



AIR FORCE WEATHER

OUR HERITAGE 1937 TO 2012



“DIRECTORATE OF WEATHER”

Jul 1937 - 1950

May 1958 - 1978

Apr 1991 - 1 Jul 2012



Air Weather Service
14 Apr 1943 - 15 Oct 1997



Air Force Weather Agency
15 Oct 1997 - 1 Jul 2012

Air Force, Reserve, & Guard Component
Weather Units

1 Oct 1991 to 1 Jul 2012

2nd Edition 1 March 2014

“MEETING THE CHALLENGE FOR 75 YEARS”



The “father of Air Force Weather, Capt Randolph P. “Pinkie” Williams (right) in balloon basket at Scott Field, Illinois, in April 1935. It was largely due to Capt Williams’ efforts that the Army Air Corps Weather Service came into existence in 1937. In basket with Capt Williams is Capt Orvil A. Anderson, renowned balloonist who rose to the rank of major general in the Air Force.

AIR FORCE WEATHER

OUR HERITAGE 1937-2012

An Illustrated Chronology

Prepared by

Air Weather Association

1 JULY 2012

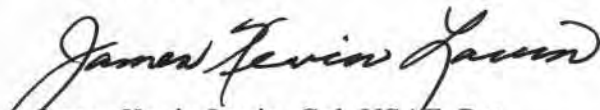
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Chairman, Air Weather Association

This illustrated chronology was compiled primarily from official United States Air Force histories prepared by Air Weather Service and Air Force Weather Agency. These histories are maintained in the Air Force Weather Agency historical holdings at 101 Nelson Drive, Offutt Air Force Base, Nebraska 68113. Those events that did not come from these histories are identified and the source of the information is cited.

DEDICATION

“Pinkie Williams was the true father of the Air Corps Weather Service, and established the first real Air Corps weather station at Langley Field around the mid-1930s.”

Colonel Arthur F. Merewether, USAF (Retired)

“No one has ever given Major R. P. Williams the credit due him for prying the meteorological service loose from the Signal Corps. It was his dream and he was the prime mover. He was a regular bulldog in his tenacity to get hold of the kind of service that the Air Corps had to have. I have no doubt that World War II would have caught us without a weather service had it not been for Major Williams”

Major General J. K. Lacey, USAF (Retired)

This book is dedicated to the 335 Air Force Weather “Fallen Warriors” who lost their lives in the service of their country, and especially to Colonel Randolph P. (“Pinkie”) Williams, the founder of the Army Air Corps Weather Service. His aggressive pioneering and organizational efforts in 1936-37 are generally acknowledged as the impetus behind the evolution of the United States Air Force weather function as we know it today. Colonel Williams was killed in action September 5, 1944, when his photographic reconnaissance aircraft was shot down over France.

WORLD WAR II

CAPT Robert M. Losey, 21 Apr 1940
T/SGT Daniel A. Dyer, Jr., 7 Dec 1941
CPL Harold W. Borgelt, 7 Dec 1941
CPL James M. Topalian, 7 Dec 1941
PFC Sherman Levine, 7 Dec 1941
PFC Richard E. Livingston, 7 Dec 1941
TEC3 Leon G. Du Bois, 10 May 1942
1/LT James W. Pflueger, 9 Nov 1942;
PVT George D. Cunning, 2 Feb 1943
PVT Gordon S. Hart, 2 Feb 1943
PVT Earl W. Wilson, 2 Feb 1943
1/LT Amos M. Hutchison, Jr., 16 Feb 1943
M/SGT Clyde J. Truett, 3 Mar 1943
1/LT William E. Stodghill, 25 Apr 1943
CAPT Robert G. Aho, 13 Jun 1943
M/SGT Donald E. Tice, 14 Jun 1943
1/LT James H. Cooke, 18 Jun 1943
T/SGT Ben Slobutsky, 10 Oct 1943
2/LT Otto H. Ahlers, 9 Dec 1943

2/LT William H. Holcomb, 9 Dec 1943
2/LT LaVerne P. Rissinger, 9 Dec 1943
M/SGT John P. Buchanan, 9 Dec 1943
T/SGT Peter W. Costello, 9 Dec 1943
S/SGT Bernard Cohen, 9 Dec 1943
SGT Ralph W. Harding, 9 Dec 1943
CPL Matthew Ekes, 9 Dec 1943
M/SGT Raymond B. Orner, Jr., 16 Dec 1943
CPL Earl E. Jackson, 19 Dec 1943
CPL Frank Lynch, 28 Jan 1944
SGT William E. Black, 15 Feb 1944
SGT Wilfred R. Scarem, 15 Feb 1944
CPL George H. Bailey, 15 Feb 1944
LT Col Joseph M. Cole Jr., 22 Feb 1944
T/SGT Herman C. Hudson, 16 Mar 1944
2/LT Raymond W. Pope, 20 Mar 1944
S/SGT Everett N. Dietrich, 23 Mar 1944
T/SGT Burton H. Holmes, 24 Mar 1944
2/LT Eugene J. Garone, 26 Mar 1944

2/LT Leland T. Harder, Jr., 26 Mar 1944
2/LT James L. Harris, 26 Mar 1944
2/LT Frederick E. Lindgren, 26 Mar 1944
F/O Albert P. Schug, 26 Mar 1944
T/SGT Steve J. Grecnik, 26 Mar 1944
S/SGT Ben G. Montgomery, 26 Mar 1944
S/SGT Robert E. Nicholson, 26 Mar 1944
S/SGT James Rago, 26 Mar 1944;
S/SGT William D. Redd, 26 Mar 1944
SGT Robert J. Miller, 26 Mar 1944;
SGT John J. Pawlina, 26 Mar 1944
S/SGT David W. Fogo, 28 Mar 1944
1/LT Arthur F. Noel, 29 Mar 1944
MAJ William P. "Tony" Conway, Jr., 1 Apr 1944
T/SGT "Gerald" Thomas Harrigan, 7 Apr 1944
1/LT Onufry W. Dzwonkoski, 9 Apr 1944
CAPT Richard L. Meister, 10 Apr 1944
S/SGT Russell E. Hill, 22 Apr 1944
CAPT Edward P. McDermott, 26 Apr 1944
2/LT William F. Dieterich, 26 Apr 1944
2/LT William Gallagher, Jr., 26 Apr 1944
2/LT Wilfred W. Larsen, 26 Apr 1944
2/LT Kenneth F. Lechert, 26 Apr 1944
2/LT James T. W. Moseley, Jr., 26 Apr 1944
2/LT Max E. York, 26 Apr 1944
S/SGT Charley O. Bertrand, 26 Apr 1944
SGT Pedro Beltran, 26 Apr 1944
SGT Jacob I. Hedrick, Jr., 26 Apr 1944
SGT Frank H. Kobus, 26 Apr 1944
SGT Robert L. Luke, 26 Apr 1944
SGT Le Roy D. Thompson, 26 Apr 1944
SGT Joseph J. White, 26 Apr 1944
PFC Raymond L. Norris, Jr., 26 Apr 1944
2/LT Paul E. Fox, 27 Apr 1944
SGT Emanuel M. Sprecher, 27 Apr 1944
1/LT Hubert L. Gholson, 20 May 1944
CAPT John D. Root, 8 Jun 1944
SGT Fred W. Purchase, 10 June 1944
1/LT John J. Mann, 7 Jul 1944
2/LT William L. Davis, 7 Jul 1944
CPL Kenneth E. Blair, 8 July 1944
1/LT Douglas G. McMillin, 29 Aug 1944
2/LT William C. Karbach, Jr., 29 Aug 1944
2/LT Max Rubin, 29 Aug 1944
F/O Harold A. Thornton, 29 Aug 1944
T/SGT Richard W. Corbin, 29 Aug 1944

S/SGT Steve J. Buccia, 29 Aug 1944
S/SGT J.D.F. Hawthorne, 29 Aug 1944
S/SGT Peter P. Kosciuszek, 29 Aug 1944
S/SGT Harry H. Reed, Jr., 29 Aug 1944
S/SGT Kenneth H. Thoen, 29 Aug 1944
2/LT Dale S. Hannah, 30 Aug 1944
2/LT George E. High, 30 Aug 1944
2/LT Jackson E. Le Vien, 30 Aug 1944
S/SGT Donald A. Jarvis, 30 Aug 1944
SGT Raymond H. Huges, 30 Aug 1944
SGT Max A. Prather, 30 Aug 1944
SGT Joseph G. Kimmel, Jr., 30 Aug 1944
COL Randolph P. Williams, 5 Sep 1944
2/LT John H. Macklin, 22 Sep 1944
M/SGT Richard W. Stoodley, 22 Sep 1944
SGT Louis W. Heller, 24 Sep 1944
S/SGT Charles H. Hammill, 25 Sep 1944
CPL Robert P. Herbig, 25 Sep 1944
1/LT Ross A. Sieh, 30 Sep 1944
W/O John W. Newton Jr., 30 Sep 1944
CPL Jerome H. Grossman, 30 Sep 1944
CPL Leonard S. Harrow, 6 Oct 1944
COL Joseph A. Miller, Jr., 21 Oct 1944
1/LT Carrol W. Feather, 23 Oct 1944
S/SGT Donald D. Fay, 24 Oct 1944
2/LT Robert L. Shaw, 25 Oct 1944
S/SGT Floyd A. Young, 30 Oct 1944
M/SGT James K. Hastings, 6 Nov 1944
1/LT Edward F. Tuohy, 17 Nov 1944
2/LT Everett L. Harris, 18 Nov 1944
SGT Myron Hirshfield, 6 Dec 1944
Virginia M. Hope, WASP, 8 Dec 1944
Margaret M. Isbill, WASP 8 Dec 1944
S/SGT Charles N. Worsham, 8 Dec 1944
CAPT Jean W. Dixon, 13 Dec 1944
1/LT Howard R. Henry, 13 Dec 1944
2/LT Elgin E. Fisher, 13 Dec 1944
2/LT William G. Stilwell, 13 Dec 1944
2/LT Harold G. Brink, 13 Dec 1944
T/SGT John F. Spellman, 13 Dec 1944
SGT Albert F. Whalen, 13 Dec 1944
MAJ Frank T. Cox Jr., 24 Dec 1944
1/LT Frank I. Folsom, Jr., 24 Dec 1944
1/LT Alfred F. Gessel, Jr., 24 Dec 1944
1/LT Paul R. Matwicio, 24 Dec 1944
2/LT Allen L. Mathias, 24 Dec 1944

T/SGT Seymour M. Klein, 24 Dec 1944
S/SGT Leonard M. Hayes, 24 Dec 1944
S/SGT John W. Smith, 24 Dec 1944
F/O Carl L. Martin, 7 Jan 1945
2/LT Dick W. Beard, Jr., 12 Jan 1945
CPL Walter A. Marsh, Jr., 20 Jan 1945
1/LT Ralph E. Fisher, 21 Jan 1945
T/SGT Walter C. Ahrens, 23 Jan 1945
2/LT Robert G. Kraybill, 24 Jan 1945
2/LT Frederick A. Walker, 11 Feb 1945
CPL John M. Anderson, 23 Feb 1945
CPL Carl E. Houston, 3 Mar 1945
1/LT William L. Knowlan, 10 Mar 1945
2/LT Charles A. Cannon, Jr., 10 Mar 1945
2/LT Charles H. Janssen, Jr., 10 Mar 1945
2/LT Calvin D. Sigrist, 10 Mar 1945
T/SGT John Zok, 10 Mar 1945
S/SGT William H. Hutchings, Jr., 10 Mar 1945
S/SGT Fred E. Keup, 10 Mar 1945

MAJ Jay Jacobs, 27 Mar 1945
1/LT Arthur J. Brestlin, 27 Mar 1945
2/LT Floyd E. Bishop, 5 Apr 1945
T/SGT Cletus G. Bice, 23 May 1945
MAJ Robert C. Kunz, 19 Jun 1945
1/LT Stanley Z. Abrams, 19 Jun 1945
F/O James M. Pyka, 19 Jun 1945
S/SGT Billy R. Isham, 19 Jun 1945
S/SGT Alvin C. Schaefer, 19 Jun 1945
S/SGT William J. Klumb, 21 June 1945
CAPT Carl E. Rimmele, 30 Jun 1945
CPL Author H. Gill, Jr., 5 Jul 1945
SGT Harold E. Gstalder, 25 Jul 1945
CPL John R. Waite, 27 Jul 1945
1/LT James A. Fuller, 12 Aug 1945
CAPT Ray E. Harr, 19 Aug 1945
SGT Jesse G. Buchanan Jr., 5 Sep 1945
1/LT Walter R. Weston, 19 Oct 1945
CWO William E. Flaherty, 19 Apr 1946

KOREA

CAPT David H. Grisham, 3 Sep 1950
1/LT James M. Schooley, Jr., 9 Oct 1950
CAPT Warren G. Harding, 7 Dec 1950
CPL Robert W. Taylor, 25 May 1951
CAPT Gerald L. Brose, 11 Aug 1951

CAPT Bruce K. Nims, 21 Oct 1951
1/LT George Bain, 22 Feb 1952
1/LT Russell J. Wolfgram, 22 Feb 1952
T/SGT Carl M. Spence, 22 Feb 1952
A1C Edwin W. Collins, 22 Feb 1952

SOUTHEAST ASIA

A1C Norman C. Bowers, 6 Sep 1966
A2C Wayne S. Meacham, 6 Sep 1966¹
A2C Tullio P. Iodice, 23 Oct 1966²
SSGT James C. Swann, 4 Mar 1968
SGT Edward W. Milan, 4 Mar 1968
SSGT Eduardo Garcia, Jr., 18 Mar 1968
A1C Kenneth E. Baker, Jr., 22 Mar 1968

¹ Hist. of 1st WW, 1 Jul -31 Dec 66, Appendix 1, p 12; e-mail, Try, Paul, Col, USAF, Ret., [Remembering Vietnam](#), 8 Dec 2010.

² *Ibid.* Hist. of 1st WW.

COLD WAR

Col Keith R. Grimes, 14 Sep 1977³

OPERATION DESERT SHIELD⁴

MSGT Samuel M. Gardner, Jr., 29 Aug 1990

SSGT Marc H. Cleyman, 29 Aug 1990

SSGT Rande J. Hulec, 29 Aug 1990

OPERATION ENDURING FREEDOM

CAPT Nathan J. Nylander, 27 Apr 2011⁵

³ DD Form 13, *Statement of Service*, AFWA/HO archives [Note: Statement of Service indicated highest rank held was Colonel but at time of accident the grade was Lt Col]

⁴ Study, Nawyn, William E., Dr., "Mission Accomplished: The Air Weather Service in DESERT SHIELD/DESERT STORM, August 1990 - April 1991," pp xvi and 22, Dec 1992, AFWA/HO archives

⁵ Art., Wise, Lindsay, "Airman from Harris among 8 Killed in Afghanistan." *Houston Chronicle*, 29 Apr 2011, downloaded from <http://www.chron.com/disp/story.mpl/metropolitan/7543561.html>

WEATHER RECONNAISSANCE

1LT Joseph E. Finkey, 31 Dec 1947
1LT William N. Green, 31 Dec 1947
1LT Paul G. Jordan, 31 Dec 1947
2LT Donald DeNeau, 31 Dec 1947
MSGT James D. Matthew, 31 Dec 1947
TSGT George W. Bessire, 31 Dec 1947
SSGT David C. Brown, 31 Dec 1947
SGT Edward C. Decker, 31 Dec 1947
CPL Earl P. Domangue, 31 Dec 1947
1LT Jay A. Steinbrenner, 28 Sep 1948
1LT John P. Trostel, 28 Sep 1948
1LT Otis A. Young, 28 Sep 1948
TSGT Harry A. Holt, 4 Oct 1948
MAJ Roy H. Bruns, 3 Nov 1949
CAPT Cleo S. Maddox, 3 Nov 1949
CAPT Jon C. Mays, 3 Nov 1949
1LT Andrew J. Rooks, 3 Nov 1949
1LT James E. Shewey, 3 Nov 1949
TSGT Clarence J. Hyatt, 3 Nov 1949
SSGT Harry N. Barker, 3 Nov 1949
SSGT Preston S. Treadway, 3 Nov 1949
SGT James A. Sapp, 3 Nov 1949
CPL Harry N. Carden, 3 Nov 1949
CPL Robert D. Myrman, 3 Nov 1949
1LT Walter Krueger, 26 Feb 1952
2LT Vincent P. Gendusa, 26 Feb 1952
2LT Robert J. Shaw, 26 Feb 1952
MSGT Frank P. Leach, 26 Feb 1952
SGT Donald E. Parker, 26 Feb 1952
CPL Francis X. Toland, 26 Feb 1952
MAJ Bruce Acebedo, 5 Apr 1952
CAPT Guilford A. Hopkins, 5 Apr 1952
CAPT Robert L. Kizer, 5 Apr 1952
CAPT Leonard B. Winstead, 5 Apr 1952
2LT August I. Lam, 5 Apr 1952
MSGT Edwin M. Fultz, 5 Apr 1952
TSGT George R. Shook, 5 Apr 1952
SSGT Carlton J. Fose, 5 Apr 1952
SSGT Elbert E. King, 5 Apr 1952
SSGT Hayden C. Shulz, 5 Apr 1952
MAJ Sterling L. Harrell, 26 Oct 1952
CAPT Donald M. Baird, 26 Oct 1952
CAPT Frank J. Pollak, 26 Oct 1952
1LT William D. Burchell, 26 Oct 1952

1LT Clifton R. Knickmeyer, 26 Oct 1952
MSGT Edward H. Fontaine, 26 Oct 1952
A1C Alton B. Brewton, 26 Oct 1952
A1C William Colgan, 26 Oct 1952
A1C Anthony J. Fasullo, 26 Oct 1952
A3C Rodney E. Verrill, 26 Oct 1952
CAPT Guy M. Broughton, 18 Sep 1953
CAPT John A. Lelland, 18 Sep 1953
CAPT William T. Allen, 18 Sep 1953
CAPT Thomas H. Smatana, 18 Sep 1953
CAPT Thomas E. Zapolsky, 18 Sep 1953
SSGT Walter C. Drew, 18 Sep 1953
A2C Billy G. Elliott, 18 Sep 1953
CAPT Charles F. Baker, 25 Sep 1953
MAJ Dale Richardson, 31 Aug 1956
CAPT Leonard N. Chapman, Jr., 31 Aug 1956
CAPT Everett E. Dyson, 31 Aug 1956
1LT William J. Wolters, Jr., 31 Aug 1956
2LT William W. Faustlin, 31 Aug 1956
MSGT Fred T. Gregg, Jr., 31 Aug 1956
TSGT Richard K. Brown, 31 Aug 1956
SSGT Ronald R. Ragland, 31 Aug 1956
A2C Melvin O. Lindsay, 31 Aug 1956
A2C Elijah Spencer, 31 Aug 1956
A3C Douglas W. Maxson, 31 Aug 1956
CAPT Raymond A. Durr, 28 Dec 1956
CAPT Dewey A. Keithly, 28 Dec 1956
CAPT Leonard A. Klawa, 28 Dec 1956
CAPT Lawrence E. Monies, 28 Dec 1956
1LT Waylon H. Moseley, 28 Dec 1956
SSGT William A. Taylor, 28 Dec 1956
A2C Gerald R. Arnn, 28 Dec 1956
A2C John E. Hollis, 28 Dec 1956
A2C Mose F. Thomas, Jr., 28 Dec 1956
CAPT Harold W. Bales, 17 Jan 1957
CAPT Robert E. Eichelberger, 17 Jan 1957
CAPT William P. Spil, 17 Jan 1957
1LT Robert E. McGough, 17 Jan 1957
1LT Ralph L. Sampson, 17 Jan 1957
2LT Bobby H. Spencer, 17 Jan 1957
MSGT Woodrow B. Russell, 17 Jan 1957
A1C John W. Cramer, 17 Jan 1957
A1C Donald D. Dodds, 17 Jan 1957
A2C Robert C. Glenn, 17 Jan 1957

A2C Thomas F. Patterson, 17 Jan 1957
A3C Roger D. Sigman, 17 Jan 1957
CAPT Albert J. Lauer, 15 Jan 1958
CAPT Marcus G. Miller, 15 Jan 1958
CAPT Clyde W. Tefertiller, 15 Jan 1958
1LT Courtland Beeler III, 15 Jan 1958
1LT Paul J. Buerkle, Jr., 15 Jan 1958
TSGT Delvian L. Gordon, 15 Jan 1958
SSGT Kenneth L. Houseman, 15 Jan 1958
SSGT Kenneth L. Tetzloff, 15 Jan 1958
A1C Bernard G. Tullgren, 15 Jan 1958
A1C Randolph C. Watts, 15 Jan 1958
CAPT Robert F. Aldrich, 4 Feb 1959
CAPT Robert A. Brown, 4 Feb 1959
CAPT William Potter, Jr., 4 Feb 1959
CAPT Andrew P. Stefurak, 4 Feb 1959
1LT Frank C. King, Jr., 4 Feb 1959
1LT Carlton S. Whitney, 4 Feb 1959
MSGT Donald R. Fitzgerald, 4 Feb 1959
TSGT Alfred E. Estes, 4 Feb 1959
SSGT Jack A. Parmelee, 4 Feb 1959
SSGT Harvey O. Ward, 4 Feb 1959
A1C Franklin D. Radcliff, 4 Feb 1959
A3C Scott Stephens, Jr., 4 Feb 1959
CAPT John R. Willis, 8 Sep 1960
1LT Robert W. Blanton, 8 Sep 1960
1LT William L. Hesse, 8 Sep 1960
1LT Howard S. Kelly, 8 Sep 1960
2LT Lawrence K. Draper, 8 Sep 1960

MSGT Claude M. Burgess, 8 Sep 1960
MSGT James W. Fields, Jr., 8 Sep 1960
TSGT Vernon W. Powell, 8 Sep 1960
A1C Edward L. Armstead, 8 Sep 1960
A3C Alfred Campbell, Jr., 8 Sep 1960
A3C Barney Jablonski, 8 Sep 1960
CAPT Joseph W. Ivins, 17 Sep 1962
CAPT Paul H. Palmer, 17 Sep 1962
LT Bobby Galbrecht, 16 Oct 1962
LT Glenn Sprague, 16 Oct 1962
MAJ Joseph M. Pair, 17 Sep 1963
CAPT Carl R. Laffoon, 17 Sep 1963
MAJ Conrad L. Lienhart, 21 Apr 1964
CAPT Warren S. Hillis, 21 Apr 1964
TSGT Charles F. Heckman, 21 Apr 1964
CAPT Robert O. Bartlett, 7 Nov 1966
CAPT Leo R. Otway, 7 Nov 1966
CAPT Charles D. Booker, 9 July 1969
AMN Terry J. Nirolis, 15 Apr 1970
LT COL James B. McCravy, 27 Jun 1972
CAPT Harold A. "Pat" Moore, Jr., 27 Jun 1972
MAJ Dale M. Mann, 27 Apr 1973
CAPT Edward R. Bushnell, 12 Oct 1974
1LT Gary Wayne Crass, 12 Oct 1974
1LT Timothy John Hoffman, 12 Oct 1974
1LT Michael Patrick O'Brien, 12 Oct 1974
TSGT Kenneth George Suhr, 12 Oct 1974
SGT Detlef Wolfgang Ringler, 12 Oct 1974

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**SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000**

2 July 2012

Dear Air Force Weather Professionals:

For 75 years, Air Force Weather has provided outstanding support to the Nation. The daily efforts of your superb men and women have helped to guide the course of history.

Since your beginnings on July 1, 1937, in the Army Air Corps, we have benefitted from weather warriors operating in all of our major combat and humanitarian relief operations. In addition, your leadership in areas ranging from hurricane reconnaissance to observing and forecasting solar activity has saved countless lives and allowed us to evaluate and plan for impacts to our numerous air and space systems.

You have a distinguished heritage, and the Air Force Weather team can be justifiably proud as you celebrate this significant milestone. I am confident that Air Force Weather's future will be characterized by the same high standards of excellence that have marked your performance in the past. Happy 75th!

A handwritten signature in black ink, likely belonging to the Secretary of Defense, is centered on the page. The signature is stylized and cursive, with a long horizontal line extending to the right.

FOREWORD

Today, 1 July 2012, is the date we recognize as the 75th birthday of the United States Air Force weather function. On this day in 1937 the War Department transferred the responsibility for providing Army Air Corps weather services from the Signal Corps to a small group known then as the Army Air Corps Weather Service. At birth, the fledgling weather service consisted of about 280 enlisted and 22 officers manning 40 weather stations. They were led by 1st Lt Robert M. Losey, who reported directly to the Army Air Corps Commanding General.

This book, a combined effort of the Air Weather Association, the Directorate of Weather staff, and Air Force Weather Agency's Historical Office, begins with that day in 1937 and takes us on a 75-year journey through time as we examine the places, faces, and events that have shaped our Air Force Weather into what it is today.

We have evolved from our original complement of about 300 people to nearly 4,000 today. We have also developed and acquired the tools and methods that have made our weather services more accurate and responsive to operational needs. Our "supercomputers," for example, perform billions of calculations in the time it once took a forecaster to sharpen a pencil. Weather satellites offer a view of our planet that few in 1937 could have imagined while modern robust communications now tie our outstanding forecasters and our hard-won knowledge and technology together as if we were all in the same room.

Air Force Weather has never been equipment-centered, and never will be. The power of Air Force Weather comes from our people and their warfighting spirit. No matter whether the roster lists 300 or 4,000 names, our dedicated professionals have always been the heart of Air Force Weather. Our tremendous people have made Air Force Weather what it is today and this will continue into the future. It was that way in 1937, it is still that way in 2012, and it will be that way in 2037 and beyond.

The thousands of people who have served in Air Force Weather through times of war or peace may proudly use this occasion, stirred by the recollections motivated by this book, to reflect on their individual and unit contributions to our great nation. When future Air Force Weather Airmen look through these pages, I hope they feel the same sense of pride and accomplishment that those of us who helped shape the first 75 years feel. I know that as we go forward into the next 75 years the outstanding people of Air Force Weather will continue to meet every future challenge to ensure the warfighters have the best weather support possible to "Fly, Flight, and Win!"

*Weather Warriors,
Be very proud of what
you have done for our
great Nation! You have
made a "huge difference"
in combat and much, much
more!
Thanks!
Fred*

VIR



FRED P. LEWIS, SES, PhD, USAF
Director of Weather
Directorate of Operations
DCS, Operations, Plans & Requirements

PREFACE

"There is nothing that solidifies and strengthens a nation like reading the nation's history, whether that history is recorded in books, or embodied in customs, institutions, and monuments."

Joseph Anderson

The idea to capture the story of Air Force Weather (AFW) over the past 75 years began with the realization in December 2007 that the 75th anniversary (1 July 2012) was rapidly approaching. Dr. Fred Lewis, Director of Weather, Headquarters United States Air Force (AF/A3O-W) and Kevin Lavin, Col USAF, Ret., Chairman of the Air Weather Association (AWA), agreed AWA would host its biennial 2012 reunion in Omaha while A3O-W would initiate planning in 2011 for a celebration of the 75th anniversary to coincide with the reunion.

One of the highlights of the 50th Anniversary in July 1987 included the preparation of a special study by the Military Airlift Command Historical Office. Ms. Rita M. Markus, Master Sergeant (MSGT) Nicholas F. Halbeisen and Mr. John F. Fuller authored *Air Weather Service: Our Heritage 1937-1987*. There were additional studies prepared in subsequent years: William E. Nawyn and Rita M. Markus, *Air Weather Service: A Brief History 1937-1991* and Ms. Lillian E. Nolan and Mr. John M. Murphy, *Air Force Weather: A Brief History 1937-2000*.

I believed the "1937-1987" document could serve as an outline for creating a new document that captured those significant events that defined the next 25 years for AFW. AWA offered to prepare a document that would reflect "Air Force Weather, Our Heritage 1937-2012." AFWA agreed to this approach in December 2009. I worked closely with Mr. Don May, AFWA historian, on researching prepared histories, special studies, and other information that would serve as the basis for an update.

We soon discovered that the past 25 years was a period of monumental change for the Air Force's weather function. Whereas the first 50 years saw the birth and growth of Air Weather Service, the next 25 years saw rapid technological innovation and organizational change resulting from an overarching Air Force transformation designed to meet the challenges of the 21st Century. As an example, for nearly 60 years the tools of weather operations were electro-mechanical, analog sensing and display systems; teletype bulletins and manually plotted maps, analyzed with acetates and grease pencils; and commanders received weather mission forecasts from staff weather personnel that were largely based on the four-times a day synoptic cycle of the meteorological community. Now, weather warriors are using third generation micro-processor based integrated processing, analysis, and display capabilities, tied to the Department of Defense's (DoD) Global Communications Grid, allowing commanders to receive highly-tailored weather updates relevant to their mission and area of responsibility as soon as the data are available. Weather personnel now spend their time characterizing, exploiting, and interpreting the environment to determine the effects weather events will have on unit operations instead of spending much time and effort collecting and analyzing basic weather data.

The organizational changes that resulted from technological innovation and the Air Force organizational transformation redefined how the weather force perceived itself. Under the umbrella of Air Weather Service there was a sense of a "family" focused on providing weather information to Air Force and Army units engaged in a number of various missions. Today, AF weather forces are a more loosely bound "family," but remain integrated under the umbrella of Air Force Weather. As a total force function (AF weather, AF battlefield weather, AF special

operations weather teams, Air Reserve and Air National Guard component weather and battlefield weather, civilian, and contractor personnel) organized in a mix of centralized weather production capability and embedded in war-fighting units. AFW's focus remains to provide timely, relevant, and accurate information to combatant commanders and the war-fighting forces.

The first 50 years of this document was compiled from *Air Weather Service: Our Heritage 1937-1987* with several notable changes. AWA believed it appropriate that those people who were reported as casualties while assigned to units in the Republic of Vietnam should be included, thus the Vietnam list increased by three. Lt Col Keith Grimes was added as a Cold War casualty. The DESERT SHIELD casualties were previously added to the list in *Air Weather Service: A Brief History 1937-2000*. As the protracted war in Afghanistan continued we added one more fallen comrade to the list.

I changed chapter 1 to reflect an Air Force Weather theme rather than Air Weather Service. The anniversary date of Air Force Weather is 1 July 1937 and the birth of Air Force Weather Agency (previously AWS) is celebrated on 13 April and stems from the formation of the Weather Wing in April 1943.

In chapters 2 through 6, I added several new events to the earlier chronology, e.g., late fall 1944 the discovery of the jet stream; May 1946 Publishing of *War and Weather, A Report Prepared for the AAF Scientific Advisory Group, December 1945*; 24 Apr 1952 change of enlisted grade; 1 Apr 1960, launch of first weather satellite; 15 Apr 1986, Operation ELDORADO CANYON. In addition, several photographs were added because of their relevancy or significance, e.g., a Signal Corps observer circa 1882, African-Americans in 1945, Technical Sergeant (TSgt) Alice Hill [first AFW female Chief Master Sergeant (CMSgt)], and Sergeant (Sgt) Vickiann Esposito [first AFW female aircrew member]. I corrected a factual error pertaining to the first launch of Defense Military Satellite Program (DMSP) satellite based on a National Reconnaissance Organization History Office study completed in 2001 [18 Mar 1965]. Using that study, I also added some DMSP events that contributed to the technological evolution of AFW.

To round out the next 25 years, I used AWS and AFWA official histories or other information available from various sources. I referenced entries with the respective source document if it did not come from official histories.

In this second edition, I updated the Dedication section to reflect research efforts of CMSgt Craig Kirwin, Air Combat Command's enlisted weather functional manager. Chief Kirwin identified additional AFW warriors who lost their lives while serving in World War II and Korea. As a result, on 28 February 2014, the Air Force Weather Agency updated the Air Force Weather Fallen Memorial that was rededicated during the August 2012, 75th Anniversary celebration. Other significant changes included the following: 30 Mar 82 Operation GALLANT EAGLE, deleted the word "undetected;" Figure 6-17 replaced "Senior NCO" with "MSgt John Justice;" added an event 24 Aug 1990 to reflect the arrival of the Central Command's Staff Weather Officer to the Operation DESERT SHIELD theater of operations; clarified the last weather Airmen to depart Iraq at the end of Operation NEW DAWN, 17 Dec 2011; and corrected the Grimes Award for 1989. I purposefully did not include President Obama's or the Senate Resolution documents commemorating the 75th anniversary of Air Force Weather. Both documents were incorrectly worded to reflect the 75th anniversary of Air Force Weather Agency rather than Air Force Weather.

For the past 25 years, “*Air Weather Service; Our Heritage 1937-1987*” served many as an excellent research tool and a reminder of the growth of Air Force Weather. It is my wish “*Air Force Weather, Our Heritage 1937—2012*” will provide today’s and future Airmen a means of understanding the heritage of the Air Force weather profession and receive the same satisfaction of serving our great Nation as those who have done so in the past.

A handwritten signature in cursive script that reads "George N. Coleman III". The signature is written in black ink and is positioned above the printed name and biographical information.

George N. Coleman III
CMSgt, USAF, Ret. (AWS 1960-1984)
Retired Civil Servant (AWS/AFWA 1984-2004)
Member, Air Weather Association

ACKNOWLEDGEMENTS

I have enjoyed delving into the annals of Air Force Weather for the past 3 years. The magnitude of compiling this document has been a labor of love and I couldn't have done it alone. I would like to thank all who have helped me and especially those who provided encouragement.

Since 2004, Kelly Klein, Col, USAF Ret., had frequently asked when I was going to write about my experiences in Air Force Weather. In 2009 he provided me the opportunity to assist the Air Force Weather Agency history office compile a chronology of AFW's events for the period 2001 through 2007. While working with Mr. Don May, AFWA's historian, we discussed the idea of preparing a document similar to Rita Markus', *et al.*, *Air Weather Service: Our Heritage 1937-1987*. Mr. May admitted that he didn't have the staff to prepare a similar historical study. It was this impetus, which led me to approach Kevin Lavin, Col, USAF Ret., Chairman of the all-volunteer Air Weather Association (AWA), and seek his sponsorship of the task. I'm eternally grateful to Kelly for his encouragement and Kevin for his vision. Don's moral and technical support throughout the process has made the task less burdensome, for this I thank you.

I am grateful to Dr. Fred Lewis, USAF Director of Weather, for allowing AWA to prepare this illustrated chronicle of Air Force Weather's events for the past 75 years. In addition, I owe thanks to the AFWA commanders, Cols John Murphy, Robert Russell, and Lou Zuccarello who supported this effort and provided me access to AFWA historical holdings to conduct independent research.

To ensure personal bias did not creep into a document of this nature required scrutiny from a body of peers. I'm eternally grateful to the core review team of Col George Frederick, Commander AWS, Mar 1991-May 1993; Col Gene Pfeffer, Vice Commander AWS, Mar 1991-Jun 1994; and Maj Paul Demmert, former member of AWS and author/contributor to several weather technical publications, most notably AFWA/TN-05/001, *Value of Weather Services to the Combatant Commands*. Their wisdom and insight kept me focused on maintaining a balanced approach to the overall chronology. In addition, the A3O-W and AFWA staff's provided critical review that ensured the document reflected current policy and relevancy to the war fighting focus of Air Force Weather.

I would be remiss if I didn't recognize Col Frank J. Misciasci, Jr., Commander, AWS, May 1993-May 1995, for his encouragement, wisdom, and motivation he provided me as I struggled with conflicting bits of research.

Most importantly, I thank my lovely wife Joyce for creating a loving and understanding environment that allowed me to work on this document at all hours of the day and various vacation locations.

Without doubt there will be errors, omissions and over-simplifications, for which I take absolute responsibility. I hope that the rest of the material will be enough to stimulate one to explore the heritage of Air Force Weather.

CHAPTER 1—THE ROOTS AND LINAGE OF AIR FORCE WEATHER¹

Although today's National Weather Service and the Air Force's weather warriors are distinct and separate organizations, they share a mutual link to the earliest meteorological activities in the United States (U.S.). The interwoven background of military and civil meteorology, prior to their permanent separation in 1917, can be divided into four distinct periods.

The early period, from 1644 to 1819, was characterized by the individual efforts of prominent citizens such as doctors, clergymen, judges, and scientists. The first known regular record of weather on the North American continent was kept by the Reverend John Campanius at Swedes Fort near Wilmington, Delaware, in 1644-65. The Honorable Paul Dudley, Chief Justice of Massachusetts, kept a regular weather record in Boston, 1729-30. In September 1743, Benjamin Franklin, then Postmaster General, using reports of numerous postmasters, deduced the track of a hurricane moving up from the West Indies. Thomas Jefferson at Monticello and James Madison at Williamsburg, Virginia, maintained a series of contemporaneous observations showing that their climate conditions harmonized completely.

The period from 1819 to 1870, corresponded with the U.S. expansion westward, the Civil War and the U.S. growth as an emerging world power. It was marked by more concentrated individual investigations and by the interest of the Army's Surgeon General, James Tilton. In 1814, Tilton directed hospital surgeons to record the weather. Tilton's successor, Dr Joseph Lovell, continued the practice of collecting reports that outlined the climate, diseases most prevalent in the vicinity, their most probable causes, and the general state of the local weather – temperature, wind, rain, etc. Dr Lovell also suggested the creation of a weather observing network, improvement of the soldier's rations and clothing, and abolition of the whiskey ration. His recommendation concerning a weather observing



Figure 1-1: An U.S. Army Signal Corps soldier at Pikes Peak weather station, transmits latest weather data by heliograph (circa 1880s)

network led to an Army regulation with the first recorded observations being made in January, 1819. The thermometer and the wind vane were the only weather instruments used at first. In 1836 a rain gauge was added, and in 1840 and 1841 additional funds allowed the purchase of barometers and

¹ Note: This section was significantly rearranged from previous historical studies to define Air Force Weather, a functional arrangement of forces, from its beginnings to the current organizational alignment. Previous studies intimated that Air Weather Service, a named organization, was synonymous with Air Force Weather. This study corrects the relationship.

hygrometers. In 1842, a “Meteorologist to the U. S. Government” was appointed by Congress and assigned to the Surgeon General’s Office.

The period from 1870 to 1890 saw the U.S. grow from an agricultural nation to an industrial power. Congress acted to create a functioning weather service in 1870 by charging the War Department with “...taking meteorological observations at the military stations in the interior of the continent and at other points in the states and territories of the U.S., and for giving notice on the northern lakes and on the seacoast, by magnetic telegraph and marine signals, of the



Figure 1-2: U.S. Army Signal Corps and Weather Bureau Station on Pikes Peak, altitude 14,147 feet (circa 1890s) (U.S. Army Signal Corps)



Figure 1-3 Sgt. Alexander McAdie as Signal Service weather observer in 1882.

approach and force of the storms.” The Secretary of War assigned the Chief Signal Officer, General A. J. Myer, the duty of executing the order. General Myer’s first step was the establishment of a school of instruction in meteorology at Fort Whipple (later named Fort Myer). In November 1870 the Signal Corps published the first bulletin announcing storms on the Great Lakes. In January of the following year the first “weather probabilities” were published. Issued three times daily, these forecasts covered eight areas; New England, Middle States, South Atlantic States, Lower Lakes, Upper Lakes, Eastern Gulf, Western Gulf, and Northwest. The rapid growth of the Signal Corps’ weather service is reflected in the growth of its annual appropriations for meteorology, exclusive of pay and allowances of military personnel, from \$15,000 in 1870 to \$250,000 in 1873. This period also saw the establishment of the Weather Station atop Mount Washington, New Hampshire, and stations at Fort St. Michaels and St. Paul’s Island, Alaska, in 1876. By 1882 an extensive Alaskan observing system had been developed. In 1885, the Signal Corps opened a weather station on top of Pikes Peak, Colorado that remained in operation under the Weather Bureau until 1894, when it was closed due to budget costs.

The period from 1890 to 1917 saw major initiatives to improve weather services appropriate to the growth of the U.S. as world power. The U. S. Weather Bureau was created under the Department of Agriculture by a Congressional Act of 1 October 1890 and effective 1 July 1891. On that date, buildings, telegraph lines, stations, apparatus, and personnel were turned over to the

Department of Agriculture. From 1891 until the U.S. entered World War I, there was practically no military weather service except for a limited capability to provide ballistic data for artillery firing.

The Weather Service of the U.S. Army was established under the Chief Signal Officer in 1917 as the U.S. entered World War I (WW I). Its mission was to provide the Army at home and American Expeditionary Forces (AEF) in Europe with all the meteorological information needed; to supply the aviation fields, the coast artillery stations, the ordnance proving grounds, and the gas warfare service with such meteorological and aerological data as might be useful to them; and to undertake special investigations in military meteorology and related problems.

Initial manning for the fledgling Army Weather Service was established at 14 officers and approximately 300 men for duty in the Meteorological Section of the Signal Corps overseas, and 13 officers and approximately 175 men for duty in the U.S. Given the state of meteorology at the time, there were not a sufficient number of trained personnel to man the organization. Accordingly, the Army took men with satisfactory educational qualifications and arranged for additional training in meteorology. Through the cooperation of the National Research Council, the Committee on Education and Special Training of the General Staff, and by transfer from other military organizations, approximately 500 men were eventually made available.

The first group of 150 trainees was sent to various Weather Bureau stations in the U.S. for field training in meteorology. After a short period of training, nine of these men were sent to Fort Omaha, Nebraska, and in November 1917 the first military meteorological station was established there. At about this same time, a school of meteorology was opened at College Station, Texas, with Dr Oliver I. Fassig as chief instructor. Here, approximately 300 men were given preliminary training in meteorology. In September 1917, after training, Majors (Maj) W. R. Blair and E. H. Bowie were sent to Europe to begin work with the AEF there.



Figure 1-4: Weathermen of the U.S. Army Signal Corps with the AEF forces in France, WW I (U.S. Army Signal Corps)



Figure 1-5: U.S. Army Weather Forecast center at Colombey-les-Belles, France, December 1918 (U.S. Army Signal Corps)

The meteorological services with the AEF immediately made plans for cooperation with the French and British meteorological service at the front. The first American station was established in May 1918 at the flying field of the First Corps Observation Group located at Ourches (Meurthe-et-Moselle), France. The first station to take part in combat operations was the one which operated with the First Army Corps near Chateau-Thierry. Several stations operated with the First Army during the St-Michael and Meuse-Argonne operations.

The Signal Corps Meteorological Section established 37 military meteorological stations in the U.S. They were manned and equipped to furnish meteorological data to other branches of the Army as well as the Signal Corps. Most of these stations were at military posts and were established at the request of one of the branches of the military service.

WW I officially ended in November, 1918. By July 1, 1919, the Meteorological Section, Signal Corps, was practically on a peace-time basis; all men who enlisted for the period of the emergency had been discharged, excepting two, who had requested that they be retained temporarily. They were subsequently discharged in July 1919. Men who had enlisted in the Regular Army after the close of the war had been given training in meteorological work and were capable of providing the necessary weather services for the Army.

WW I had clearly demonstrated the need for and the potential of an Army Air Service. It had produced visionary airmen such as Billy Mitchell, Tooev Spaatz and, Hap Arnold who were dedicated to its development. Despite their ardent efforts and the passage of the Air Corps Act in 1926, military aviation developed slowly. There were too many skeptics and critics, including Army officers who considered aviation to be an adjunct to ground operations and Navy officials who viewed air power as a direct



Figure 1-6: Pilot Balloon (Pibal) release near Pee Dee River, North Carolina, December 1927 (U.S. Army Signal Corps)

threat to the future of the battleship. Additionally, the nation's economy during the early thirties did not allow the allocation of sufficient funds to improve U. S. air power. By 1937, the U. S. had dropped to sixth place among the world powers in combat airplane strength. If the Army's air arm was slow to develop, so too was its Weather Service. In 1935 there were only about 160 enlisted weathermen and half dozen weather officers in the Signal Corps' Weather Service. It would take World War II to prove the value of air power and the value of weather services to support it. However, the years between the wars showed only a slow evolution toward an independent air arm.

Two events served to focus attention, both public and congressional, on the inadequacies of the Air Corps. In 1934, the Air Corps' was given the task of flying the mail following President Roosevelt's cancellation of the civilian air line contracts with the Post Office. Severe winter weather, obsolete aircraft, inadequate clothing, and lack of training contributed to 66 accidents and 12 aircrew fatalities during the three-month operation. It was a tribute to the airmen of the Air Corps that not one pound of the 777,389 pounds of mail flown was ever lost. However, it was clear that the Air Corps was not up to the task of taking over air mail delivery much less combat operations.

The other significant event was the report of the Baker Committee. The committee had been charged by the Secretary of War to investigate and report on the performance of the Air Corps in carrying the mail and the "adequacy and efficiency of its technical flying equipment and training for such a mission." The committee's report failed to recognize the potential of airpower. It concluded that the Air Corps should continue to have only a limited role in the Army. However, it also concluded that the Air Corps should be reorganized by creating a General Headquarters Air Force (GHQ Air Force) in March 1935. The GHQ Air Force was charged with directing the combat operations of the Air Corps. The commanding general of the GHQ Air Force was at the same command level as the Chief of the Air Corps whose job it was to develop, procure, and supply equipment and train personnel. This division of leadership gave rise to many jurisdictional disputes, some of which directly affected the future of the weather service. Another recommendation in the Baker Committee report was that the Air Corps should operate the weather service in time of war.

The organization of the newly created GHQ Air Force included a weather officer, Captain (Capt) Randolph "Pinky" Williams, later recognized as the father of the Air Force's weather service. In a number of studies during 1935 and 1936, Capt Williams outlined the shortcomings of the weather service as it then existed. Various proposals to improve the weather service were also made by the Signal Corps, the Air Corps, the Adjutant General, and, finally, the General Staff.



Figure 1-7: At work in an early military weather station, a sergeant records the data telephoned to him by a colleague from the balloon release point outside.

After a year of recommendations and debate, but no decisions, Major General (MGen) John H. Hughes, Assistant Chief of Staff of the War Department General Staff, advised the Chief of the Air Corps that the weather service should be transferred from the Signal Corps to the Air Corps. The main thrust of General Hughes' memorandum was that 95% of the weather service provided by the Army was used by the Air Corps, and that, as of December 1936, there were actually more weather officers in the Air Corps than in the Signal Corps. In January 1937, The Secretary of War directed

the transfer. The Chief of the Air Corps was directed to assume the responsibility effective July 1, 1937. This came to be recognized as the birthday of the Army Air Corps Weather Service². Forty weather stations, 22 weather officers, and 180 enlisted men were transferred from the Signal Corps to the Air Corps to join the 100 weather personnel already assigned to the Air Corps.

The transfer created a Weather Section in the Office of the Chief of the Air Corps. The first head of the Weather Section was First Lieutenant (1st Lt) Robert Losey. The Weather Section controlled “fixed” weather stations while the GHQ Air Force, which directed combat operations, oversaw “mobile” weather units. Army theater commanders administered the five overseas weather stations. The Signal Corps retained responsibility for developing procuring, and maintaining weather and communications equipment.

Beginning in 1939, when World War II broke out in Europe, the Air Corps Weather Service experienced rapid expansion. By the time the U.S. entered the war in 1941, it had about 2,650 personnel. This explosive growth made recruiting and training qualified personnel a big challenge. The Air Corps had opened a school for enlisted forecasters at Patterson Field, Ohio, in 1937, and a school for weather observers at Scott Field, Illinois, in 1939. It consolidated the two schools at Chanute Field, Illinois, in 1940. It also sent prospective weather officers to several universities to pursue studies in meteorology.

In June 1941, the Air Corps became the Army Air Forces (AAF). It consisted of the Air Corps and an Air Force Combat Command. The Weather Section remained with the Office of the Chief of the Air Corps and continued to direct fixed weather units. Combat Command supervised mobile weather units. In 1942, the Air Corps Weather Service became the AAF Weather Service. Also in 1942, the mission was expanded to include support to Army Ground and Service Forces. On April 14, 1943, AAF activated a Weather Wing that then transitioned to Asheville, North Carolina. This activation came to be recognized as the birthday of the Air Weather Service³ (AWS). The wing served as a field headquarters that managed the nine Weather Service squadrons in North America. By 1945 the AAF Weather Service reached its peak strength of 19,000. At this time it operated 900 weather stations, 700 of them being overseas in all theaters of the war. They accompanied airborne forces in the Normandy invasion and infantry storming Pacific Islands. The war claimed the lives of 68 AAF weather personnel.

In 1946, the AAF Weather Service was assigned as a subordinate unit within the Air Transport Command. This new affiliation did not significantly change its mission or structure. On January 7, 1946, the headquarters of the Army Air Forces Weather Service moved from Asheville, North Carolina, to Langley Field, Virginia. Soon thereafter, on March 13, 1946, Army Air Forces redesignated the organization as the Air Weather Service and remained subordinated to the Air Transport Command. Along with the Air Transport Command, the AWS headquarters relocated to Gravelly Point, Virginia, on June 14, 1946. In 1947, the Air Force (AF) was established as a separate

² *Air Force Weather Agency Historical Highlights*, Air Force Weather History Office, Hq AFWA, Offutt AFB, NE, Nov 2004, p. 1

³ *Ibid.* [Note: Col Charles French, AWS commander in 2000, introduced the term Air Force Weather in his introduction to *Air Force Weather A Brief History 1937-2000*, but the historical study still reflected the “birth of AWS” as occurring on 1 Jul 1937.]

Service. Under the terms of an Army-Air Force agreement, the Air Force retained operational weather support responsibilities for the Army.

On June 1, 1948, AWS was transferred to the AF's newly established Military Air Transport Service (MATS) (which was redesignated Military Airlift Command (MAC) on January 1, 1966, and Air Mobility Command (AMC) on June 1, 1992). Headquarters, Air Weather Service, moved concurrently with MATS, to Andrews Air Force Base (AFB), Maryland, on December 1, 1948.

Air Weather Service headquarters moved with Military Air Transport Service to Scott Air Force Base, Illinois, on June 23, 1958, where it remained for more than 4 decades. On April 1, 1991, the AF designated AWS a field operating agency of Headquarters, United States Air Force (USAF). With this change the AF divested AWS of its subordinate wings by October 1, 1991. The AF redesignated AWS as the Air Force Weather Agency (AFWA) on October 15, 1997 and assigned it to Offutt AFB, Nebraska.

DIRECTORATE OF WEATHER HISTORICAL HIGHLIGHTS

World War II generated much organizational turmoil as the Air Staff attempted to best structure itself for the war. The designation of the highest weather command level at the Air Staff changed in rapid succession during 1942 and 1943 from Weather Section to Weather Directorate to Weather Division, gaining responsibility for both fixed and mobile weather units.

On July 1, 1945, the Army Air Forces abolished the Weather Division at the Air Staff, redesignated the Weather Wing at Asheville as the AAF Weather Service, and transferred most Weather Division functions to the new organization. The Chief, AAF Weather Service, remained in Washington, where he continued to function as the Staff Weather Officer to the Commanding General, AAF until 1946.

From 1946 to about 1950, the responsibility for advising the Chief of Staff of the Air Force (CSAF) on meteorological matters resided with the Air Staff Air Weather Officer. However, when this function was disbanded, the duty fell again to the AWS commander to function as the meteorological advisor to the CSAF.

In June 1958, when the Air Staff directed AWS to relocate its headquarters to Scott Air Force Base, Illinois, an Office of the Assistant for Weather was assigned in the Office of the Deputy Chief of Staff for Operations. In 1963, it moved to the Office of the Deputy Chief of Staff for Programs and Requirements. Other than for the increase to three weather officers in 1966, the Office of the Assistant for Weather remained relatively stable until 1978 when the next major reorganization of the Air Staff abolished the office. Staff responsibilities for weather were transferred to a two-officer weather element within the Deputy Chief of Staff, Plans and Operations.

With the sweeping reorganization of the Air Force during the early 1990s and the resultant disestablishment of the AWS, in 1991, the CSAF established the Office of the Director of Weather (USAF/XOW) in the Office of the Deputy Chief of Staff for Plans & Operations (USAF/XO). It was redesignated as A3, Deputy Chief of Staff for Operations, Plans and Requirements, in 2006 when the

Air Force adopted an “A-staff” structure similar to the other services. Consequently, the weather directorate’s office symbol became A3O-W.

CHAPTER 2—CHRONOLOGY 1937-1946

1937

1 Jul War Department transferred responsibility for weather support of Army air arm from Army Signal Corps to Army Air Corps, and 1st Weather Squadron (WS), 2nd WS, and 3rd WS activated, respectively, at March Field, CA; Langley Field, VA and Barksdale Field, LA. However, Army Signal Corp retained responsibility for research and development, procurement, issuance, installation, and major maintenance of weather equipment and supplies to Army Air Corps, and for communications needed by its service.

First Chief, Weather Section, Office of the Chief of the Army Air Corps, Washington, DC, was 1st Lt Robert M. Losey, who reported directly to the Commanding General, Army Air Corps, and was responsible for operations of Army Air Corps (AAC) Weather Service.

In addition to 100-odd Army Air Corps enlisted men on weather duty, 180 Army Signal Corps enlisted men were transferred to AAC Weather Service. They and 22 officers (10 of whom subsequently attained general officer rank) manned 40 weather stations, 35 stateside and five overseas--two in Hawaii, two in Canal Zone, and one in the Philippines.

1 Sep The Army Signal Corps' six-month school at Fort Monmouth, NJ, for training enlisted forecasters disbanded and was reestablished by Army Air Corps at Patterson Field, OH.



Figure 2-1: Capt Don McNeal and staff at Patterson Field forecaster school, 1937

1938

15 Nov The Army Airways Communications System (AACS) subsequently redesignated as the Air Communications Service, Airways and Air Communications Service, and then Air Force Communications Service—(AFCS)) was established. Its mission included responsibility to transmit AAC Weather Service communications.

1939

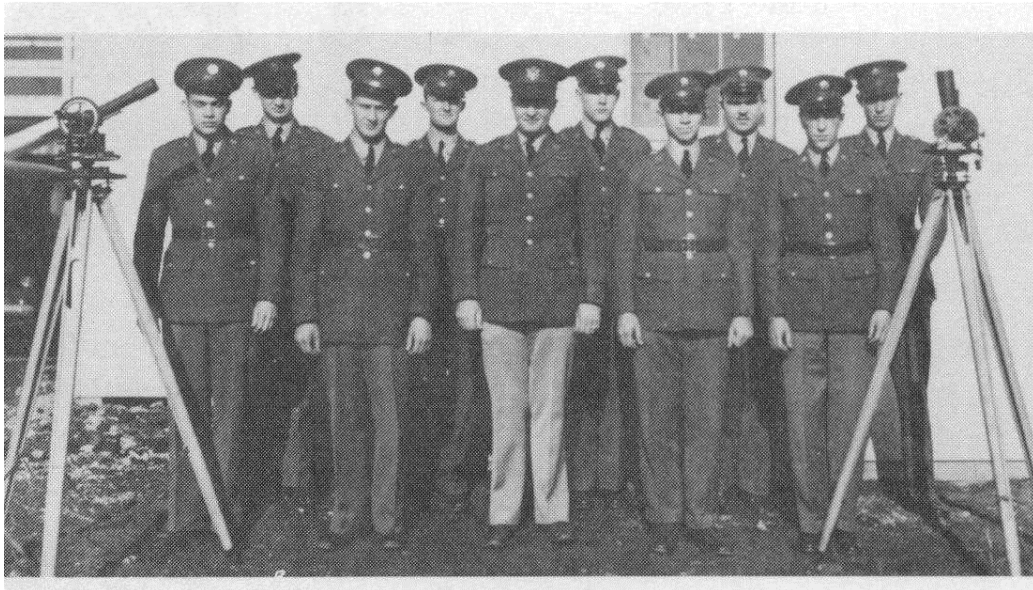


Figure 2-2: First observer class and instructors, Scott Field, November 1939

Sep The first class of seven enlisted men entered first formal Army Air Corps weather observer school at Scott Field, IL. Course duration was twelve weeks originally. It was later shortened to ten weeks.

1940

18 Jan First Lieutenant Arthur F. Merewether replaced Capt Losey as Chief, Weather Section, Headquarters (HQ) Army Air Corps.

11 Apr The Army Air Corps ordered the move of the enlisted forecaster school at Patterson Field, and the observer school at Scott Field, to Chanute Field, IL, where the Air Corps Weather School was established. The first observer class there entered in August; the first forecaster class entered in September 1940.

21 Apr Capt Losey was killed in Norway during a German air raid while acting as a military observer. He was the first officer killed by hostile action while in the service of the U.S. during World War II.

Jun First meteorological cadet class was enrolled in three-month course at Massachusetts Institute of Technology. From that beginning until its end in June 1944, the unique aviation meteorological cadet program (later lengthened to nine-



Figure 2-3: Capt Losey with Mrs. Florence Jaffray Harriman, US Minister to Norway shortly before his death.

month course leading to commission) was expanded to include other universities and eventually produced 5,000 weather officers.

30 Jun The U.S. Weather Bureau transferred from Department of Agriculture, where it had been since 1891, to the Department of Commerce.

1941

21 Jan The first formal meeting of Defense Meteorological Committee. Established to coordinate wartime civilian and military weather activities, it became the Joint Meteorological Committee, Joint Chiefs of Staff (JCS), in 1942 and, subsequently, Joint Meteorological Group, JCS, on 1 June 1967.

20 Jun Army Air Forces (AAF) was established. Under the command of Major General (Maj Gen) Henry H. Arnold (Army Air Corps chief since September 1938), AAF composed primarily of Air Corps (responsible for providing equipment, supplies, and service), the Air Force Combat Command, and Air Staff.

The Weather Section, responsible for managing AAC Weather Service, became part of the Training and Operations Division, Air Corps.

20 Oct First official AAC Weather Service long-range (30-day) forecast, and long-range forecast verification attempts.

7 Dec Five 7WS enlisted men killed during Japanese attack on Pearl Harbor and Hickam Field, HI.

1942



Figure 2-4: WW II weather station, August 1944, Guam

7 Jan-5 May Approximately fifteen 5th WS enlisted men, most killed or taken prisoner, among last-ditch defenders at Bataan and Corregidor. Captured also was 5WS' Lt James H. Cooke, who died in a Japanese prisoner of war camp on 18 June 1943.

8 Jan Maj Don Z. Zimmerman, Director, Weather Research, Bolling Field, Washington, DC, replaced Maj Merewether as Chief, Weather Section, Training and Operations Division, Air Corps, HQ AAF.

10 Jan AAF approved “General Meteorological Plan for the Army Air Force.” It included provisions for: AACS’ developing worldwide, AAF weather-communications system; establishing an inspection system for Army Air Corps Weather Service; and developing a forecast verification system.

Mar Army Air Corps Weather Service began using map-typing (analogues) technique in preparing long-range forecasts for Allied invasion forces.

9 Mar AAF reorganized. Air Corps and Weather Section abolished. Administration of Army Air Corps Weather Service transferred to Directorate of Weather, a subdivision of Directorate of Technical Services--the technical branch of AAF’s Operations Staff which included, besides weather, Directorates of Communications, Photography, and Maps and Charts.

9 Mar Colonel (Col) Zimmerman appointed Director of Weather with job of supervising and directing AAF Weather Service (AAFWS). Assigned strength of Directorate of Weather staff was 16 (15 officers and a civilian), excluding approximately 30 enlisted men assigned to Weather Research Center. The figure grew to 143 (51 officers and 92 civilians) on 10 July, 183 (70 officers and 113 civilians) on 13 August, and 246 (98 officers and 148 civilians) on 30 September.



Figure 2-5: Personnel of the Tuskegee weather detachment, circa 1944. (front row, left to right) Lt Grant Franklin, Lt Archie Williams, Capt Wallace Reed, Lt John Branche, Lt Paul Wise, and Lt Robert Preer

18 Mar Staff formed to support AAFWS. It included, eventually, among others, an Executive, Administrative, Climatological, Personnel, Operations, Equipment (to include Supply), and Plans functions.

21 Mar Black weather detachment formed at Tuskegee Institute, Alabama, AAFWS’s only all-black weather unit was commanded by 1st Lt Wallace P. Reed, who completed the aviation meteorological cadet program at the Massachusetts Institute of Technology.

Jun-Dec Test facsimile transmission of weather products on circuit from AAFWS Weather Central, Washington, to 8th WS station at Presque Isle, ME, conducted.

24 Jun 10th WS activated; it moved to China-Burma-India theater in January 1943; and by close of war was authorized 1,709 officers and men but was manned by over 2,000--making it the largest squadron in AAF Weather Service history.

24 Jul Army Regulation 95-150 officially designated the "Army Air Forces Weather Service." Other provisions indicated that: AAFWS had technical control of all weather units and was responsible for organizing, training, and equipping all weather units for combat operations; combat and theater commanders had operational control of weather units within their areas of jurisdiction; Army Signal Corps retained responsibility for research and development, procurement, issue, installation and major maintenance of all weather equipment, weather communications equipment, and supplies.

21 Aug 1st Weather Reconnaissance Squadron (WRS) activated at Patterson Field. By 1943 it had moved and, equipped with B-25s, began weather reconnaissance flights along North Atlantic ferry route.

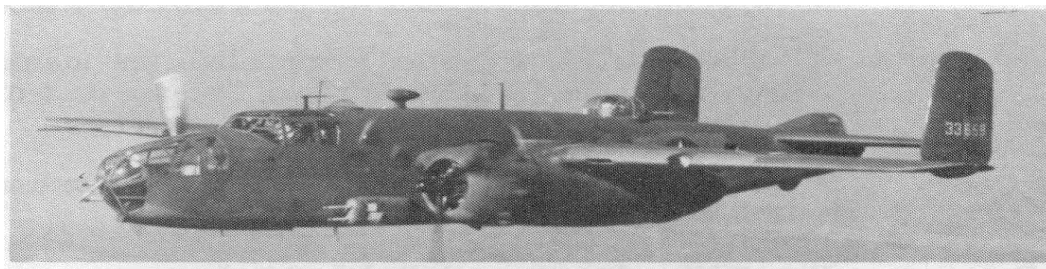


Figure 2-6:An AAF Weather Service (2nd WRS) B-25D used for weather recce.

14 Sep AAFWS's first tactical (mobile) squadron, the 12th WS, was activated. With mission of supporting the 12th Air Force (AF) and Army ground forces during and after invasion of North Africa, 12th WS pioneered mobile weather support concepts that were later refined and used by 21st WS detachments supporting U.S. tactical air and ground forces in the race across Europe following Allied invasion of France in June 1944.

8 Nov Allied invasion of North Africa (Operation TORCH) began. Weather was acceptable, as forecasted, but began deteriorating that evening. Following the invasion, the headquarters of the Supreme Allied Commander for the invasion, General Dwight D. Eisenhower, reported, "...the strategic and tactical importance of weather forecasts cannot be over emphasized." Forecasting techniques adapted for Operation TORCH (some successful, some not) provided lessons that were applied by military meteorologists and decision makers alike to all subsequent large-scale amphibious operations. The AAFWS's Weather Research Center in the Pentagon was one source of forecasts for TORCH.

21 Nov Weather Training Center activated at Grand Rapids, MI. First class of meteorological cadets entered 33-week school on 4 January 1943. Effective 1 April 1943 enlisted forecaster school

at Chanute moved to the center and another observer school opened there. The center officially closed 15 October 1943.

9 Dec¹ Lieutenant Colonel (Lt Col) Harold H. Bassett replaced Col Zimmerman as Director of Weather.

1943

In 1943 First radiosonde sets installed at AAFWS units.

In 1943 U.S. Weather Bureau's hurricane warning center at Jacksonville moved to Miami, FL, where Joint (Weather Bureau-Navy-AAFWS) Hurricane Warning Central (subsequently designated National Hurricane Center) was established.

29 Mar AAF reorganized. With the basic objective of transferring bulk of purely operational matters from HQ AAF to field and theater units, all directorates on Operations Staff, including Weather Directorate, were abolished.

Training, Climatological, Weather Central, and certain Supply functions of Weather Directorate were divided among five weather branches, sections, or units of three different Air Staff divisions. Most significant of new Air Staff weather organizations was the Weather Unit (headed by Col Bassett) assigned to the Office of the Assistant Chief of Air Staff for operations, Commitments, and Requirements (AC/AS, OC&R).

Other former Weather Directorate functions, including parts of Operations and Plans, were transferred to HQ Flight Control Command, Winston-Salem, NC, also established on 29 March 1943 and given responsibility of, among other tasks, operating AAFWS field units and AACS. All weather squadrons not assigned to theater commands (primarily those in Zone of Interior) were assigned to Flight Control Command effective 29 March.

Apr Short-range (24, 36 and 48 hours) forecast verification program inaugurated by AAFWS.

14 Apr Weather Wing, Flight Control Command, activated at Pentagon, under command of Lt Col William O. Senter. Weather Wing headquarters moved to Asheville, NC, on 3 May, and on 19 May 1943, those weather squadrons assigned to Flight Control Command (nine of the 19 weather squadrons then in existence) were

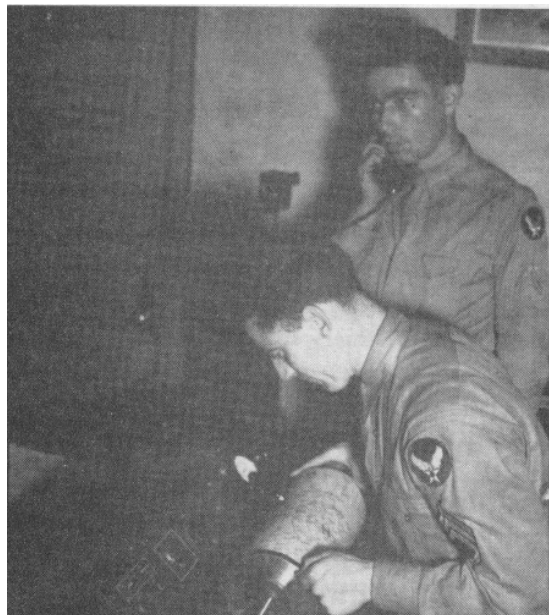


Figure 2-7: Weather facsimile equipment at 2WS' Regional Weather Central, Mitchel Army Air Base, NY, Jul 1943

¹ Hist., Corrected date to 9 Dec from 9 Mar based on review of official 1942 AWS history.

reassigned to Lt Col Senter's Weather Wing. [In 2004 the Air Force Weather (AFW) historian determined this event was the more historically correct beginning of Air Weather Service (AWS).²]

May AAF requested ten AN/TMQ-1³ transportable weather stations be service tested.

Jul First AAFWS facsimile net established to support six First Fighter Command bases in New York-New England area.

6 Jul Weather Wing reassigned from Flight Control Command to HQ AAF (under immediate supervision of AC/AS, OC&R) and redesignated as AAF Weather Wing.

10 Jul Position of Air Weather Officer created on Air Staff (under AC/AS, OC&R) and given responsibility of supervising AAF Weather Wing and overall AAF Weather Service. Assigned as Air Weather Officer was Col Basset, who, in effect, commanded AAF Weather Service.

15 Jul First weather inspection system established under Weather Inspector, AAF Weather Wing. It was authorized to coordinate and supervise inspection activities of all AAF Weather Service units.

27 Jul Col Joseph B. Duckworth and 1st Lt Ralph O'Hair flew an AT-6 Texas trainer from Bryan, Texas, into the eye of a hurricane between Galveston and Houston. It was commonly recognized as first premeditated flight into a hurricane's eye.

Aug First formal school for staff weather officers (two-week course) established at AAF School of Applied Tactics, Orlando, FL. Course discontinued on 14 November 1945.

1 Aug In first large-scale, low-altitude attack by U.S. heavy bombers against a heavily defended target, 177, 9th AF B-24s attacked oil fields and refineries at Ploesti, Rumania. Leading one of four bomber groups over Ploesti was Col Leon W. Johnson, one of original 22 officers in the AAC Weather Service. Johnson, who earned the Congressional Medal of Honor for the Ploesti raid, was one of only two ex-Weather Service officers ever to obtain the four-



Figure 2-8: Pointing at victory symbols on the side of his aircraft is Col Leon W. Johnson, a Medal of Honor holder. With him is Lt Gen Jacob L. Devers, European Theater of Operations, US Army commander. General Devers had just presented the Medal to Col Johnson for action during the Ploesti raid. The Medal of Honor is still around Col Johnson's neck.

² Study, Moyers, Al, *Air Force Weather Heritage – Air Force Director of Weather*, AFWA/HO Brochure, Nov 2004

³Doc., *Joint Electronics Type Designation System*, MIL-STD-196D, 17 Feb 1998. [This standard provides a method of deciphering type designation of weather systems. AF weather systems were typed using this standard.]

star rank of general. The other was General William S. Stone who spent eight years with Weather Service.

Sep In September 6th WS began using harbor and air defense radars adjacent to Panama Canal for weather surveillance; by April 1944 a radar weather reporting net was in operation. A year later, using AN/APQ-13 radars from military aircraft, 10th WS established weather radar net in India.

3 Sep Air Staff's Air Weather Officer position discontinued and replaced by Weather Division, AC/AS, OC&R, which assumed duties and responsibility for all other Air Staff weather branches and sections. Appointed chief of Weather Division was Col Bassett whose responsibilities included supervision of AAF Weather Wing and operation of AAF Weather Service. Col Senter, Commanding Officer, AAF Weather Wing, reported to Col Bassett, who also served as staff weather officer to Commanding General, AAF. AAF Weather Wing was an administrative headquarters for AAF Weather Service.

26 Nov First ten WASP (Women Airforce Service Pilots) assigned to AAF Weather Service. Before the program ended 20 December 1944, five more WASPs, used to free male pilots for combat, were assigned to AAF Weather Service.



Figure 2-9: AAF Weather Service WASPs, 1943

Dec Approximately 50 volunteer weathermen, officer and enlisted, completed an intensive combat training course in secret at Kearns Field, Utah. Shipped to Australia in early 1944, they were assigned to 15th WS to form a nucleus of weather teams going ashore during initial assaults on Japanese-held islands in the southwest Pacific. Put ashore by U.S. submarines, they also worked behind Japanese lines in Philippines supporting Allied air strikes in preparation for an invasion by forces under General Douglas MacArthur. By 10 May 1944, 15WS guerilla weathermen operated six stations on Mindanao and Samar Islands. Two 15WS guerilla weathermen, Sergeant Charles Hammill and Corporal Robert P. Herbig, were aboard the submarine U.S.S. *Seawolf* that was sunk off Samar's east coast in October 1944 with loss of all hands (82 crewmen and 17 passengers).

1944

1944 First B-17s and B-24s for weather reconnaissance purposes delivered to AAF Weather Service units.

14 Feb JCS approved first formal plan for aerial reconnaissance of hurricanes by AAF Weather Service and Navy aircraft.

Four B-25D aircraft were assigned to the recently constituted Army Hurricane Reconnaissance Unit to perform the hurricane reconnaissance missions. The planes were equipped with extra gas tanks for long range cruising, and a B-3 drift meter. This type of drift meter was considered essential to insure accurate wind measurements under turbulent air conditions.

The Army Hurricane Weather Officer at the Miami Hurricane Center determined the appropriate routes to be flown. Variation of flight plan, to obtain a maximum of information on the location, intensity and extent of the storm was made during the flight on the recommendation of the weather officer aboard the aircraft. Observation of clouds, weather and surface winds over the ocean were made by the weather officer. The position of the aircraft and wind measurements were determined by the navigator, who relayed this information to the weather officer by interphone. The weather officer coded the observation in WAF-2 and relayed the message to the radio operator for transmission to hurricane center.⁴

A total of forty eight missions were flown into ten tropical storms and hurricanes during this first season. Reconnaissance flights by this unit were made into all stages of development of these storms, providing valuable information on the changes in flying characteristics as their intensity increased.⁵

14 Mar Two 19WS enlisted observers and a radio operator parachuted at night into mountains of Slovenia in German-occupied Yugoslavia. Until extracted on 3 September 1944, they worked with Marshall Josip Tito's partisans, taking and transmitting observations to improve efficiency of C-47 airlift to Yugoslavian guerillas.



Figure 2-10: 1st WS WAC Cpls Pula Eberstadt (left) and Evelyn Barclay making Pibal run at Minter Fld, Bakersfield, CA 1944

15 Mar U.S. bombers pounded Cassino, Italy. As the greatest massed air attack of the war in direct support of ground forces to that date, it was tagged "Operation Ludlum" by Fifth Army

⁴ Rpt., Porush, Irving I., Maj, Air Corps, Army Hurricane Weather Officer and Spencer, Otha C. 1stLt Air Corps, Pilot, Army Hurricane Reconnaissance Unit, *Report on Hurricane Reconnaissance Operations During 1944*, Hq AAF Weather Wing, circa 1945, pp 4-5. [Note. Report provided by Bernard C. Barris, Lt Col, USAF, Ret., Historian of the Air Weather Reconnaissance Association]

⁵ *Ibid*, Forward, p 3.

Commander, Lieutenant General (Lt Gen) Mark W. Clark, in honor of his staff weather officer, 12WS' Capt David M. Ludlum. It was a unique distinction, quickly picked up by magazine reporters from *Time* and *Newsweek*.

17 Apr On an experimental basis, ten enlisted WAC (Women's Army Corps) observers entered enlisted forecaster course at Chanute. Only five graduated and the experiment was discontinued.

Jun Three-station AAF Weather Service sferics net operational.

6 Jun D-Day Allied invasion of France, a date determined by weather forecast prepared with help of 18th WS and 21st WS personnel in England. On that date, three 21st WS observers (Sergeant Charles J. Staub, Corporal Warren F. Wolf, and Staff Sergeant Robert A. Dodson) parachuted and glided in, with elements of the 82nd and 101st Airborne Division, behind German lines at Normandy in the pre-dawn darkness. Some 20 other 21st WS weathermen, assigned to air support parties with the infantry, waded ashore with the assault troops or landed behind the beaches in gliders. By the close of the Normandy campaign, thirty 21st WS mobile detachments were on the continent and by war's end; 21st WS became AAF Weather Service's most decorated unit of WW II.

Mid-1944 AAF Weather Service had over 19,000 military personnel assigned, largest population ever.

5 Sep Col Randolph P. "Pinkie" Williams (considered the "father" of AFW for his pioneering work in organizing the Army Air Corps Weather Service between 1936 and 1937 when he was a captain) was killed in action when his photoreconnaissance aircraft was shot down over France.

Late Fall-1944 20th AF weather forecasters, Cpts Bill Plumley and Reid Bryson, located on Saipan, calculated a forecast of 168-knot winds at 30-35,000 feet for the next day's B-29 bombing mission over Tokyo. The commanding general "angrily challenged" their forecast and told them to "calculate again." They came up with the same value and again the general was angry. He said, "We're not going to listen to you." The mission was a failure. Upon his return the general apologized and said, "We measured the winds, and they were 170 knots." As a result, the AAF asked Professor Carl-Gustaf Rossby, "What about those strong winds?" Rossby said, "Aha. We will call it the *jet stream*..."⁶



Figure 2-11: 26th WS B-17 Weather Witch at Orlando, FL 1944. Standing in back row (middle) is Capt William s. Barney, who eventually became AWS vice commander before retiring in 1967.

⁶ Art., Bryson, Reid A., *The Discovery of the Jet Stream*, Wisconsin Academy Review, Summer 1994.

20 Sep U.S. invasion of Philippines (Leyte Island). Among Sixth Army assault forces landing that day was a 15th WS team of seven enlisted men led by 1st Lt Lorin A. Hamel. Two days later, a second 15th WS team landed, led by 1st Lt Leon M. Rottman. The weather-plagued Leyte campaign ended 25 December 1944, when organized Japanese resistance collapsed.

1 Oct Army transferred responsibility for research, development, maintenance, and storage of weather communications equipment from Army Signal Corps to AAF. In addition, AACS was to provide weather communications support to AAF Weather Service including acting on requests for service, equipment, and weather intercepts.

1945

Jan AAF B-24 weather reconnaissance squadron (forerunner of AWS' 55th WRS) commenced operation from Guam. Its primary mission was target reconnaissance over Japan, but on a non-interference basis, it also flew typhoon reconnaissance.

9 Jan Col Bassett appointed Director, Weather Services, United States Strategic Air Forces in Europe (USAFE), replacing Col Donald N. Yates, who assumed Col Bassett's former job as Chief, Weather Division, of Air Staff's AC/AS OC&R.

19 Feb Two U.S. Marine Corps divisions invaded Iwo Jima. A 7WS team of two officers and seven enlisted, under Capt Patrick D. Goldsworthy, landed on Iwo Jima's west beach on 5 March, ten days after the Marines' famed symbolic capture of Mt Suribachi. Organized Japanese resistance ended 16 March.

15 Mar Col James W. Twaddell, Jr., Deputy Commander, AAF Weather Wing, replaced Col Senter as Commander, AAF Weather Wing.

1 Apr U.S. invasion of Okinawa. Not until 21 June did organized Japanese resistance succumb to what was the most audacious and complex enterprise undertaken by U.S. amphibious forces. During heavy fighting, units of three 7WS detachments supported Tenth Army elements on Okinawa commencing 18 April.

19 May Revised Army Regulation 95-150 gave AAF Weather Service responsibility for providing weather service to all U.S. Army components except those specifically exempted by War Department (i.e., artillery units and theater commands) and for meteorological technique research and development.



Figure 2-12: The original AAF Weather Service weather station at a fighter strip on Amchitka. When activated on 27 Jan 1943, enemy Japanese forces were a mere 65 miles westward at Kiska Island. (L-R) S/Sgt R. B. Block, S/Sgt C.E. Pickett, Sgt F.A. Dodge, S/Sgt B. T. Plumlee, WOJG Wm. C. Norquist.

1 Jul Air Staff's Weather Division (under AC/AS, OC&R in Pentagon) abolished and AAF Weather Wing at Asheville redesignated as new command, the AAF Weather Service. All former Weather Division and AAF Weather Wing functions transferred to AAF Weather Service.

Col Yates appointed Chief, AAF Weather Service, and his office remained in Washington. As chief of the new separate command, he reported directly to and served as staff weather officer for Commanding General, AAF. In time, the Office, Chief of AAF Weather Service, in Washington became known as the Weather Service liaison Office.

HQ AAF Weather Service at Asheville was headed by Deputy Chief, AAF Weather Service, Col Twaddell.

Although all Weather Division personnel were reassigned to HQ AAF Weather Service, all were not transferred to Asheville.

6 Aug Age of atomic warfare opened with drop of first atomic bomb on Hiroshima on date determined by weather forecast prepared by AAF Weather Service's Maj's Edward Brewster Buxton and Joshua Holland at the Guam weather central.



Figure 2-13: The weather central at Guam, 1945 – source of Hiroshima forecast.

17 Aug War Department ordered all weather units outside continental U.S. in theater commands be assigned to, and come under operational control of, AAF through AAF Weather Service. Last such unit assigned 12 October 1945, thus completing AAF Weather Service's worldwide organization.

2 Sep Japan formally surrendered ending World War II. As of early 1945, available records indicated that 68 AAFWS men (30 officers and 38 enlisted) were killed in action, excluding deaths of Capt. Losey and Col Williams⁷. AAFWS ground and weather reconnaissance units earned a minimum of 10 campaign streamers, 20 service streamers, and nine other assorted awards and decorations.

Nov AAFWS began around-the-clock forecasting support to AACCS' Military Flight Service Center (MFSC) program. MFSC program continued until 1962, when it transferred to Federal Aviation Administration.

⁷ Note: Research completed in 2013 by CMSgt Craig Kirwin revealed that a total of 168 AFW Airman died during WW II from various causes.



Figure 2-14: 1946—AAFWS units received first WB-29s for weather reconnaissance mission.

1946

7 Jan HQ AAF Weather Service moved from Asheville to Langley Field.

13 Mar AAF Weather Service redesignated Air Weather Service (AWS) and reassigned from HQ AAF to Air Transport Command (ATC).

May HQ AAF Air Materiel Command published *War and Weather, A Report Prepared for the AAF Scientific Advisory Group*, December, 1945. “The report covered historical development of military weather service, comparison of German Air Force and AAF Weather Services in World War II, and future trends in military weather services (International cooperation for meteorological developments, weather service requirements, wartime reporting system, atomic energy applied to meteorology, and research).”⁸ One of the several recommendations stated, “If a unified command of U.S. Air, Ground, and Naval Forces is established, the technical and administrative control of the weather services should be at this level to facilitate the coordination of all civil and military weather agencies in wartime.”⁹

14 Jun HQ AWS moved from Langley to Gravelly Point, VA.

30 Jun AWS military population dropped to post-World War II low of 4,209.

30 Jun First atomic bomb test at Bikini (Project Crossroads) on the date determined by weather forecasts prepared with the help of AWS forecasters and B-29 weather reconnaissance. During it and succeeding detonations at Bikini and Eniwetok over next two years, AWS perfected fallout forecasting techniques.

During Sandstone test of 1948, Maj Paul H. Fackler and his B-29 crew from AWS’ 59th WRS were first to fly into an atomic cloud.

⁸ Rpt., Krick, Irving P. Dr., *War and Weather: A Report of the AAF Scientific Advisory Group*, Dec 1945, HQ Air Materiel Command, Publications Branch, Intelligence T-2, Wright Field, Dayton, OH, 1 May 1946. Declassified EO 12958, Rel, 7 Dec 1987, Abstract

⁹*Ibid.*, p, 3

1 Jul War Department directed transfer of responsibility for field engineering installation and major maintenance of weather and weather communications equipment from Army Signal Corps to AAF (Air Materiel Command). Army Signal Corps retained responsibility for research and development, standardization, procurement, and supply of weather equipment for AAF (AWS).



Figure 2-15: Maj Paul H. Fackler

1 Aug HQ AWS formally announced it had established a Research and Development Division on its staff responsible for research and development in both meteorological equipment and techniques. R&D Division at HQ AWS was established 15 March 1946. ATC challenged legal basis for AWS assuming such mission in view of War Department and Army directives, giving responsibility for weather equipment research and development to Army Signal Corps. AWS thus submitted staff study through ATC to AAF recommending that research and development in both meteorological techniques and equipment for AAF be transferred to AAF's Air Materiel Command. HQ AAF did so in a letter dated 26 March 1947--evidently having secured War Department and Army approval, although Army Signal Corps retained responsibility for unique Army weather equipment research and development requirements. Transfer involved 81 AWS manpower authorizations (20 civilian and 61 military).

Sep First AN/GMQ-2 fixed-beam ceilometer installed at Langley Field.

7 Oct First flight over top of hurricane by AWS B-29.

CHAPTER 3—CHRONOLOGY 1947 – 1956

1947

1947 Ultra High Frequency (UHF) pilot-to-forecaster service [PMSV] established for AAF crews.

5 Feb Colonel Yates promoted to brigadier general. Yates was first AWS Commander to attain general officer rank.

17 Mar First AWS B-29 weather reconnaissance flight over North Pole. Labeled “Ptarmigan” after a bird native to the Arctic, this North Pole track became a standard mission for AWS crews.

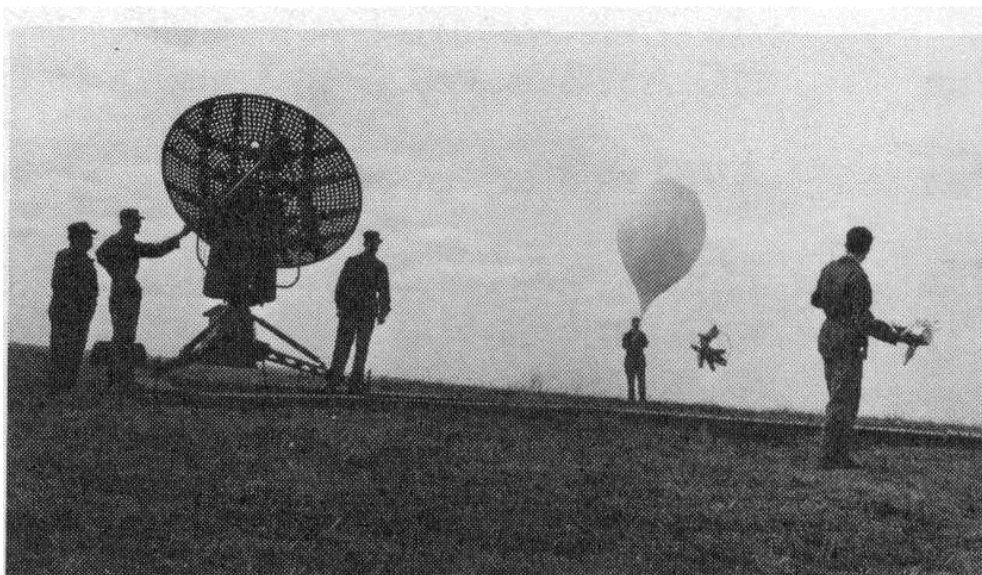


Figure 3-1: AN/GMD-1 at Sherman AFB, KS, 1952

1 Apr AAF transferred \$1 million to Army Signal Corps for procurement of first 25 AN/GMD-1 rawin sets for AWS. Delivery to AWS field units completed by June 1949.

16 Jul Joint Weather Bureau-Air Force-Navy (WBAN) weather analysis center established in Washington D.C.

26 Jul National Security Act signed into law by President Truman. Among other provisions, the act abolished War Department and established Department of Defense; established AF as separate branch of service; and created National Security Council and Central Intelligence Agency. In one of over 200 roles-and-missions agreements ironed out under the act by the Army and Air Force on 15 September 1947, the Air Force was made responsible, through AWS, for the “provision of meteorological service to the Army, except Army meteorological ballistic data which will remain in the Army.”

First Secretary of Air Force administered oath of office 18 September and first Air Force chief of staff sworn in on 26 September 1947.

19 Oct First low-level and night penetration of hurricane by AWS RB-29.

1948

1948 AWS began testing “Minimal Flight” procedures for long-range flights. Later referred to as “4-D Minimal Flight Planning,” the procedures were eventually used in computer flight plans.

25 Mar First tornado forecast issued by AWS at Tinker AFB, OK. AWS’ Major Ernest J. Fawbush and Captain Robert C. Miller pioneered efforts in U.S. to forecast severe weather.

May AWS became AF Office of Atomic Engery-1’s (AFOAT-1) [forerunner of today’s AF Technical Applications Center (AFTAC)] primary support agency. “AWS was primarily responsible for AFOAT-1’s aerial mission requirements. Although AFOAT-1 used many other AF flying units over the years, AWS was the foundation of [the airborne sampling technique] for several decades.”¹

1 Jun Military Air Transport Service (MATS) formed by combining Air Transport Command and Naval Air Transport Command elements. AWS assigned to MATS.

26 Jun “Operation Vittles,” airlift of food and supplies to Berlin, commenced. Weather, the greatest single threat to fifteen-month Berlin Airlift, determined daily tonnage delivered.

1 Jul Phase I of first major post-World War II AWS program to train and integrate Reserve Forces Personnel implemented.

Sep First dropsondes delivered to AWS weather reconnaissance units for operational suitability tests. Tests completed July 1949 after which operational use began.

29 Sep HQ AWS established Scientific Services function under Dr. Sverre Petterssen.

1 Dec HQ AWS moved with HQ MATS from Gravelly Point to Andrews AFB, MD.



Figure 3-2: Lt Col Fawbush (left) and Maj Miller after being presented the American Meteorological Society’s (AMS) Meisinger Award in Washington, DC, in 1956 for their contribution to science of severe weather forecasting. Between them is AMS President, Dr. Robert D. Fletcher, who was also HQ AWS Director of Scientific Services.

¹ Art., Welch, Mary, *AFTAC Celebrates 50 Years of Long Range Detection*, AFTAC Monitor: Oct. 1997, p.12.



Figure 3-3: Let to right are Col Senter, BGen Yates, and Lt Col Jerome A. Pryber the commanders, respectively, of the 43rd WW, AWS, and 20th WS) at HQ 20th WS, Nagoya, Japan, in Apr 1947. Yates was AWS' first general officer commander, and Senter became AWS' first two-star commander.

1949

15 Mar Global Weather Central organized at Offutt AFB, NE, to support Strategic Air Command (SAC).

31 Mar Joint Army Regulation 115-10/Air Force Regulation 105-3 published, superseding Army Regulation 95-150 of 19 May 1945. The new joint regulation held Army Signal Corps responsible for procurement, storage, and issue of weather equipment for Air Force and Army.

Aug Policy Board established at HQ AWS. Composed of deputy AWS commander, chief of staff, and heads of each staff agency function, the Policy Board's charter was to advise and make recommendations to AWS commander in all matters related to development, implementation, and status of AWS objectives and policy.

Eighteen years later, in November 1967, HQ AWS established the AWS Council whose composition and charter were identical to defunct Policy Board's.

23 Sep U.S. confirmed Russia had exploded its first atomic bomb. An AWS RB-29 discovered the radioactive debris.

28 Dec Air Force formally established “Airman Weather Career Field” with publication of Air Force Regulation 35-425.

31 Dec AWS’ inputs to Central Intelligence Agency’s National Intelligence Summary increased from two to fifteen studies per year.

1950

In 1950 First use of dropsondes by AWS RB-29s in hurricanes.

18 Jan Formal flight following and met-watch advisory service inaugurated in AWS.

25 Jun Hostilities in Korea commenced. Within 24 hours an AWS RB-29 was flown on a weather reconnaissance mission over Korea, and within 48 hours a weather detachment was airlifted from Japan to Taegu (the last AWS station had been withdrawn from Seoul in September 1949 when U.S. forces evacuated from Korea). It began furnishing weather information to United Nations forces.



Figure 3-4: Lt Col Fletcher (left) on “his” ice island, 1953. At right is Capt Marion F. Brinegar.

13 Jul AWS RB-29 piloted by First Lieutenant Fred R. Spies (later awarded the first oak leaf cluster to the Distinguished Flying Cross for that and two other B-29 strikes) led first B-29 strike from Japan against targets in North Korea.

29 Jul Fletcher’s Ice Island (as subsequently named in honor of AWS officer Lieutenant Colonel Joseph O. Fletcher) discovered in Arctic Ocean by AWS RB-29 weather reconnaissance crew.

29 Aug AWS mission amended to exclude weather reconnaissance “over areas where active enemy aerial resistance may be encountered.

30 Aug Air Force authorized use of prefix “W” with AWS aircraft modified for weather reconnaissance mission, thus AWS B/RB-29s became WB-29s.



Figure 3-5: AWS’ first Korean War casualty, 1Lt David Grisham, watches Pibal at forward base in Korea in late June 1950 while 20th WS 1Lt John t. Gordon operates theodolite.

3 Sep AWS suffered its first casualty of Korean War. First Lieutenant David H. Grisham from Benton, LA, assigned to 20WS, was staff weather officer to 18th Fighter Bomber Group at Ashiya AB, Japan. Also qualified as F-51 pilot, Grisham flew 45 combat missions over Korea. On his 46th, an F-51 mission from Japan to Korea on 3 September, Grisham was reported missing in action. He was posthumously awarded the Bronze Star Medal.

8 Sep Capt Charles R. Cloniger, 514th Reconnaissance Squadron (VLR) Weather, of AWS' 2143d Air Weather Wing at Andersen AFB, Guam, awarded Distinguished Flying Cross for continuing and completing a typhoon reconnaissance mission in a heavily-loaded WB-29 with one engine feathered. Determination of typhoon's position and intensity was vital to U.S. forces then conducting landing operations at Kobe, Japan, in preparation for the Inchon invasion. It was believed to be the first DFC in AWS for such missions.



Figure 3-6: Capt Cloniger (second from left) in front of WB-29 Typhoon Goon at Andersen AFB, 1950

24 Oct Testing of classified "customer's" Atmospheric Measuring Equipment (AME) aboard AWS WB-29s commenced.

28 Nov Duration of tour for AWS personnel in Korea extended from sixty days to six months, excluding volunteers and key personnel, who could be retained in Korea for up to one year. To handle the turnover, personnel were rotated between 20WS in Japan and 30WS in Korea on basis of foreign service credits. The policy remained in effect until 1 September 1951 when Korean tours were lengthened to one year.



Figure 3-7: 1Lt Albert T. Watson, Jr., readying Pibal run at advanced F-51 strip in Korea, late 1950. In background (left to right) are AN/GMQ-1 Wind Equipment, AN/TMQ-2 Ceiling Light Set, and ML-41 Shelter protecting ML-24 Psychrometers (dry bulb and wet bulb thermometers)

1951

22 Jan Manpower Group formed on HQ AWS staff to establish manpower standards for all AWS squadrons, groups, and wings.

Feb Severe Weather Warning Center established at Tinker AFB.

1 Mar An AWS F-51 pilot became the first weather officer with the 5th Air Force to complete 100 combat missions in the F-80 Shooting Star in Korea. From Ft Worth, Texas, Captain Leon Grisham became the staff weather officer to the 51st Fighter Interceptor Wing in Japan. On 1 March 1951 Grisham was credited with damaging a MiG-15 in air battle over Korea. During WW II, he flew 41 combat missions over Germany in P-47s and P-51s, shooting down three ME-109s. On his 41st mission, he was shot down and spent the remainder of the war as a POW at Fellingbestel. Grisham earned three Distinguished Flying Crosses, 13 Air Medals, a Bronze Star, and two Purple Hearts. After Korea, he remained with AWS in weather reconnaissance, rising eventually to command the 55WRS as a colonel.

19 Mar-28 Apr AWS representatives attended first session of U.N.'s newly-established World Meteorological Organization (WMO). The WMO replaced International Meteorological Organization originally formed in Vienna in 1873.

Apr RAND Corporation issued report entitled *Inquiry into the Feasibility of Weather Reconnaissance from a Satellite Vehicle*. In addition they warned the AF successful operation of overhead photoreconnaissance satellites depended on accurate and timely meteorological forecasts of the Sino-Soviet landmass.²

Jul AWS began field testing prototype SCM-19 Automatic Weather Station (developed by Army Signal Corps) installed at Amchitka, AK. Every three hours the station automatically transmitted, on two frequencies, precipitation, temperature, pressure, humidity, sunshine, and wind data. By August 1952, three SCM-19s were installed and operational at: Amchitka, Thule, Greenland, and St Matthew Island in the Bering Sea.

11-12 Jul Expanding concepts, battle tested in World War II, when tactical units used assigned aircraft for target weather recce, SAC and TAC (Tactical Air Command) revealed plans for using specifically-instrumented aircraft manned with AWS-trained personnel for multi-purpose missions, including ECM (Electronic Countermeasures), photo reconnaissance, and weather reconnaissance.

By 1954-56 period, SAC strategic reconnaissance units equipped with RB-36s, RB-47Ks, and RB-50s were flying weather reconnaissance missions, as were TAC units with WT-33s and WB-66Ds. Special weather equipment on some aircraft included dropsonde chambers, psychrometers, radar altimeters, and AN/AMQ-7 temperature-humidity measuring sets.

² Hist., Hall, R. Cargill, Civ, NRO/HO, *A History of the Military Polar Orbiting Meteorological Satellite Program*, NRO, Sep 2001, p.1.

21 Aug Major Jean D. Armstrong became the first Women in the Air Force (WAF) officer to command an AWS detachment. She commanded the 18WS detachment at Frankfurt, staffed with five male forecasters and ten WAF observers, which was responsible for monitoring weather reports from MATS trans-Atlantic flights and coordinated weather advisories for Air Force aircraft.

1952

Feb First 56WRS WB-29 crews completed 50 combat missions over Korea and, under Air Force's rotation policy, were transferred back stateside.

5 Feb Brigadier General Senter, Commander, AWS, promoted to temporary grade of major general making him the first two-star AWS commander.

Apr For the first time, AWS began decentralizing its climatology service by placing climatology cells at selected field units.

8 Apr High winds [20-25 mph] plagued Exercise LONGHORN airborne operations. Though the drop had been canceled by the commanding general at 0500, the word never reached the AF's 516th Troop Carrier Wing or the Army's 508th Airborne Regimental Combat Team; one trooper was dead and 232 were injured.³ Exercise LONGHORN was the largest in a series of joint Air Force and Army maneuvers. AWS's 3rd WS of the 2102nd Air Weather Group provided weather services for the maneuver forces. The exercise enabled AWS to test and evaluate new concepts of weather support to further the ability of AWS to aid tactical units in using weather as an element of warfare.⁴



Figure 3-9: The McChord AFB representative observation site (ROS) is strategically located near the end of the main runway to furnish critical weather observations to MATS aircraft during marginal weather conditions. Here TSgt Charles L. Simmons, of Det 4, 4th Wea Sq, calls in an observation to the base weather station as a C-124 readies to take-off. (USAF Photo circa early-1950s)

24 Apr In a further change from practices carried over from the Army, the Air Force designated private first class, corporal, and buck sergeant as airman third class, airman second class, and airman first class⁵.

³ Web, slim84, *Story Behind the Jump*, 82nd Airborne Division Association NEWSLETTER, Mar-Apr, 1992, downloaded from <http://www.paratrooper.net/commo/Topic275712.aspx>

⁴ Pamphlet, *Air Weather Service, Exercise LONGHORN*, 2220th Field Printing Plant, Apr 1952, p. 7.

⁵ Study, Spink, Barry L., *A Chronology of the Enlisted Rank Chevron of the United States Air Force*, Air Force Historical Research Agency, 19 Feb 1992, p. 3

10 Apr AWS' Data Control Unit (Detachment 1, HQ AWS--the heart of its climatological function which traced its roots to the establishment of AAF Research Center's Statistical Section at Bolling Field on 10 September 1941) at New Orleans, LA, moved to Asheville, and redesignated Data Control Division, HQ AWS.

18 Apr With publication of revised AWS mission directive, Air Force Regulation 20-2, AWS for first time had a definitive organizational and field maintenance mission. This mission was centralized under the 6WG and given responsibility for field maintenance support to AWS groups and squadrons stateside.

May At General Senter's instigation, AWS units completed a major reorganization from geographic to functional support posture.

9 Jun For first time since the day after Korean War began, WB-29 crews of AWS' 512 RS (VLR) Weather/56WRS at Yokota AB, Japan, did not fly daily strategic weather reconnaissance missions over combat zone north of 38th parallel. In logging approximately 750 combat missions since 26 June 1950, 512RS (VLR) Weather/56WRS was the only Air Force unit to have an aircraft over enemy-held territory every day since the war began.

7 Jul Forerunner of Representative Observation Site (ROS) program established. However, it was May 1956 before Air Force approved additional 234 observer spaces AWS needed to implement program and authorized major air commands to construct necessary sites.

15 Jul First formal AWS Objectives Program inaugurated.

1 Sep An unforecasted tornado struck Carswell AFB, TX, causing estimated \$48 million in damage to 107 of SAC's B-36s, one of which was completely destroyed. "It caused an angry outcry in congress," the AWS historian wrote of Carswell Incident, "because the main atomic striking force of SAC had been crippled."

26 Oct First loss of AWS aircraft during regular hurricane or typhoon reconnaissance. All ten crewmembers were killed in a crash of 54WRS WB-29 making low-level penetration of Typhoon Wilma some 300 miles east of Leyte.

31 Dec First three stateside bases had Telautograph installed. One could now rapidly disseminate weather information to multiple locations at the same time.



Figure 3-10: Col Ellsworth, 10th WS Commander, 1944)

1953

12 Jan Hamilton AFB, CA, site of first test of Weathervision. First proposed for its use in military aircrew briefings at the Armed Forces Staff College in 1951, Weathervision was intended to transfer weather data to various customers dispersed around the perimeter of large modern airfields⁶

18 Mar Brig. Gen. Richard E. Ellsworth, then assigned with SAC at Rapid City AFB, SD, killed in B-36 crash in Newfoundland. Ellsworth was assigned with AWS from 1942 to 1949, including duty as 10WS commander in China-Burma-India theater where he helped pioneer night flights across the Himalayas' famed "Hump." Ellsworth AFB was subsequently named in his honor.

27 Jul Korean armistice signed. Six AWS men (five officers and one enlisted man) were killed in action.

Retained by Chinese Communists after armistice as political prisoner was Colonel John K. Arnold, Jr., a former AWS Chief of Staff, who's B-29 (he was then assigned to Thirteenth Air Force's 581st Air Resupply and



Figure 3-11: Col John K. Arnold, Jr. 1948



Figure 3-12: T-420 Wind Direction and Speed Transmitter, a subsystem of the AN/GMQ-11 Surface Wind Set.

Communications Wing) was shot down near Yalu River on 12 January 1953. Convicted as a "spy" by a military tribunal in Peiping, Colonel Arnold was imprisoned 31 months before being released by Chinese Communists in August 1955.

AWS ground and weather reconnaissance units earned 18 campaign streamers, three Republic of Korea Presidential Unit Citations, two Air Force Outstanding Unit Awards, and four service streamers.

12 Aug Russia exploded its first hydrogen bomb. AWS WB-29s detected the nuclear debris.

⁶ Art., Lewis J. Neyland, Maj and Cornelius J. Callahan, Maj, *Weathervision*, *Weatherwise*, Vol 10, Issue 2, 1957.

1954

20 Jun First radar specifically designed for meteorological use, the AN-CPS-9, installed at Maxwell AFB, AL.

1 Jul Joint (AWS-Navy-Weather Bureau) Numerical Weather Prediction Unit (JNWPU) activated at Suitland, MD, with AWS' Dr. George P. Cressman as director.

Aug Weather Observing and Forecasting System (Project 433L) launched.



Figure 3-13: First WB-50D received by 55WRS, 1955.

26 Aug First AN/GMQ-10 transmissometer installed at Andrews AFB.

26 Aug First weather teletype circuits stateside converted from 50 to 100 word-per-minute capability.

Oct First AN/GMQ-11 surface wind set installed at Eielson AFB, AK

Nov First issue of AWS command news-paper, the *Observer*, published.

1955

1955 Very High Frequency (VHF) pilot-to-forecaster service established for air crews.

1955 Prototype WB-50D delivered. New equipment installed included AN/APN-82 Doppler radar and AN/AMQ-7 airborne temperature-humidity indicators.

Jan Ground Observer Corps (GOC) formed in 1950 as Air Defense Warning System began 24-hour-a-day severe weather watch for AWS. Weather observations continued until GOC's disbandment in January 1959.



Figure 3-14: A1C Catherine J. Joyce and SSgt Keith C. Blean at USAF Central Andrews AFB.

11 Jan USAF Weather Central move from Andrews AFB to Suitland completed. The central, which traced its origins to establishment of Weather Research Center at Bolling Field in

September 1941 (subsequently moved in 1943 to Pentagon, and commonly referred to as Pentagon, Army , or AAF Weather Central), was merged at Suitland with other Washington-area centrals--the joint WBAN and Navy Fleet Weather Central--to form National Weather Analysis Center.

Feb International Business Machines (IBM) 701 computer installed at JNWPU. On 6 May 1955 JNWPU began daily production of regular computer-generated forecasts for North America in what meteorologists hailed as the most significant advance in weather prediction in 30 years.

1956

Jan AWS's Severe Weather Warning Center moved from Tinker AFB to Kansas City, Missouri.

Jan AWS submitted requirement to Air Force for high-altitude sounding rocketsonde system capable of reaching 250,000-foot altitude.

Feb AWS tested special weather balloons at Albrook AFB, Canal Zone, capable of reaching altitudes of 100,000 feet and higher.

Apr Air Force issued general operational requirement for new weather reconnaissance system subsequently given program title of Weather Reconnaissance Support System, 460L.

Jun Drafted and coordinated by the 1WG, and designed to consolidate several SAC directives, SAC Manual 105-1, *Weather Support Procedures*, published. It was the first such treatise, under AWS' functional support concept, for support of a major air command, which outlined weather support doctrine, concepts, and procedures for SAC operations in peace and war.

5 Jun The "20 Minute Reporting System" for off-period, limited weather observations became operational. The AWS historian described it as "one of the most important innovations in the annals of weather communications history."

30 Aug The Army sent the Air Force its first formal and comprehensive statement of requirements for weather service since early 1946. It equated to 74 additional manpower spaces for AWS, most of which Air Force directed MATS to provide from MATS resources.

31 Aug First crash of AWS (58WRS) WB-50D. Between then and 17 January 1957, there were three other major accidents with the trouble-plagued, AWS WB-50D program. Over



Figure 3-15: Dr. Cressman with USAF's highest civilian honor, the Decoration for exceptional Civilian Service, awarded March 1956 for his work with JNWPU.

30 AWS crewmen lost their lives in the four mishaps--the worst rash of aircraft accidents in AWS history.

26 Sep IBM 705 computer inaugurated at AWS' Data Control Division, Asheville, which marked the beginning of the end of AWS' use of WW II era, high-speed electronic accounting machines for processing Climatological data.



Figure 3-16: IBM-705 computer recorded most of the climatological data on over 300 million punch cards filed in these and other drawers at AWS Data Control Division.

Nov First AN/TMQ-11 surface temperature-humidity measuring sets delivered.

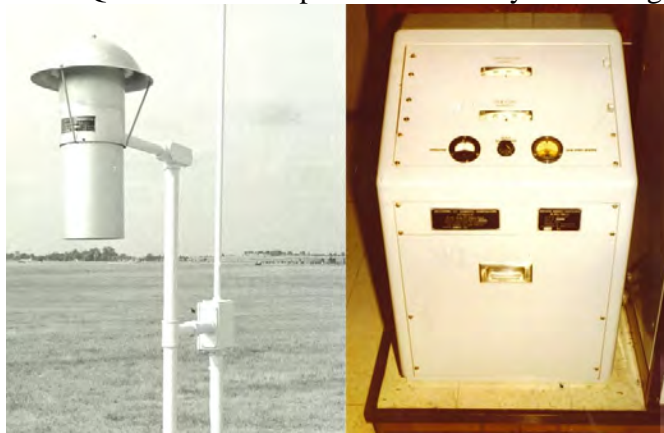


Figure 3-17: AN/TMQ-11 Surface Temperature-Humidity Measuring Set. On the left is the OA-1165 Transmitter Group located near the center of an airfield which transmits voltage information to an ID-533 Indicator group located in an observing site or base weather station.

20 Dec First formal treatise on AWS doctrine, Air Force Manual 105-6, *Weather Service for Military Agencies*, published. It addressed topics such as AWS capabilities and limitations.

CHAPTER 4—CHRONOLOGY 1957-1966

1957

1957 Global Weather Central (GWC) began using SAC's IBM 704 computer.

7 Jun First AWS Commanders' Awards presented.

17 Jun Task team convened at HQ AWS in first AWS-wide look at centralizing terminal forecasts. The team's final report, issued 12 August 1957, recommended a test centralized forecast facility at Tinker AFB. The site subsequently changed to AWS' Severe Weather Warning Center (SWWC), Det 25, 6WS (Mobile), at Kansas City, where a pilot program began forecasting for five terminals on 1 November 1957. The facility merged with SWWC (subsequently referred to as Severe Weather Warning Facility) to form Kansas City Centralized (Terminal) Forecast Facility, (formally Det 4, 4WG) which, on 15 May 1958, issued official (advisory only, not obligatory) forecasts for the first block of 12 (number rose to 35 by January 1959) AWS detachments at Air Force and Army bases in central U.S.



Figure 4-1: Moorman Award added to the Commander's Awards. First awarded in 1964 to the Kansas City Centralized Terminal Forecast Facility (Det 42, 8th WG). Left to right are Lt Col Robert C. Miller, Det 42 chief forecaster and AWS' "Mr. Severe Weather"; Lt Col Edward J. Dolezel, Det 42 Cmdr., and Lt Gen Moorman, PACAF vice Cmdr. and former AWS Cmdr.; and BGen Roy W. Nelson, Jr., AWS Cmdr.

Jul Weather IBM 701 computer at JNWP replaced with IBM 704.

Sep AWS began weather reconnaissance support of SAC and TAC air refueling areas.

Nov In connection with U.S. Weather Bureau's National Hurricane Research Project (forerunner to Project Stormfury which got underway in 1956 and to which AWS provided TB-50 support), AWS (55WRS) assigned a B-47.

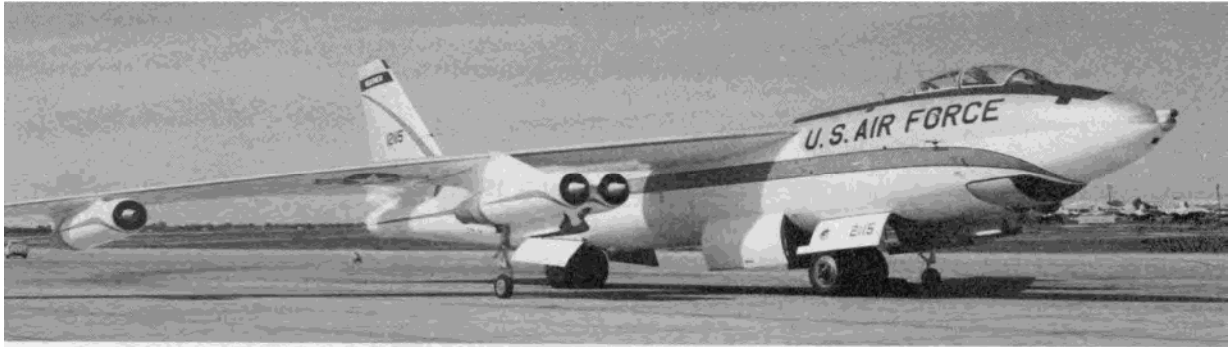


Figure 4-2: AWS assigned 55WRS WB-47 to National Hurricane Research Project

11 Dec USAF Weather Central at Suitland closed and its functions and resources combined with GWC (formally Det 1, 3WW) at Offutt AFB. In the vacated space at Suitland, AWS united its Washington-area Climatological functions into what became referred to as the Climatic Center (formally Det 3, HQ AWS).

1958

Jan-Mar First AN/GMD-2 rawin sets tested at Andrews AFB.

Mar U.S. Weather Bureau's National Meteorological Center commenced operation at Suitland.

23 Jun HQ AWS moved from Andrews AFB to Scott AFB.

Two, two-man offices created to fill AWS' liaison need in Washington area. They were the Office of the Assistant for Weather with the Air Staff's Operations staff agency (AWS had actually maintained a liaison officer in Pentagon since September 1955) and the AWS Washington office.

1 Sep Twenty-five master sergeants were the first in AWS (nine with weather Air Force Specialty Code (AFSCs)) promoted to new grade of E-8 (senior master sergeant). None of the promotees were WAFs with weather AFSCs.

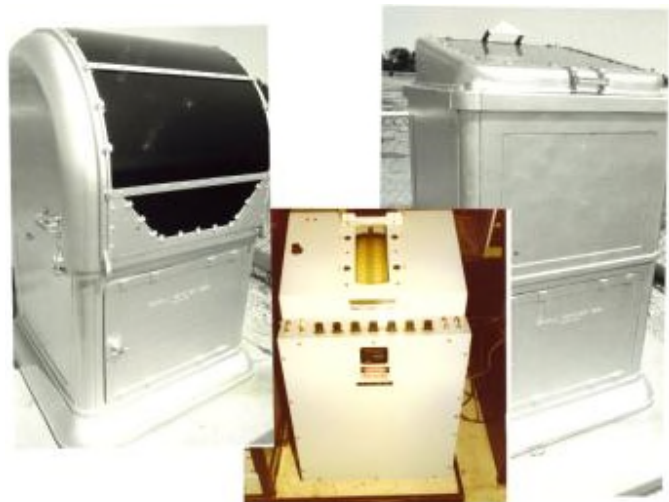


Figure 4-3: AN/GMQ-13 Cloud Height Set, ML-506 Projector (L), IP-327 Indicator (C), and ML-507 Detector (R); more frequently referred to as Rotating Beam Ceilometer (RBC) because of the rotating light beam technology used in the projector.

22 Oct While joint Army Regulation 115-10/Air Force Regulation 105-3 of 31 March 1949 was under revision, Air Force issued guidance for Army weather support establishing Air Force responsibility for providing, installing, and maintaining weather equipment at Army installations. The Army was made responsible for providing, installing, and maintaining weather communications equipment.

31 Dec Most of new AN/AMT-6 dropsondes and related equipment delivered to AWS weather reconnaissance units.

1959

In 1959 First AN/GMQ-13 Cloud Height Set installed.

15 Feb USAF strategic facsimile net established connecting GWC with other weather centers and facilities stateside.

24 Feb At Air Force's request, AWS forwarded first formal statement of requirements for meteorological satellite data.

1 May Joint (Navy-Air Force) Typhoon Warning Center established at Navy's Fleet Weather Central facility, Nimitz Hill, Guam.

15 May Due largely to AWS' initiative and preparation, MATS participated in operational test of numerical flight plans produced by JNWP IBM 704 computer. On 14 December 1959 MATS directed AWS to set up an operational system.

Jul First AN/FMS-3 sferics equipment received by AWS.

8 Jul First two weather squadrons (7WS at Heidelberg AI, Germany, and 16WS at Ft Monroe, Virginia) activated for exclusive support of Army.

1 Oct AWS Regulation 55-3, "AWS Centralization Program," published. It established AWS policy, including that of making Kansas City Centralized (Terminal) Forecast Facility forecasts obligatory, with a few exceptions, for local terminal use after a three-hour period.

1 Dec Four Senior Master Sergeants (Leonard S. Grisham, 25WS; James T. Hastings, 33WS; and Jerome



Figure 4-4: Interior of Kansas City Centralized (Terminal) Forecast Facility showing, left to right in foreground, SMSgt Frank Brzeczek, Lt Col James Bunce, Lt Col Robert Miller, and Maj Neil Gardner. In background CMSgt Claborn Gibson, and 1Lt Douglas Fenn.

D. Rhodes and George E. Sheldon, 9WRG) are first from AWS promoted to grade of E-9 (Chief Master Sergeant).

15 Dec Naval Aerological Service first established on permanent basis in 1919, redesignated as Naval Weather Service.

1960

8 Feb Data Control Division of AWS' Climatic Center (Det 3, HQ AWS) at Asheville redesignated Data Processing Division.

18 Mar AWS finished placing all its weather reconnaissance units under control of 9th Weather Reconnaissance Group (9WG), Scott AFB (moved to McClellan AFB, California, in 1961 and redesignated 9th WG until 8 July 1965, when it became 9th Weather Reconnaissance Wing (9thWRW)). It was the first time since 1951 that all weather reconnaissance operations were supervised by one field unit headquarters.

1 Apr The RCA-built TIROS 1 (Television Infrared Observation Satellite), the world's first meteorological satellite, is launched from Cape Canaveral, Fla., atop a Thor launch vehicle.

May AN/TPQ-11 weather radar installed at Cape Canaveral, FL, for Category II and III testing.

1 May U-2 piloted by Francis Gary Powers shot down over Russia. U.S. originally denied Russian claims that aircraft was a "spy" plane, maintaining it inadvertently drifted off course while on a "weather reconnaissance" or "weather research" mission with NASA (National Aeronautics and Space Administration) and AWS instrumentation aboard. Powers' ill-fated flight originated from Peshawar, Pakistan, although the pilot was based at Incirlik AB, Adana, Turkey. U.S. later admitted U-2s flew intelligence-gathering missions over Russia. CIA director Allen Dulles said weather conditions, not political considerations, were the primary determining factor in scheduling U-2 flights.

Ostensibly, Powers' U-2 belonged to Weather Reconnaissance Squadron Provisional #2--one of three such squadrons organized and attached to HQ AWS in 1956 to "obtain high-level meteorological data in conjunction with the NACA (National Advisory Committee for Aeronautics)," the forerunner of NASA. AWS provided logistical and technical support to the NACA/NASA marked U-2s, aboard which, among other gear, was the AN/AMQ - 7 temperature-humidity measuring system. AWS and NACA/NASA interests were secondary to U-2's primary intelligence-gathering mission.

20 Jun Air Research and Development Command's Air Force Ballistic Missile Division published AFBMD Regulation 80-6, "Staff Meteorological-Geophysical Services." It was the first clear delineation of AWS staff meteorologist's responsibilities and organization.

27 Jun AWS Regulation 105-1, "Weather Modification," published. It was the first directive addressing subject.

Jul IBM 7090 computer installed at Joint Numerical Weather Prediction Unit. It replaced the IBM 704.

Jul HQ AWS established in-house the “Advanced Systems Program” for monitoring development of new weapons and command-and-control systems (such as B-70, Dyna-Soar, SAMOS, MIDAS, etc.). Program instituted because AWS believed previous weapons and command-and-control systems (F-102, B-47, B-58, Matador, SAGE [Semi-Automatic Ground Environment], etc.) development had not taken into account environmental factors. HQ AWS appointed “Advanced System Project Officers” for each Air Force weapons system then under development. Twelve years later, with publication of AWS Regulation 800-2, HQ AWS established a program with a charter identical to that of the defunct Advanced Systems Program.



Figure 4-5: Discussing new IBM 7090 computer at GWC are left to right: BGen Peterson, AWS/CC; Lt Col Roland Rogers, GWC/CC, and Anthony T. Shtogren, 3WW/CC.

1 Jul HQ AWS’ Det 3, the Climatic Center, inactivated and 2150th Air Weather Squadron, HQ AWS, established in its place at Washington DC, designated the Climatic Center USAF.

26 Aug AWS formally proposed establishing Air Force weather satellite system.

24 Oct After SAC determined in 1959 that GWC could no longer share its IBM 704 computer, Air Force approved AWS’ request for new IBM 7090 computer, which became operational at GWC.

Nov IBM 1401 computer installed at GWC to transfer data in and out of IBM 7090.

22 Dec Hq MATS gave EASTAF (Eastern Transport Air Force) responsibility for the numerical (computer) flight plan program AWS had inaugurated earlier.

1961

3 Feb SAC’s KC-135 Looking Glass Airborne Command Post (ABNCP) began continuous airborne operations, with additional back-up airplanes on 15-minute ground alert. The airborne command post sortie was airborne safely and continuously until 24 July 1990. Operation LOOKING GLASS “mirrored” ground-based command, control, and communications located in the underground command center at SAC headquarters, Offutt AFB, NE. It provided command and

control of US nuclear forces in the event that ground-based command centers were destroyed.¹ AWS provided launch and recovery support from Offutt base weather station and on orbit strategic weather products from AFGWC.

1 Mar Among 45 master sergeants in AWS selected for promotion to E-8 was Olive M. Folze of HQ AWS, the first WAF in AWS to obtain the grade of E-8.

16 Mar U.S. Weather Bureau's SELS (Severe Local Storm) unit at Kansas City assumed from AWS' Severe Weather Warning Facility responsibility for preparing preliminary severe weather outlooks and severe weather warning advisories and amendments.

Jun Under Air Force's single manager concept for support aircraft, AWS field units transferred their support aircraft (mainly C-47s and C-54s) to host bases.

21 Jun Under Secretary of the Air Force Joseph V. Charyk, also head of the National Reconnaissance Office (NRO), created an "interim" meteorological satellite program for the NRO with the goal of first launch in 10 months – this was the conception of the Defense Meteorological Satellite Program (DMSP).²

27 Jul Col Harry Evans, Deputy Director of the Office of the Secretary of the Air Force for Special Projects (SAFSP), "appointed Lt Col Thomas O. Haig the first director of the DMSP. Haig, a meteorologist and electrical engineer, accepted the assignment on condition that he would *not* have to use the resident 'systems engineering and technical direction' contractor...." – the birth of DMSP.³

Jul-Dec AWS submitted QOR (Qualitative Operational Requirement) to Air Force for mobile tactical meteorological van (subsequently designated AN/MMQ-2) for use as representative observing site to support tactical operations.



Figure 4-6: Weather warriors at Landing Zone (LZ) Baldy, Republic of Vietnam (RVN). From left, Sgt Alton J. Keel, Jr., Sgt Gary R. Nunn, and Capt Dennis C. Moreno, 1968

1 Jul 2150th Air Weather Squadron (a named activity designated as Climatic Center, USAF) HQ AWS redesignated 1210th Weather Squadron, HQ AWS, Washington, DC.

¹ Web, *The History of the Looking Glass*, 2ACCS, downloaded 28 Jul 2011, from <http://2accs.com/history.html>; Web, *Operation Looking Glass*, Wikipedia The Free Encyclopedia, downloaded 28 Jul 2011 from http://en.wikipedia.org/wiki/Operation_Looking_Glass

² Hall, *op. cit.* p. 1. In addition, Art., McCormack, Noel A., *The Rescue of Apollo 11*, Ctr. for the Study of National Reconnaissance, un-dated, p. 1, identified the DMSP weather satellite program had a succession of numeric and alphabetic names, including Program II, P-35, 698BH, 417, and Defense Systems Applications Program. In order to avoid confusion, this chronology uses the designation of DMSP throughout.

³ *Ibid.*, p 2

Aug Air Force expanded AWS' mission by designating AWS the Defense Department single manager for aerial sampling as of 1 April 1962. With this expansion, AWS gained unique B-57 and balloon sampling capability with associated helicopter (six CH-21s) recovery activity.

1 Nov World's first official clear air turbulence forecast issued by AWS' Kansas City Centralized (Terminal) Forecast Facility.

9 Nov First duplicate precision-approach weather-observation facility (weather instrumentation at both ends of runway) installed at Suffolk County AFB, NY.

27-29 Dec Responding to PACAF (Pacific Air Forces) and Thirteenth Air Force requests, initial cadre of 23 AWS personnel deployed to Republic of Vietnam (RVN).

1962

20 Mar Russia launched recoverable satellite which, among other missions, investigated "the distribution and formation of cloud patterns."

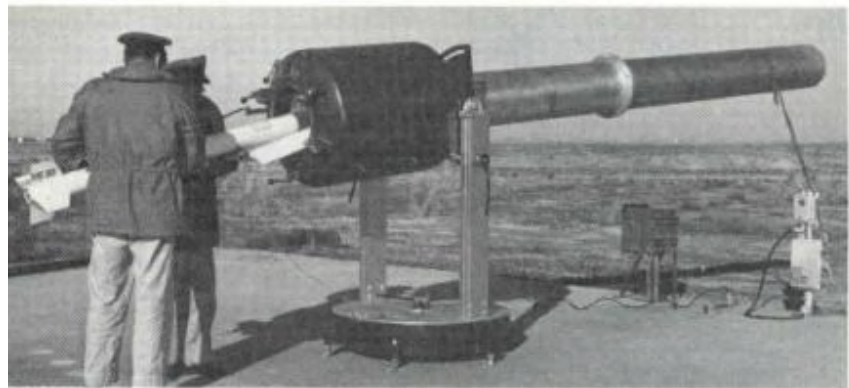


Figure 4-7: Rocketsonde launcher, White Sands Missile Range, NM, 1960

22 May AWS directed to implement a USAF meteorological rocket (rocketsonde) network. First simultaneous four station rocketsonde firing occurred 7 November 1962.

23 Aug Second launch of DMSP satellite was successful. Launched into a sun-synchronous 450 nautical mile circular polar orbit, the RCA television system provided 100 percent daily coverage of the Northern Hemisphere at latitudes above 60 degrees, and 55 percent coverage at the equator. Readout of the tape-recorded pictures was planned to occur on each pass over the western hemisphere; at the ground stations, the video pictures of cloud cover over the Eurasian landmass was relayed to the Air Force GWC. Weather pictures of the Caribbean returned by this vehicle later in October proved crucial during the "Cuban Missile Crisis," permitting effective aerial reconnaissance missions and reducing the number of aerial weather reconnaissance sorties in the region.⁴



Figure 4-8: WC-130

⁴ *Ibid.*, p. 4 and 5.

28 Aug COMET (CONUS-Continental United States--Meteorological Teletype) system implemented with automated weather relay center at Tinker AFB.

Oct First AWS solar forecast issued by HQ AWS.

22 Oct First WC-130B configured for atmospheric sampling delivered at AWS.

23 Nov A six-ship flight of C-130s from the 322 Air Division and a four-member team of two weather observers and two forecasters arrived in New Delhi India to assist India with their border conflict with China. The weather team from Det. 17, 31st WS, 2 WW, Evreux, France, led by Lt Fred Scheeren, supported re-supply missions to the Indian forces in the high Himalayas for the first 60 days. The forecasters operated out of New Delhi while the observers spent the entire time at Leh airstrip. They, along with a couple of Combat Controllers, were the only American forces based there with the shooting war going on only a few miles away. At 11,000 feet elevation, the Leh airstrip was a “rough dirt gash cut out of a barren flat spot in the mountains. It was a perfect place to demonstrate the capabilities of the Hercules C-130.”⁵ Dubbed Operation LONG SKIP, other 2nd WW units provided support until the end of the effort on 31 Aug 1963.⁶

4 Nov U.S. detonated a 1.59 megaton yield nuclear warhead at 69,000 feet altitude near Johnston Island, 717 miles west south west of Hawaii. Called Operation FISHBOWL, it was part of a bigger operation called DOMINIC I. This test was regarded as the last true US atmospheric nuclear test.⁷ AWS provided 10 WB-50 reconnaissance aircraft and positioned 6th WS (Mobile) rawinsonde units at Johnston, Palmyra, Christmas, Malden, and Tutuila islands. The Central Pacific Forecast Center, located at Kunia, Hawaii, issued mission control forecasts and the base weather station at Hickam briefed various air crews supporting DOMINIC operations.



Figure 4- 9: Atomic fireball from CHAMA explosion detonated as part of the overall Operation DOMINIC I



Figure 4-10: LtCol Francis T. McHenry (Left), Commander of Det. 3, 1WW, Kunia Forecast Center and Maj Ralph G. Wallace discuss upper air analysis of the central Pacific region. (USAF Photo, circa 1957)

⁵ Art., Scheeren, Frederrick A., Lt Col, USAF Ret., *India Saga*, downloaded from <http://rowf.info/india-saga.htm>, 27 Feb 2011

⁶ E-mail, Scheeren, Frederrick A., Lt Col, USAF Ret., to George Coleman, *India Saga*, 22 Oct 2011

⁷ Web, *Operation Dominic I and II*, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/Operation_Dominic_I_and_II, 17 Jul 2011

7 Dec Air Force ordered Inspection function withdrawn from all MATS wings and groups, and centralized, in AWS' case, at HQ AWS.

1963

1 Mar AWS implemented WBAWS (Weather Briefing Advisory and Warning System) whereby 26 stateside detachments provided severe weather warning service to Air Force and Army installations within specified geographical areas.

20 Mar First of 34 WB-47Es (equipped with AN/AMQ-19 meteorological system) delivered to AWS.

2 Apr The Joint meteorological Group, JCS, agreed to develop weather support concepts for WWMCCS (World-Wide Military Command and Control System).

1 May 1210WS, HQ AWS, at Washington, DC, reassigned to 4WG at Andrews AFB. The squadron commander also served as Director, Climatic Center, USAF.

31 May IBM 7090 computer at GWC converted to IBM 7094 purchased in January 1964 for \$2,442,160.



Figure 4- 11: AIC Peter T. Cromwell (left) and Sgt Angelo Marinosci from 5WS' (of 1WG) Combat Weather Team 1, pose with weapons in front of AN/MMQ-2 Meteorological Station, Manual at Long Giao AI, RVN, 1968.

Jun Air Force awarded contract under Project 433L to Hamilton Standard for 58 AN/MMQ-2s and associated tactical equipment (AN/GVN-1 night visibility set, AN/TMQ-14 ceilometer, AN/TMQ-15 wind set, and AN/TMQ-20 temperature-humidity set). First AN/MMQ-2 installed in RVN on 1 July 1966, but AN/MMQ-2s subsequently proved unsatisfactory for tactical operations.

Jul DMSP transferred satellite ground tracking and readout from Lockheed to blue-suit manned tracking stations in Maine and Washington. At the same time, a command and control center

for DMSP manned by SAC personnel [SAC's 4000th Support Group] began operating one floor below AFGWC in Building D, Offutt AFB, NE. (Hall, p7) When the ground stations were assembled, the program office developed a sun tracking technique to determine an antenna's pointing vector and receiving system sensitivity during operation. This eliminated a costly "bore sight tower."⁸ AWS would employ this sun tracking technique in the late 1970's as standard operating procedure to measure the AN/FPS-77 Storm Detection Radar tracking accuracy.⁹

22 Jul AWS transferred responsibility for clear air turbulence forecasts from Kansas City Centralized (Terminal) Forecast Facility to 3WW forecast centers at March and Westover AFBs.

20 Aug First operationally ready APT (Automatic Picture Transmission) weather satellite readout installed at Offutt AFB and operated by 3WW.

15 Sep AWS transferred responsibility for terminal forecasting from Kansas City Centralized (Terminal) Forecast Facility (Det 42, 8WG) back to respective detachments and, due to dissatisfaction with the service of U.S. Weather Bureau's SELS Unit, established a Military Weather Warning Center (MWWC) at Kansas City responsible for severe warning function of the 26 WBAWS detachments.

23 Nov First major WB-47E accident. A 55 WRS WB-47E crashed on landing at Lajes Field, Portuguese Azores.



Figure 4-12: B-52H (61-0023), configured at the time as a test bed to investigate structural failures, still flying after its vertical stabilizer sheared off in severe turbulence on 10 January 1964. The aircraft landed safely.

1964

Jan Department of Commerce established office of the Federal Coordinator for Meteorological Services and Supporting Research (commonly referred to as OFCM). Headed by U.S. Weather Bureau chief, under which were two committees: ICMS (Interdepartmental Committee for Meteorological Services) and ICAMR (Interdepartmental Committee for Applied Meteorological Research).

8 May Six CH-21s associated with AWS' balloon sampling activity assigned to the 59WRS, which was inactivated 8 May 1964 when AWS consolidated all balloon support activities under Detachment 1 of 4WG's 6WS (Mobile), and two other aircraft transferred to Air Rescue Service.

18 Jun First of 19 RB-57Fs delivered to AWS. Unit cost approximately \$1.5 million.

13 Aug IBM 7040 computer installed at Climatic Center, USAF.

⁸ Hall, *Op. cit.*, p.11

⁹ Personal reflection of Coleman, George N. III, CMSgt, USAF, Ret., based on experience in the late 70s as AWS added emphasis to radar operations.

15 Aug AWS transferred responsibility for clear air turbulence forecasting from 3WW centers at March and Westover AFBs to GWC.

31 Aug Solar forecasting function transferred from HQ AWS to 4 WW, Ent AFB, Colorado.

16 Oct US detected first Communist Chinese nuclear test, initially by acoustic and 11 electromagnetic stations. It was subsequently confirmed by airborne particulate sampling conducted by AWS WC-130, WB-50, and WB-57 aircraft from Yokota AB, JP; Wheelus AB, Libya; Eielson AFB, AK; and McClellan AFB, CA.¹⁰

26 Oct First production-model AN/TPQ-11, Radar Cloud-Detecting Set received. The TPQ-11 was a vertical-pointing, two-antenna, K_a-band, system for detecting, displaying, and recording the density and height of clouds and precipitation directly above the set. A continuous height-time record was produced on a permanent facsimile record. The set provided information concerning the existence of cloud layers above a low stratus or fog deck, shear layers, sharp intensity gradients in thunderstorm clouds, the slope of advancing precipitation, and low-level temperature inversions.

4 Nov First AN/FPS-77 Radar Meteorological Set delivered to Griffiss AFB, New York, for Category II and III testing. The FPS-77 was a C-band search radar that eventually replaced the X-band AN/CPS-9 Radar Set.

15 Dec Climatic Center, USAF, Washington, DC, redesignated Environmental Technical Applications Center (ETAC), USAF. It remained assigned to 4WG's 1210WS.

1965

In 1965 AWS special warfare weathermen deployed to South East Asia (SEA) theater of operations. Members of 2WG's Detachment 75, worked clandestinely in Laos, under dangerous conditions and on a nearly uninterrupted basis, to establish and maintain, a weather observing and reporting net essential to combat air operations.



Figure 4-13: MSgt Watson (left) and Capt Grimes (kneeling center, without glasses, facing camera in Laos, 1965.

18 Mar First DMSP weather satellite launched that could be "...programmed to record and readout specific weather data in Southeast Asia to support tactical operations in the theater." A

¹⁰ Hist., Frank J. Griffith, Col, USAF, *History of the Air Force Technical Applications Center (AFTAC)*, 1 Jul – 31 Dec 1964, p. vi, 9 and 25. Document classification changed to UNCLAS, 7 May 1999. Downloaded 19 Jul 2011 from <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB26/12-12.htm>

“tactical” ground station was set-up at Tan Son Nhut, RVN. “It furnished...complete cloud-cover data for North Vietnam, South Vietnam, and parts of Laos, China, and the Gulf of Tonkin.”¹¹

14 Apr First C-130E picked up at factory (Lockheed, Marietta, Georgia) and delivered to 53WRS. Air Force Logistics Command subsequently modified the aircraft to WC-130E configuration.

22 Apr Two C-135Bs transferred from MATS to AWS, the first of 10 eventually modified to WC-135B configuration. The tenth WC-135B was received 21 January 1966.

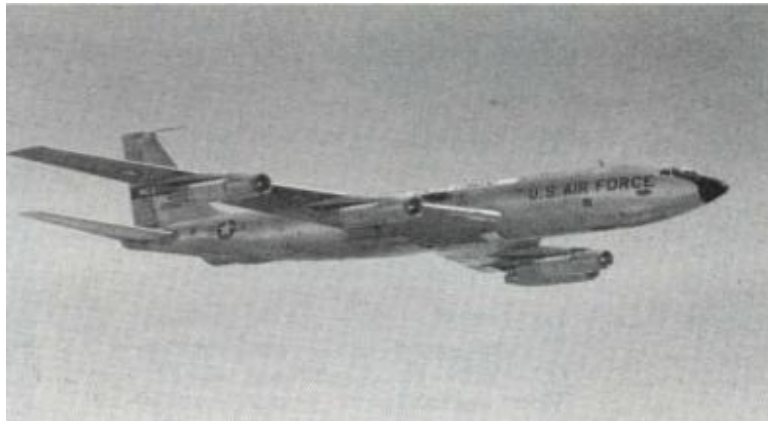


Figure 4-14: WC-135B

1 Jul Automated Weather Network (AWN) operational. It linked weather centrals at Fuchu AS, Japan, and High Wycombe, England, and GWC with high-speed weather communications link via Tinker AFB switch.

Jul Col. John E. “Jack” Kulpa became the new [DMSP] Program Director and initiated work on the next series of satellites, DMSP Block 5. He delegated instrument requirements and design of the spacecraft to Capt Richard Geer and Maj James Blankenship. A career weatherman, he “played a predominant role in the payload design that made Block 5 especially user-friendly, such as formatting of



Figure 4-15: Maj James Blankenship (L) and Capt Richard Geer (R) at Block 5 preliminary design review.

the imagery to standard AWS weather chart scales.... He possessed excellent long-range vision, seeing data applications, technology solutions, and political ways and means far into the future. His expertise in weather phenomenology, his aggressive attitude, his persuasiveness, and a unique [NRO

¹¹ Hall, *Op. cit.*, p. 14. In previous studies 10 Sep 1965 was used as the “First DMSP launch.” Hall’s document does list a Sep launch but it was not the first DMSP launch. In addition, AFGWC had been receiving satellite data from DMSP since “flight number three launched on 19 Feb 63.” p.7.

access via the AWS] . . . combined to make him arguably the most powerful person in the SPO [system program office].”¹²

1 Jul At direction of MATS, AWS manpower and organization function and its 29 manpower spaces transferred to HQ MATS to man Management Engineering Team (MET)-1.

13 Jul U.S. Weather Bureau became component of Commerce Department’s newly formed ESSA (Environmental Science Services Administration).

1 Sep First day of continuous operation of AWS’ SOFNET (Solar Observing and Forecasting Network), as reported by AWS solar observers and forecasters at Athens, Sagamore Hill, Sacramento Peak, Hawaii, and Manila.

14 Sep Last AWS WB-50D departed Yokota AS (56WRS) for eventual storage at “boneyard,” Davis-Monthan AFB, Arizona. In 10 years with AWS, WB-50Ds experienced 13 accidents, killing 66 crewmen.

8 Nov Univac 418 computer for AWN installed at GWC. Effective 1 June 1967, when low-speed teletype input to ITT 7300/ADX was terminated, UNIVAC 418 became sole data source for GWC.

22 Nov GWC began transmitting six analysis and forecast maps twice daily to Fuchu and High Wycombe centrals over AWN.

26 Nov AWS mission regulation expanded to include weather modification.

16 Dec Pathet Lao forces attacked and overran Lima Site 169 at Pan Pha Thuong, Laos. A1C Wilder of 2nd WG’s Det 75 was the only American there and barely escaped. A full-scale rescue attempt was initiated by the air attaché at Vientiane, Laos, and, after 36 hours evading the enemy, Wilder was pulled from the jungle by helicopter.¹³

1966

In 1966 The National Reconnaissance Program Committee on Imagery Requirements and Exploitation (COMIREX) adopted World Aeronautical Grid Cells (WAG Cells) as a single standard. Each WAG Cell was a uniform 12 by 18 nautical miles on a side around the world. An intelligence



Figure 4-16: “Looking North” is A1C Ronald D. Marquardt (Det 9, 30th WS), M-16 rifle ready and clad in flak vest, standing guard near sandbagged weather instrument shelter at Dong Ha AB, some six miles south of the Demilitarized Zone (DMZ) RVN

¹² *Ibid*, p.18

¹³ Note, Grimes, Keith, Col, USAF, AFWA Historical Files. [Note was prepared as an explanation of a photograph showing MSgt Watson and A1C Wilder dressed in distinctive air commando bush hats.]

operator thereafter submitted target requests to COMIREX identified by WAG cell location and sorted by ephemeris—whichever satellite orbital trace crossed a particular WAG Cell and at what time. In the meantime, AFGWC began work on a three-dimensional cloud analysis program. It merged all overhead imaging and civilian weather reports into a global cloud analysis with a spatial resolution of 25nm on a polar stereographic grid, by date and time of day. By the late 1960s, AFGWC could estimate the probability of cloud-free access on any day and time throughout the year for any required target.¹⁴

1 Jan MATS redesignated Military Airlift Command (MAC) with no change in status of AWS.

17-19 Feb Na Khang, Laos (Lima Site 36) was overrun by Communist forces.¹⁵ MSgt Watson, a “commando” weather person of 2nd WG’s Det 75, was part of the friendly forces that abandoned Lima Site 36 when it came under heavy mortar attack. Watson was able to salvage a theodolite and some basic observing gear, but the AN/GMQ-1 wind-measuring set was destroyed. In conjunction with ground fighting, USAF air strikes reduced the site to charred remains.¹⁶



Figure 4- 17: MSgt Watson (left) and A/IC Wilder (Det 75, 2WG) in 1964 with the distinctive air commando bush hats. Watson holds a Brunton compass while Wilder has some standard components from the AN/PMQ-4 manual meteorological station.

31 Mar Using dry ice with tethered balloons, AWS conducted its first operational test of dissipating cold fog. The tests were deemed inconclusive.

1 Apr Solar Forecast Facility (Det 7, 4WW) established at Ent AFB, Colorado. It was charged with operating SOFNET and a Solar Forecast Center within the NORAD (North American Air Defense Command) Space Defense Center in Cheyenne Mountain complex near Colorado Springs, CO.

17 May Solar-geophysical teletype network became operational.

8 Jul To support widening U.S. combat effort, AWS expanded its SEA organizational posture from a squadron to a group and three squadrons.

4 Aug First AN/TKR-1 transportable weather satellite receiving station [APT] accepted. This receiver provided selected fixed base and deployed weather units the ability to receive TIROS weather satellite images as the satellite traversed within the reception foot-print of the unit’s location. While DMSP was making history in the classified environment, the APT images

¹⁴ *Op. cit.*, Hall., p. 30 and 31.

¹⁵ Rpt., Porter, Melvin F., Capt, USAF, *Second Defense of LIMA SITE 36*, Hq PACAF Dir, Tac Eval, CHECO Division, 28 Apr 1967, p 1. [Note: The forward references the 17-19 Feb 1966 attack.]

¹⁶ *Op. cit.*, Grimes.

spearheaded the growth of weather satellite analysis techniques for use in daily weather operations. One such location was the Central Pacific Forecast Center (Detachment 3, 1WW), Hawaii.¹⁷

26-30 Sep First AN/FMN-1 for computing RVR (Runway Visual Range) installed at Westover AFB, MA.

7 Oct Air Force approved installation of advanced computers at GWC, Offutt AFB, NE.

7 Nov First major RB-57F accident. A 58WRS RB-57F crashed into Sandia Mountains approximately ten miles from Kirtland AFB, NM, killing both crewmembers.

11 Nov World's first magnetometer network established by AWS.

16 Dec AWS Solar Forecast Facility (Det 7, 4WW) began mapping ionosphere.

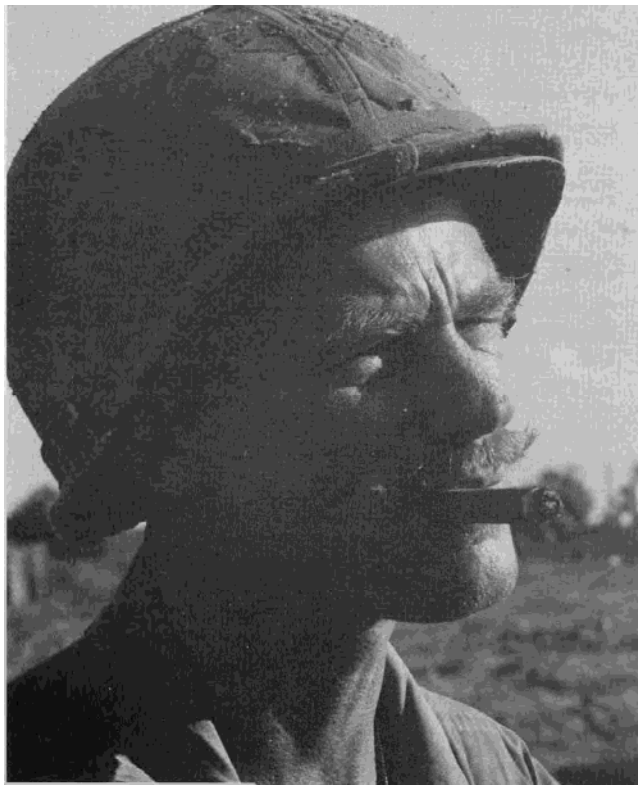


Figure 4-18: In what would have been a classic pose for a Bill Mauldin “Willy-and-Joe” cartoon of WW II fame, whisker stubble, cigar-smoking Sgt Michael Connell, a 39 year-old “lifer” from Loving, NM, assigned as a combat weather team chief to OL-2 of 5WS’ Det 31 at Phuoc Vinh, wearing a helmet with the words “lover not fighter” scrawled over its burlap camouflaging, squints into the hot Vietnam sun one day in 1968. “We get a very deep sense of satisfaction working with the ‘Cav;” he was quoted when asked how it felt being stationed with the 1st Cavalry Div (Airmobile) in ‘Nam,’ “because it is a division noted for its success against the enemy” and “the information we obtain and pass on plays a vital role in the planning of each operation.”

¹⁷ Personal reflection, George N. Coleman III, CMSgt, USAF, Ret., of events as they developed while assigned to Det. 3, 1WW from 1966-1969.

CHAPTER 5—CHRONOLOGY 1967-1976

1967

17 Mar AWS WC-130s commenced weather reconnaissance and rainmaking operations in SEA.

22 Mar Seventh Air Force formally expressed immediate need for tactical, cloud-height measuring device for use by AWS combat weather teams at forward airstrips in Vietnam that did not have external power sources. On 19 February 1969, Air Force awarded the contract to General Time Corporation (Rolling Meadows, Illinois) for 25 AN/TMQ-25 tactical ceilometers. (The estimated costs had risen in 1968 from \$127,500 to \$290,000 or \$11,600 per unit.) Category III testing of four sets was completed on 23 December 1970, when AWS declared the AN/TMQ-25 “suitable for its intended function.” The first AN/TMQ-25s were installed in RVN in 1971 but proved unsatisfactory for tactical operations.

4 May In television interview at Tan Son Nhut AB, RVN, the 7th AF Commander, Lieutenant General William W. Momyer, said, “This weather [satellite] picture is probably the greatest innovation of the war.”¹

15 May AWS rawinsonde team goes to sea. Flight B of 6th WS (Mobile) departed Port Hueneme, CA aboard the USNS Richfield (a missile range instrumentation ship)² in support of Operation SKIN DIVER II, 1967. While in the area of operations (somewhere in the South Pacific), the team took a total of 76 radiosonde (average height 103,415 feet), and 79 winds-aloft (average height 102,434 feet) observations. The team relayed the coded reports back to Det 25, 6th WW for dissemination to the weather support force supporting SKIN DIVER II. In addition the team prepared daily radiation-fallout diagrams for the on-site commander. The team members were MSGts Richard R. Adkins (NCOIC) and John G. Lasiter, SSGts William G. Workman and Richard L. Camp; and Gilbert A. Brown, Paul J. Durand, Kenneth R. Hanneman and Donald D. Nissen, all with the rank of A1C. Their mission was completed on 3 Jul.³

Operation SKIN DIVER II was a contingency air sampling by AWS weather reconnaissance aircraft in the Western Hemisphere in support of AFTAC mission during the 1966-1968 period.⁴ Besides the deployment aboard the Richfield, AWS deployed personnel from several weather wings. The 1st WW provided a forecaster and an observer to Pago Pago with forecast

¹ Note: Due to the highly classified nature of DMSP, Gen. Momyer was probably “holding” an APT weather satellite picture but was actually referring to the DMSP imagery he reviewed on a daily basis. [George Coleman’s supposition]

² Web, *USNS Private Joe E. Mann (T-AK-253)*, downloaded 25 Jul 2011 from [http://en.wikipedia.org/wiki/USNS_Private_Joe_E._Mann_\(T-AK-253\)](http://en.wikipedia.org/wiki/USNS_Private_Joe_E._Mann_(T-AK-253)), [Note: ship was renamed USNS Richfield in 1960]

³ Msg., Rusk, State Department to AWS, et. al., *Project QUICK DIP*, 17 Sep 1965, p. 1. Document was downloaded 19 Jul 2011 from <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB7/ae11-1.htm> [Note: message, declassified on 28 Feb 1991, describes QUICK DIP and SKIN DIVER.

⁴ Hist., *The AWS 1967 unclassified history*, AFWA/HO, Vol I, p. 402 [Note: describes deployment of personnel. SKIN DIVER was an ongoing contingency effort.]

assistance coming from the Central Pacific Forecast Center in Kunia, HI; 3rd WW provided people to support U-2 operations; 5th WW sent one observer and 2 forecasters to Mendoza, Argentina to provide observation and forecasts of debris trajectory for Task Flight Charlie; 6th WW provided several rawinsonde teams to Easter Island, Chile, and Rarotonga, Cook Islands, to take upper air observations; while 7th WW's South American Forecast Center (Det 3, 15th WS) provided support from their home station at Charleston AFB, SC.

1 Jun Office of Special Assistant for Environmental Services (SAES), JCS, established. Its mission was to “assist the JCS and Secretary of Defense in coordinating, reviewing, and providing continuing broad policy guidance concerning environmental services of the Department of Defense.”

SAES assumed Joint Meteorological Group's functions, ending over 26 years of that organization's existence. SAES also served as Defense Department interface with Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM), including, as of 1 April 1968, its Interdepartmental Committee for Meteorological Services, ICMS. This ended, in effect, AWS' direct formal participation in a number of key interagency and international meteorological committees.

16 Jun Four Univac 1108 computers selected as replacement for IBM 7094s at AFGWC. Acceptance testing of first system was completed 5 June 1968 and the entire Univac 1108 system was officially operational 1 June 1969. It represented the largest meteorological data processing system in the world.

1 Jul Naval Weather Service designated a separate command, the Naval Weather Service command.

8 Jul Det 1, 3WW charged with operating AFGWC, inactivated and 2WS activated in its place with same mission.

8 Jul ETAC reorganized as USAFETAC, 6WW, concurrent with inactivation of 6WW's 1210WS.

1 Aug MAC transferred assignment responsibility for weather observers and weather equipment technicians back to AWS, thus giving AWS assignment control over all its enlisted and officer weather AF Specialty Codes .

1968

4 Mar AWS suffered its first casualties of Vietnam war when two 5WS observers, Staff Sergeants James C. Swann and Edward M. Milan, were killed during enemy 82mm mortar attack on Ban Me Thout AI, RVN.

25 Jun In-flight refueling modification completed on first AWS WC-135Bs.

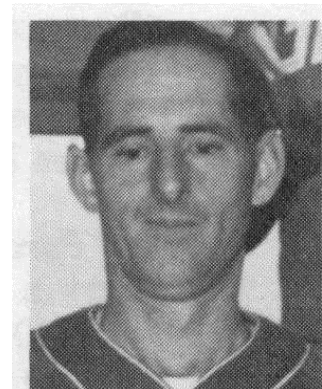


Figure 5-1: SSgt Swann—AWS' first Vietnam War casualty

20 Nov AWS formally unveiled plans for Space Environmental Support System (SESS) which would consolidate several space metering and monitoring systems, including SOFNET.

23 Dec Position of special assistant to AWS commander for airman affairs established at HQ AWS. Title subsequently changed to: Chief Master Sergeant of AWS; Senior Airman Advisor; and finally, Senior Enlisted Advisor.

1969

In 1969 Under Air Force-directed reductions (Project 703). AWS lost all 24 of its WB-47Es, one weather reconnaissance squadron, a net of three ground weather squadrons, and 757 manpower authorizations (approximately seven percent of its total).



Figure 5-2: CMSgt William M. Gardner—first AWS Senior Enlisted Advisor

8 Jul 3WW's 2WS, charged with operating AFGWC, inactivated and AFGWC activated as named squadron-level organization and reassigned in place to HQ AWS.

8 Aug Accountability for Razdow W-250-1 solar optical telescope at Ramey AFB, Puerto Rico, transferred to AWS. It was the first solar telescope possessed by AWS.



Figure 5-3: Ramey Solar Observatory

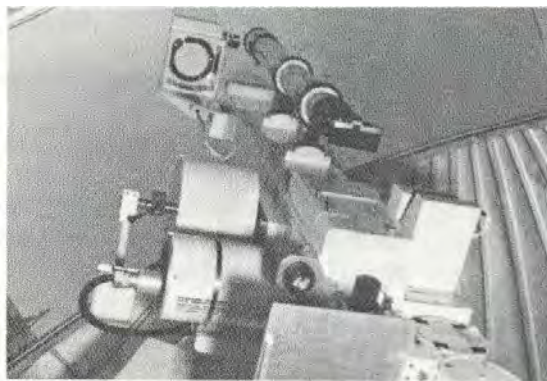


Figure 5-4:....its Razdow telescope

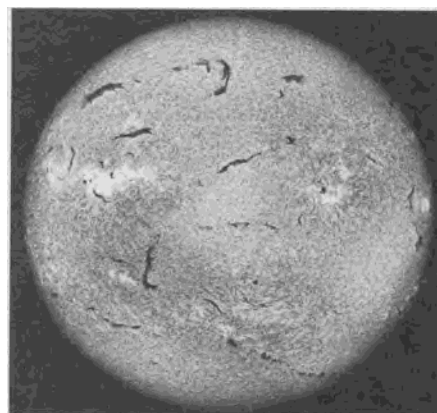


Figure 5-5:....and its product, a photograph of the sun, 15 Jul 1968

1 Oct Official dedication of Automated Digital Weather Switch (ADWS) at Carswell AFB, TX (equipped with dual Univac 1108 computers), AWN's "hub" moved at that time to Carswell from Tinker AFB, OK.

1970

In 1970 Under Air Force and MAC Projects 72-B2, 72-B3, and 72-B3 "Plus," AWS reduced by 195 manpower authorizations (approximately two percent of its total) and two ground weather squadrons.

31 Jan Military Weather Warning Center (Det 42, 7WW) at Kansas City inactivated and severe weather forecasting/warning function assumed by AFGWC.

5 Feb As a result of Hurricane Camille of August 1969, first of 11 additional C-130Bs delivered to AWS--aircraft subsequently modified to WC-130B configuration.

25 Mar Revised AWS mission regulation (Air Force Regulation 23-31) deleted reference to AWS as Defense Department single manager for atmospheric sampling.

27 Mar Announcement made that Air Force would purchase \$400,000 worth of Army's AN/TMQ-22 tactical meteorological measuring sets. The first six sets accepted by Air Force from contractor on 11 November 1974.

1 Apr JCS' SAES redesignated as Deputy Director for Operations/Environmental Services (DDOES).

8 Apr Solar Forecast Center (OL-10, Det 7, 4WW) in NORAD's Cheyenne Mountain complex combined with Det 1, 4WW and redesignated as Space Forecasting Branch of Aerospace Environmental Center. AESC subsequently redesignated Aerospace Environmental Support Unit.

15 Apr *Air Force Times* indicated AWS' Captains Marvin A. Lillie and Robert Y. Forester, WC-130 pilots with 9WRS's 53WRS, were Air Force's nominees for coveted Harmon International Trophy for Aviator category for their work during Hurricane Camille of August 1969. It was first time AWS aircrews were Air Force nominees for that award.



Figure 5-6: Capts Forester (right) and Lillie at Scott AFB on 12 Sep 1969, with Distinguished Flying Crosses awarded them for their airmanship in Hurricane Camille. Each of their crewmembers received the Air Medal.



Figure 5-7: Maj Henry M. Dyches, Jr.

1 Jul Automated Digital Weather Switch (ADWS) activated at Clark AB, thereby extending AWN to Philippines.

1 Jul Directorate of Systems, Deputy Chief of Staff for Operations, HQ AWS, elevated to deputy-chief-of-staff status.

8 Jul Major Henry M. Dyches, Jr., a pilot with 9WRW's 56WRS, awarded Koren Kolligian Jr., trophy for 1969 for handling WC-135B emergency. It was first time an AWS crewmember won that award. He also earned a Distinguished Flying Cross.



Figure 5-8: TSgt Leon W. Major (left) and SSgt Claude W. Kay sitting at the console of the Automated Digital Weather Switch (ADWS) of the Automated Weather Network (AWN) at Carswell AFB, TX

15 Jul First mission analysis of AWS completed by Air Force Systems Command's Space and Missile Systems Organization.

1 Aug MAC computer flight plan responsibility transferred from Suitland (Det 44, 7WW) to AFGWC.

25 Sep AWS airborne super cooled fog and cloud dissipation techniques declared operational.

3 Oct Commerce Department's NOAA (National Oceanic and Atmospheric Administration) replaced ESSA, and U.S. Weather Bureau redesignated National Weather Service and placed under NOAA.



Figure 5-9: Maj Keith R. Grimes (center) with Son Tay raiders at Eglin AFB, FL, in 1970 during break in their highly intensive and secret training. Grimes, who spent most of his Air Force career as a forecaster in AWS, acted as weather advisor to raid force commander, and it was his work with climatological data which set raid's general date.

3 Nov Automatic Response Query (ARQ) system operational at Carswell's ADWS.

20-21 Nov Daring night raid by small U.S. force on prisoner of war camp at Son Tay, North Vietnam, date determined by AWS climatological study and forecasts. Overall raid commander later wrote that "as far as tactical considerations were concerned, weather was probably the most critical factor."

Dec Air Force Cambridge Research Laboratory (AFCRL) initiated a research program to correlate DMSP auroral photographs with the actual structure of the polar ionosphere.⁵ The aim of the research was to assess and forecast space environment effect on U.S. surveillance and tracking systems. This was the first time that large swaths of the polar auroral zone could be observed simultaneously from above by a visual sensor. AWS saw the importance of nighttime imagery to geophysical research and was instrumental in getting the DMSP imagery released to AFCRL. Lt Col Hank Brandli (AWS) and a DMSP SPO representative went to AFCRL to brief researchers in on the highly classified program. Without AWS' initiative, there would have been no breakthrough in understanding the physics of the aurora.⁶

1971

Jan Promotion list to E-9 contained the name of Alice L. Hill, Chief Observer, HQ 17WS, Travis AFB, California. An African-American, Senior Master Sergeant Hill became the first weather WAF to obtain rank of E-9.

7 Jan Last of AWS' (54WRS) three WC-130As used for rainmaking in SEA transferred to Air Force Reserve. Since their deployment to theater in 1967, WC-130As were flown on 1,435 combat and combat support missions. Using other model WC-130s 54WRS possessed, rainmaking operations continued in theater until 5 July 1972, when last mission was flown.

5 Feb Air Force announced awarding \$4 Million contract for production of a Tactical Weather System.

23 Feb Air Force approved Chief Scientist position for HQ AWS.

16 Apr Air Force approved AWS' request of 21 November 1970 for final increment of "hardware balance" (primarily increased core capacity and faster drums) for AFGWC's Univac 1108 computers.

19 Jul Air Force authorized MAC to redesignate all AWS RB-57s as WB-57s.

31 Jul AWS' unique, high-altitude balloon sampling support of the Atomic Energy Commission ended with inactivation of Det 31, 6WW, at Goodfellow AFB, Texas.

8 Aug AWS inactivated Latin American Forecast Center (Det 3, 15WS, 7WW) at Charleston AFB, South Carolina, and transferred tasks to AFGWC.

26 Sep Under Project Stormfury, designed to modify such storms, AWS WC-130Bs seeded Hurricane Ginger with silver iodide.



Figure 5-10: Alice Hill as a TSgt. First weather WAF to obtain rank of E-9

⁵ Art., Brandli, Henry W., Lt Col, USAF, Det 11, 6th WW, Patrick AFB, *Picture of the Month, Aurora Borealis and City Lights*, Monthly Weather Review, AMS, Boston, MA, Vol 2, Jul 1974, p. 533; note, information came from Brandli's reference AFCRL, Newsletter, 6 April 1973, No. 444.

⁶ E-mail, Pfeffer, Gene, Col, USAF, Ret. to Coleman, George N., III, CMSgt, USAF, Ret., *Re: Additional Events*, 11 Jul 2011; e-mail Pfeffer, 16 Jul 2011, *Re: Additional Events*

31 Oct AFGWC's Univac 418 computers phased out for disposition by Air Force Communications Service.

1 Nov AWS launched Centralized Terminal Forecast Program for eventually issuing terminal forecasts from AFGWC for all stateside units.

1 Nov Navy weather reconnaissance in Pacific ended.

29 Dec Air Force approved AWS request to install Univac 1110 computer at AFGWC. Performance and acceptance testing completed 30 October 1972.

1972

In 1972 NRO began operating a new [intelligence] imaging satellite. "The [DMSP] early morning "scout" military weather satellite furnished weather conditions over the Soviet Union at first light. These data, used in the cloud analysis and forecast system, [developed in the late 1960s] provided cloud-cover estimates that were transmitted from AFGWC to the Satellite Operations Center in the basement of the Pentagon and used as a short-term forecast to program satellite camera operations in the reconnaissance satellites that trailed the weather scout. The late morning "assessment" weather satellite told how accurate the cloud forecast had been, determined whether target requirements had been satisfied, and also contributed data to the weather model. Finally, personnel in the Defense Mapping Agency scanned the film returned by reconnaissance satellites and reported actual cloud cover to AFGWC afterward, further contributing to the weather model data base. By the late 1970s a high percentage of satellite pictures taken of the earth were free of cloud cover. Without these weather forecasts, only 38 to 40 percent of the imagery returned would have been cloud-free."⁷

26 Apr AWS unveiled plans for "Value Analysis" program. It was designed to demonstrate through selected case studies that AWS support was economical. AWS first previewed Value Analysis studies at MAC commanders conference 5 October 1972.

23 May OL-B, HQ AWS (AWS's "Washington Office") inactivated.

30 Jun With no change in station, AFGWC reassigned from HQ AWS to 6WW.

30 Jun AWS mission expanded to include Air Force's residual aerial photo mapping capability. The expansion added a squadron, five RC-130As, and 276 personnel to AWS.

Mid-1972 Air Force drawdowns and Southeast Asia withdrawals during Fiscal Year 1972 reduced AWS by two wings, a group, five squadrons, nine aircraft, and 2,315 manpower authorizations--the largest single-year manpower reduction in AWS (23 percent of its total) since immediate post-World War II period. Additionally, HQ AWS' Plans, Comptroller, History, and Information functions transferred to HQ MAC.

⁷ Hall, Op. cit., pp. 31 and 32.

1 Jul Reductions in AWS manpower resulted in forecaster service being reduced by eight-to-eleven hours per day at 35 stateside units; 17 others were designated as “Regional Briefing Stations.”

21 Jul AUTODIN (Automatic Digital Network) operational at AFGWC.

26 Sep Move of remote weather observation instrumentation from Representative Observation Site to base weather station at Yokota AB completed. It was the first of 109 such relocations directed by Air Force to save manpower.

1 Oct National Weather Service assigned liaison official to HQ AWS. Official remained in position until 17 March 1974, after which NWS declined to replace him.

1 Nov AFGWC’s fully automated Vela satellite proton event detection and warning system, “Velawatch,” operational.

Dec Security restrictions on DMSP tactical applications were removed.⁸

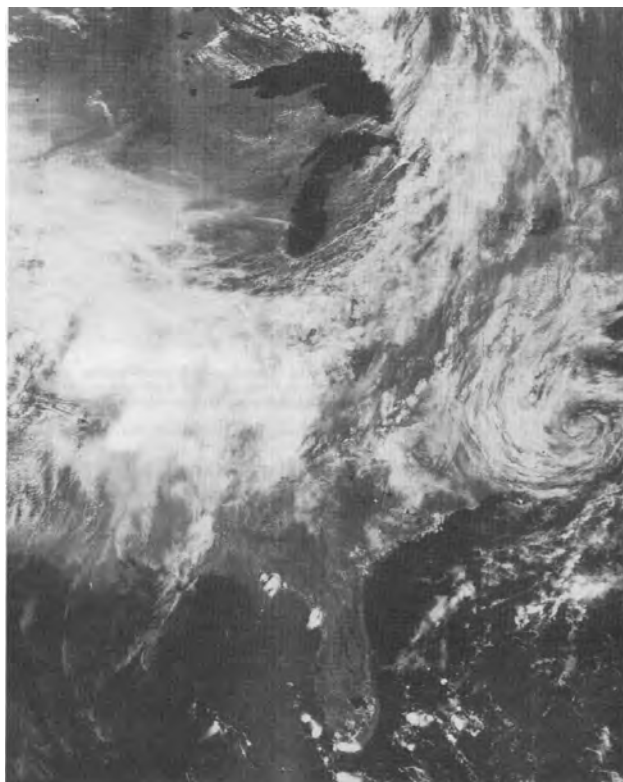


Figure 5-11: There were heavy thunderstorms over south-central U.S., and a low-pressure area lay off the Virginia coast as this DMSP photograph was taken about noon on 8 June 1974. Three hours later a tornado struck Oklahoma City, OK.

⁸ *Ibid.*, p 16.

21 Dec Air Force approved swap of fourteen Aerospace Rescue and Recovery Service (ARRS) HC-130Hs modified to WC-130H configuration for AWS' sixteen WC-130Bs. First WC-130H added to AWS inventory 26 June 1973.

1973

Jan Air Force System Command's (AFSC) Electronic Systems Division (ESD) published *Mission Analysis on Air Force Weather Mission – 1985*. Known informally as *Weather – 85*, the seven volume study documented the results of a 17-man-year effort that began in July 1971 when AFSC directed ESD to conduct a mission analysis on the Air Force weather mission. The objectives were to evaluate the impact of weather and weather service on Army and Air Force operations; to determine the utility of, and to define, the required environmental support; to identify alternate concepts for improved environmental support; to assess weather modification's potential, to plan the evolution of the environmental support system as an AWS roadmap to 1985; and to look at the vulnerability and survivability of AWS' centralized facilities, in particular, AFGWC.

BGen Best, AWS/CC, stated in his end-of-tour report, "Weather 85 is the single most important and relevant examination and report of military weather support requirements...ever conducted on behalf of the U.S. Air Force." The results "[planted] the seed of advocacy" for the development of future weather systems that became operational during the 1980s and 1990s.

3 Jan Direct drive facsimile from AFGWC to Pacific and European theaters fully operational.

27 Jan U.S. and North Vietnam agreed to cease-fire in Vietnam and Secretary of Defense announced immediate halt and indefinite suspension of drafting through Selective Service System. All U.S. combat forces withdrawn from Republic of Vietnam by 30 March 1973.

22 Feb MAC commander directed transfer of Inspector General, Personnel, Administration, and Headquarters Squadron section staff functions from HQ AWS to HQ MAC by 1 July 1973, thereby reducing HQ AWS to "operational" headquarters. HQ AWS left with Operations, Systems, Logistics, Aerospace Sciences, Safety, and Executive staff functions.

3 Mar Last AWS unit in Republic of Vietnam (Det 1, 10WS at Tan Son Nhut AB) inactivated.

11 Jun Defense Department announced that it had reached a tri-service agreement for joint use of Air Force's Defense System Applications Program (DSAP) weather satellites. AFGWC commander retained loading responsibility for system.

12 Sep AWS announced Sergeant Vicki Ann Esposito's assignment as dropsonde operator. Reporting to WC-130 equipped 53WRS in December 1973; Sergeant Esposito was the first bonafide female weather reconnaissance crewmember in AWS history.



Figure 5-12: Sgt Vicki Ann Esposito, first female weather reconnaissance crewmember.

17 Sep Acting on MAC commander's recommendation, Air Force ordered the storage of AWS' remaining thirteen WB-57Fs at Davis-Monthan AFB, Arizona. On 7 December 1973, the Air Force directed transfer of WB-57Fs' high-altitude aerial sampling mission to SAC. Completed by 30 June 1974, the transfer eliminated one squadron (58WRS) and 221 manpower spaces, approximately three percent of AWS total authorization.

Oct Ground-based, liquid propane system at Elmendorf AFB, Alaska, for dissipating cold fog declared operational by AWS.

13 Nov Special warfare weather team (primarily members of 2WG/5WW's Det 75) efforts in Laos, suspended temporarily from 30 July to September 1973, ended permanently. From 1965 on, team members worked clandestinely in Laos, under dangerous conditions and on a nearly uninterrupted basis, to establish and maintain a weather observing and reporting net essential to combat air operations.



Figure 5-13: These special warfare—or commando—weathermen formed the nucleus of 2WGs Det 75 at Hurlburt Fld, FL, in 1964. Left to right are: A1C Wayne L. Golding, A1C Andrew V. Wilder, Capt Keith R. Grimes, A1C James P. Williams, MSgt Thomas M. Watson, and A1C Lloyd W. Mitchell, Jr. All but Williams and Golding eventually saw action in Laos and Cambodia.

1 Dec "Palace Weather" weather officer career management team operational at Air Force Military Personnel Center (AFMPC), Randolph AFB, Texas. One of 14 officer management teams at AFMPC, Palace Weather, in conjunction with HQ AWS and major air command personnel staffs, handled assignments of all weather officers below the rank of colonel. Concept expanded in 1976 to include enlisted weather personnel.

15 Dec AWS transferred SESS forecast function from Aerospace Environmental Support Unit of 3WW's 12WS to AFGWC.

1974

In 1974 AWS launched program to qualify all enlisted weather personnel as both observers and forecasters by early 1980s.

6 Feb Air Force ordered that, after 1 July 1974, AWS' WC-135Bs be used on atmospheric sampling missions only, thus ending the aircraft's weather reconnaissance mission.

15 Mar The Air Force ordered phase-out of AWS' aerial photo mapping mission and resources by 1 January 1975. Last operational aerial photo mapping sortie was flown 15 January 1975, and AWS' fifth and last RC-130A associated with the mission relinquished on 20 February 1975.

28 Mar The Air Force approved AWS/MAC data automation request for computer at USAFETAC to replace IBM 7044. Installation of IBM 360/44 at USAFETAC completed 25 Aug 1975.

23 Jul The Air Force announced NASA's and NOAA's agreement to use Air Force-developed, Model 5D DMSP weather satellites as "basic bus" for their TIROS-N weather satellite series. NASA subsequently teamed with the Air Force to buy 12 RCA (Radio Corporation America) Model 5D satellites, three for Air Force and nine for NASA-NOAA TIROS-N satellites.

30 Jul Defense Department suggested to the Commerce Department that it form a joint study group with Office of Management and Budget (OMB) to establish national policy on aerial hurricane reconnaissance. On 23 August, Commerce agreed and the first study group meeting was held 30 September 1974. Based on the group's findings, OMB advised Defense on 28 October 1975 to continue its aerial reconnaissance support of National Hurricane Operations Plan, but that, commencing fiscal 1977, Commerce should reimburse it for "all directly attributable costs."

26 Aug MAC sought Air Force's permission to transfer weather reconnaissance and residual aerial sampling missions and resources to ARRS. The Air Force granted approval on 18 June 1975, and the transfer was made 1 September 1975, ending over 33 continuous years of organized weather reconnaissance in AWS. The transfer reduced AWS by a wing, three squadrons, 27 aircraft (the last remaining in AWS), and 845 manpower spaces, approximately 11 percent of its total authorizations.

24 Oct AWS distributed white paper on its "capabilities and limitations."

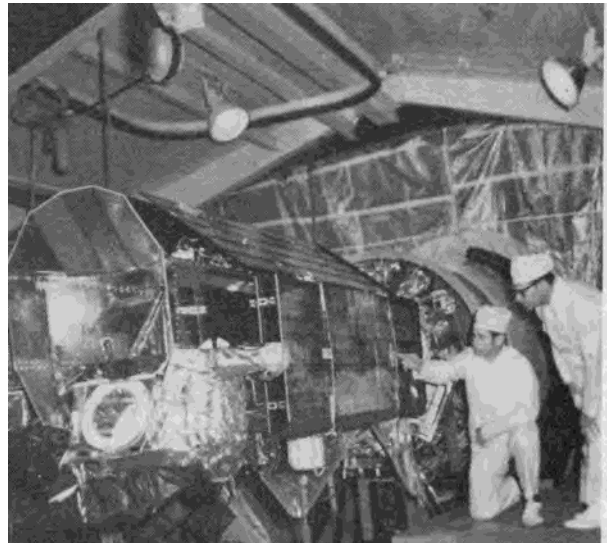


Figure 5-14: First Model 5D DMSP weather satellite undergoing final testing at Vandenberg AFB, CA, prior to launch.



Figure 5-15: First Model 5D DMSP weather satellite atop Thor at Vandenberg AFB, CA, shortly before launch on 11 Sep 1976.

1975

18 Feb Last AN/APQ-13 radar in AWS inventory deactivated at Fort Sill, OK. [See Sep 1943 entry for first use.]

Apr-May With evacuation of Americans from Laos in late May, over 13 years of involvement by U.S. military forces in combat in SEA concluded.

Last weather squadron in Southeast Asia (10WS at Nakhon Phanom AB, Thailand) inactivated 30 September 1975; last AWS unit (Det 30, 1WW at U-Tapao, RTNAS) inactivated 7 June 1976. Last permanently-assigned AWS individual in theater departed Thailand 21 May 1976.

Four AWS enlisted men killed in action and three other non-combat related casualties reported in Southeast Asia.

AWS ground units in theater (including detachments) earned outright or shared: seven Presidential Unit Citations; eight Republic of Vietnam Gallantry Crosses with Palms; 50 campaign streamers; 16 Air Force Outstanding Unit Awards; and 10 Air Force Outstanding Unit Awards with Combat "V" devices.

6 May

22 May MAC advised AWS that effective fourth quarter Fiscal Year 1975, it would be authorized only one general officer billet, that of the AWS commander. The AWS vice commander and 9WRW commander billets were converted to O-6 (colonel) slots.



Figure 5-16: Withdrawing from SEA theater of operations—loading a DMSP weather satellite readout van aboard a MAC C-5A at Nakhon Phanom AB, Thailand, in Sep 1975, for shipment out of theater.

1 Jul First of five AN/FMQ-7 solar optical telescopes planned for AWS operational at Palehua, Hawaii.

1 Jul AWS implemented centralized forecast verification program.

1 Jul Last Navy weather reconnaissance unit (Weather Reconnaissance Squadron Four, VW-4, at Jacksonville NAS, FL) decommissioned.

1 Aug AFGWC reassigned from 6WW to HQ AWS, with no change in station. USAFETAC assigned to AFGWC.

1 Aug 2WS assumed rocketsonde program management responsibility from HQ AWS.

21 Aug U.S. and Russia submitted joint draft accord for consideration by Geneva conference of U.N.'s Committee on Disarmament recommending environmental modification for hostile purposes be prohibited.

30 Aug USAFETAC moved from Washington, DC, to Scott AFB, Illinois.

1 Sep For the first time ever, no member of AWS command section (chief of staff, vice commander, or commander) held an aeronautical rating.

6 Dec The MAC Commander ordered AWS to identify 1,900 AWS manpower spaces for elimination (400 in “near term” prior to October 1976, and balance thereafter) to “help alleviate continuing budgetary pressures” in Air Force. Nine months later, MAC and Air Force agreed AWS would eliminate 311 spaces in “near term” (approximately five percent of its total).

1976

9 Feb The Air Force awarded \$4.901 million contract for procurement and installation of three AN/FRR-95 solar radio telescope systems for AWS.

18 Feb The Naval Weather Service Command redesignated, in effect, as Director Naval Oceanography and Meteorology, and its headquarters moved from Washington, DC, to Bay St. Louis, MS, 1 October.

29 Feb Acceptance testing completed on additional Univac 1110 computer at AFGWC to be used primarily for processing weather satellite data.

30 Mar The Air Force awarded \$287,300 contract for manufacture of 34 AN/GMH-7 lightning warning (sferics) sets

6 May AWS/CC concurred with 2nd Weather Wing’s recommendation to terminate cold fog dissipation efforts at Hahn AB, Germany. By the end of the summer, the fog dissipation system at Hahn was dismantled.⁹ From 1970 through 1975 three ground-based cold fog dispersal systems (CFDS) were used operationally at Fairchild AFB, WA, Elmendorf AFB, AK (Project Cold Wand), and Hahn (Project Cold Flake). These ground-based CFDS used liquid propane dispensers to cool the air around the dispensers, causing the fog water particles to precipitate out as ice crystals. All three sites showed some success in clearing cold (-5 degrees to 0 degrees C) fog, permitting aircraft



Figure 5-17: Manually activated CFDS at Hahn AB, Germany.

⁹ Hist., Fuller, John, AWS/HO, *AWS History, 1975-1976*, Vol I, pp. 117-118 [Information was extracted from AFWA/HO file copy]

movements that would have been canceled, delayed, or diverted. However, by late summer 1973, hopes for centrally procuring the CFDS were dashed when cost estimates jumped from \$350,000 to approximately \$600,000 per CFDS. In light of this large increase in estimated cost for the CFDS and a weakening of support for the CFDS in USAFE, mainly because Category II Instrument Landing Systems were scheduled for installation at many USAFE bases, reducing the risk of aircraft diversions because of cold fog, the program was not funded for future procurement.¹⁰

1 Jul First segment of CONUS Meteorological Data System (COMEDS) operational. Operating at 1,200 words per minute, COMEDS replaced COMET weather communications service. Full operational capability achieved 14 Jan 1977.

27 Aug The Army notified Air Force it would assign liaison offer to HQ AWS, a first. Lt Col Charles J. Swayne's first day on job as TRADOC liaison officer to AWS was 5 July 1977.

1 Sep AFGWC began issuing MSIs (Mission Success Indicators--probability that mission would have favorable weather) for aerial refueling operations.

In AWS commander's opinion, use of MSIs "marked a significant turning point in the history of Air Weather Service" because it "signified the entry of centralized expertise and production capability into the area of tactical decision assistance with products delivered in an operationally tailored format."

8 Sep Operation of AFCS' weather facsimile switching center at AFGWC commenced.

11 Nov Memorandum of agreement issued on joint service management and operation of DMSP weather satellite program.



Figure 5-18: AWS Commander, Brig Gen Rowe (left) cutting ribbon at Carswell AFB AWN "hub" (Det 7, AFGWC), 14 Jan 1977, dedicating COMEDS.

¹⁰ Study, Demmert, Paul, Maj, USAF Ret., *Summary of Cold Fog Systems, ud.* [Document appears as an attachment to e-mail, Paul Demmert, *Chronology 1967-1976*, 18 May 2012]

CHAPTER 6—CHRONOLOGY 1977-1986

1977

1 Feb MAC became a specified command, with no change in AWS status.

1 Mar Last warrant officer in AWS, CWO Billy G. Hance (Det 7, 24WS, 5WW, Mather AFB, CA) retired.

1 Apr The Air Force ordered transfer of AWS' weather equipment maintenance mission and most associated manpower to AFCS. Officially opposed to the transfer initially, AWS changed its position in late 1975 and 1976. Mission transfer, which became effective 1 October 1977, reduced AWS by 785 manpower authorizations (approximately 15 percent of its total). Net savings to Air Force in AWS maintenance manpower was 94 spaces.

16 May Situation climatic brief for islands of Trinidad and Tabago was first Automatic Digital Network (AUTODIN) message to leave USAFETAC addressed to a World Wide Military Command and Control System (WWMCCS) computer, and marked USAFETAC's first step into real-time, command-and-control support under automated WWMCCS concept.

18 May Together with thirty-two other nations, U.S. and Russia signed convention on prohibition of military or other hostile use of environmental modification techniques. "Each State party to this convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long lasting or severe effects as the means of destruction, damage, or injury to any other State Party," the convention read. "Widespread" was defined as 'encompassing an area on the scale of several hundred square kilometers;' "long lasting" as "lasting for a period of months, or approximately a season;" and "severe" as "involving serious or significant disruption or harm to human life, natural and economic resources or other assets." AWS believed convention did not affect its current capabilities in weather modification, nor Air Force Geophysics Laboratory's (AFGL) research and development therein.

15 Jun Full-duplex (send and receive), 1200-word-per-minute data circuit between AFGWC and USAFETAC operational.

28 Jun Geostationary Operational Environmental Satellite (GOES) data utilization station at AFGWC became operational, thus permitting AFGWC direct access to either of two GOES satellites.



Figure 6-1: A weather equipment repairman aligns a T-755 Wind Sensor, a sub-system of the A/N-GMQ-20 Wind Set.

14 Jul NASA launched first Japanese Geostationary Meteorological Satellite (GMS) from Cape Canaveral for use in Global Atmospheric Research Program.

15 Aug Last AN/TPQ-11 vertical weather radar in AWS inventory (with Det 1, 3WW, at Offutt AFB) declared out of commission for final time, and subsequently turned in. This device was an excellent tool for the weather person providing vertical cross sections of clouds as they crossed the vertical radar beam. However, the system was prone to frequent outages caused by “blown” magnetron tubes. Expensive to replace, AWS could no longer afford the high support costs thus leading to the system’s demise.¹

8 Sep In response to AWS’ 8 June 1977 request, Air Staff directed MAC (Aerospace Rescue and Recovery Service (ARRS)-AWS) to retain rainmaking capability inherent in photoflash ejector racks for ARRS WC-130s.

22 Nov NASA launched European Space Agency’s Meteosat weather satellite from Cape Canaveral, western Europe’s first such satellite.

23 Nov Based on discussions and correspondence with AFTAC and AWS, Space and Missile Systems Organization (SAMSO) found no operational requirements for data from DMSP satellites F-32 and F-33 and directed SAC to terminate all Block 5C operations as soon as possible and dispose of all Block 5C peculiar hardware. Consequently SAMSO announced on 14 December that “operation of [DMSP satellites] FTV 9532 and 10633 was terminated effective 1 December 1977.” This ended an era of Blocks 5A, B, and C spanning almost eight years.

1978

3 Jan -15 Feb Elements of 5th Weather Wing along with other AFW forces participated in a U.S. Readiness Command Exercise EMPIRE GLACIER '78. Two separate Joint Task Forces were pitted against each other at Fort Drum, NY, where annual snowfall was in the hundreds of inches and temperatures frequently were well below 0 degree Fahrenheit. Active duty AF, Army, and Marine along with Reserve and Guard participants received an indoctrination and training in cold weather operations to help them meet the endurances required of themselves and their equipment.²



Figure 6-2: Maj Stan Tkach briefing Col Joe O’Neil while A1C Ron Pagitt answers telephone inquiry during Exercise EMPIRE GLACIER '78 at Fort Drum, NY.

¹ Personal reflections of Coleman, George N. III, CMSgt, USAF, Ret, who used the system while assigned to Griffiss AFB, NY, 1970-1972

² Art., *Maine Guard Units to Join EMPIRE GLACIER '78*, Lewiston Evening Journal, Lewiston-Auburn, ME, 16 Jan 1978. [Photograph of 5WW/CC, Col Joe O’Neal led to the 5WW reference.]

1 Feb First combined DoD weather forecaster training course commenced at Chanute AFB, IL, as approved by the DoD Interservice Curricular Review Board in January 1977. The 18-week TDY course was attended by USAF, Navy and USMC personnel.

1 Feb First Radio Solar Telescope Network (RSTN) site at Palehua, HI, declared operational, six months behind schedule. AWS accepted the AN/FRR-95 Radio Telescope at the site on 2 Feb 1978, but AFLC's Sacramento Air Logistics Center (ALC) advised AWS on 15 February it would not sign turnover agreement until support equipment problems were resolved. On 2 March 1978 Sacramento ALC signed agreement, reflecting initial operational capability for the Palehua AN/FRR-95.

1 Feb European Facsimile (Eurfax) II supplanted Eurfax I as primary weather facsimile circuit for Europe and Mediterranean. Muirhead recorders replaced by Datalog DL-19W recorders, except for nine Alden recorders installed in Ramstein AB area. Eurfax II permitted receipt of weather charts at double the speed of Eurfax I, thus providing more circuit time.



Figure 6-3: SSgt Mike Springer (Det 7, 2WS, Holloman AFB, NM) using a control unit of the AN/FMQ-7 Solar Optical Telescope. When combined with an AN/FRR-95 an observatory became part of the Solar Electro-optical Observing Network (SEON)

12 Apr Air Force announced major realignments within office of Secretary of the Air Force, Air Staff, and functions of certain subordinate commands and agencies. Most actions were to be initiated in FY 1978 and completed by the end of FY 1979. The most significant change affecting AWS was abolishment of the office of Assistant for Weather (AF/PRW), DCS Programs and Resources (AF/PR), HQ USAF. AF/PRW's former responsibility for coordinating weather matters on the Air Staff transferred to AF/XOOTF. It was authorized two manpower spaces (a lieutenant colonel and a major)³, performing essentially the same tasks handled by four people previously authorized for AF/PRW.

23 May AWS point paper this date indicated FY 1978 Air Force budget for meteorological services was \$249,007,000--\$112,730,000 for AWS, \$16,974,000 for weather reconnaissance, \$17,090,000 for weather communications, \$71,783,000 for DMSP, and \$30,430,000 for R&D.

1 Jul Colonel Paul W. Kadlec, IMA to AWS Commander, promoted to rank of brigadier general in Air Force Reserve.

³ E-Mail. Pfeffer, Gene, Col, USAF Ret., *Re: Review of Heritage Document*, 14 Apr 2011. [Manpower spaces changed from "a single" [as stated in the 1937-1987 document] to "two" based on the personal reflection of Col Gene Pfeffer, USAF, Ret, who was assigned to the major position in 1979. Office didn't become XOORF until 1 Jun 1980]

28 Jul Air Force approved PLN-11 Hardware Alternatives Data Automation Requirement (DAR) for “sole source” acquisition of two Univac 1100/81 computers to replace three Univac 1108s (Systems I, II, and IV) at AFGWC.

10 Aug In reply to Air Staff’s insistence that the requirement for a warm fog dispersal system be re-examined, MAC withdrew its support of the system because of USAFE’s repeated objection: to using Ramstein AB for a prototype site; a microwave landing system that was being developed that may meet “mission requirements;” and spiraling costs. The Air Staff officially cancelled joint Required Operational Capability (ROC) document ROC 508-74 for a warm fog dispersal system on 11 September.

Sep AFGWC published its Master Plan: 1978-1988--AFGWC’s first attempt at documenting known requirements through the 1980s.

17 Sep President Carter signed Public Law 95-367, National Climate Program Act, mandating the executive branch develop, within a year, a five-year plan integrating on-going and proposed climate efforts of all federal weather agencies. Plan was to be revised every other year.

11 Oct In a major alteration to AWS’ centralization and automation doctrine, Col Albert J. Kaehn, Jr., AWS Commander, announced approval of AWS Council recommendation to change AWS’ policy on terminal aerodrome forecasts (TAFs). AWS would transfer from AFGWC back to base weather station forecaster--when on duty--responsibility for 0-to-24 hour TAFs, and AFGWC would continue producing 0-to-24 hour TAFs for limited duty stations, with base weather station forecaster--when on duty--having total meteorological watch (metwatch) and amendment responsibility. Implementation occurred in 1979.

13 Oct The prototype third-generation civil polar orbiting weather satellite, TIROS-N, launched from Vandenberg AFB. Following check out of sensors and systems, NASA turned the satellite over to NOAA for operational use on 6 November 1978.

24 Oct Representatives from National Guard Bureau (NGB), MAC, and AWS met to determine how to distribute manpower cuts the Air Staff, in July, had ordered for AFRES and ANG weather, and how the remaining ANG weather flights would be organized and aligned. It was decided that ANG weather flights would be aligned primarily to support Army reserve units. Consequently, on 13 February 1979, AWS tasked the NGB to change its mission of eighteen 100-series ANG weather flights from Air Force Reserve to Army Reserve support. AWS anticipated a similar realignment for 10 additional 100-series ANG weather flights, once approved and funded by Air Force. On 26 February 1978, NGB authorized realignment of 18 ANG weather flights to become effective 1 October 1979.

28 Dec HQ MAC published MAC 508-78, General Operational Requirement (GOR) for Pre-Strike Surveillance/Recon System (PRESSURS). The GOR stated,

“AWS has a critical deficiency in obtaining needed target weather data at points within uncontrolled and enemy-controlled battle areas and airspace.” It went on to identify the operational need as, *“Weather is a major factor in determining the success or failure of tactical air missions. Timely weather information is vital to the battle director in making*

effective tactical decisions. The needed data are clouds (cover, base, and top), contrast transmission (visible wavelength), path transmission (infrared and millimeter wavelengths), wind, temperature, pressure, and humidity.”⁴

This document would serve as the validated requirement for future data collection, forecast models development, and target scene characterization for several decades.

1979

2 Jan Western Fire Equipment Company, Brisbane, California, delivered prototype belt weather kit to AWS for evaluation. Balance of order for 250 kits delivered 27 April 1979.

7 Jan Operations suspended at solar observatory in Tehran (Det 7, 2WW) due to strife and volatile political atmosphere in Iran’s capital.

10 Jan MAC approved reorganization of HQ AWS on a so-called “functional” basis. Effective date was 15 January 1979.

15 Jan During meeting at HQ AWS, SAMSO’s DMSP director verbally approved idea of modifying all AWS’ Mark IIA and Mark III DMSP readout vans to be able to acquire and process data from Japan’s GMS geostationary weather satellites, and from NOAA’s third-generation polar orbiting weather satellites in the TIROS-N series.

16 Jan In support of REFORGER 79, two WC-130s from ARRS’ 53rd WRS conducted a successful cold fog dispersal operation dropping crushed dry ice at Rhein Main AB. It represented the first operational use of WC-130s for that purpose in Europe since the 1972-73 cold fog season.

26 Jan In a major policy statement, the Army informed the Air Staff that “direct weather service support by... [AWS] must be provided to separate brigades, armored cavalry regiments, air cavalry combat brigades and Special Forces groups” when asked for, and that “this position applied to active Army, Army Reserve and Army National Guard units, and assumes that direct weather service support will be continued at division, corps and echelons above corps as currently provided.”

13 Feb SAMSO requested proposals (bids) for design concepts of DMSP Block 6 satellites. By mid-year SAMSO had awarded \$200,000, four-month design contracts to five



Figure 6-4: Airmen using AN/TMQ-22 in support of the Army.

⁴ Ltr., Glenn, Capt, USAF, MAC 508-78, GOR for PRESSURS), HQ MAC/XP, 28 Dec 1978

aerospace companies: Rockwell International, Lockheed Missiles and Space Co., Hughes Aircraft Co., RCA (Astro Electronics Div), and General Electric. DMSP Block 6 satellites, launched from the Space Shuttle, were to commence operation in 1984 and carry the DMSP program into the 1990s. Following concept design, two firms were to be selected for preliminary design and engineering development, after which one would be awarded the contract during 1982 for a full-scale engineering development and production of DMSP Block 6 satellites.

14 Feb Iranian dissidents overran the American Embassy in Tehran. One American captured was Captain George R. Davenport, Commander of AWS' solar observatory at Tehran, Det 7, 2WW. Subsequently returned to embassy, Davenport was evacuated from Iran together with other Americans on 18 February 1979. As the last AWS individual in Iran, Davenport drew special hostile fire pay the DoD authorized for military personnel stationed in Iran from 8 December 1978 to 23 February 1979. [This event preceded the 4 Nov Iranian Hostage crisis (see 11 Oct entry).]

26 Feb AWS forwarded MAC justification for reinstating 10 ANG weather flights for Army Reserve support and for recovering 207 of 224 ANG manpower authorizations Air Staff planned to eliminate. In a 1 March letter, MAC validated the need and passed it to Air Staff who subsequently approved the proposal.

16 Mar SAMSO awarded \$21 million contract to Harris Corp for Satellite Data Handling System (SDHS) to be operational at AFGWC by late 1982. Contract included option for 29 Interactive Product and Display System (IPADS) III consoles at AFGWC and constituted half the contract's cost.

23 Mar AWS Council reviewed AWS' Army weather support policy. By adopting position of "give the Army equal service as the Air Force," the Council recommended overturning Brig. Gen. Rowe's December 1977 proposal to draw back all direct AWS support to corps level. On 17 April 1979, Colonel Kaehn approved Council recommendation that, through 1986, AWS would furnish direct observing, forecasting, and staff weather officer support to each tactical Army echelon down through divisions, separate brigades, and armored cavalry regiments. Revised AWS position conveyed to field units on 2 May 1979.

31 Mar In response to request from NOAA and Nuclear Regulatory Commission, JCS asked the Air Force to deploy mobile Rawinsonde unit to Middletown, PA, in support of Three Mile Island Nuclear Power Plant incident. Support by 7WW's 6WS(M), to include six Rawinsonde and six Pibal observations per day, commenced on 1 April and continued to 18 April 1979.

4 Apr Acceptance testing completed on second Univac 1100/10 computer system (designated as "Air Force" system) at joint Air Force-NOAA (OL A of USAFETAC and NOAA's



Figure 6-5: 6WS(M)'s Sgt Joseph Rello, with Three Mile Island plant in background. Due to continuous attention by nation's news media, plant's distinctive cooling towers behind Rello became symbolic of nuclear power's potential hazards.

National Climatic Center) computer facility, Asheville, NC. Formal dedication of joint Air Force-NOAA Univac 1100 computer system conducted 25 April 1979. Production on Spectra 70/45 system discontinued on 31 December 1979.

3 May Joint Chiefs of Staff (JCS) distributed to service chiefs and other interested agencies a WWMCCS environmental services interface implementation plan it approved for supplying environmental information and support during crises, and limited environmental support for day-to-day operations.

4 May AWS officially accepted AFGL's proposal to assume responsibility for operating AFGL's polarimeter network of nine sites (Athens, Goose Bay, Osan, Palehua, Patrick, Ramey, Sagamore Hill, Shemya, and Taiwan). Action to transfer the equipment was initiated 9 May 1979. Except for Goose Bay, Patrick, and Taiwan, which were handled through contracts, all sites were operated by AWS personnel.

8 May The Air Force Computer Acquisition Center awarded a \$760,000 contract to Sperry Rand Corporation for Univac 1106 computer peripherals on the new consolidated Pacific ADWS at Hickam AFB. Installation commenced 27 July. Univac turned over first system to Air Force on 7 September but numerous problems were encountered with the second ("B") system. Thus, consolidation at Hickam ADWS of functions previously handled by Fuchu and Clark ADWSs was not completed by 1 October 1979 as planned. Not until 17 January 1980 was Pacific ADWS activated at Hickam, climaxing an eight-year effort.

16 May Defense Commercial Communications Office (DECCO) requested bids from industry for Air Force digital graphics system (AFDIGS). DECCO awarded a contract on 31 December 1979 to American Telephone and Telegraph Co., which specified 1 October 1980 operational date.

21 May After substantial intervening deliberations, MAC decided to acquire an IBM 4341 computer, vice a government-owned IBM 370-155, to replace USAFETAC's IBM 360/44 computer. MAC approved USAFETAC computer upgrade DAR on 29 May and ordered IBM 4341 on 22 June 1979. Due to a backlog of orders, the computer was not delivered to USAFETAC until 18 January 1980. It was accepted from IBM on 28 February 1980.

4 Jun National Guard Bureau directed realignment of 10 additional 100-series ANG weather flights presently supporting Air Force elements to support Army reserve elements--to become effective 1 October 1979.

8 Jun AWS Council convened this date and again on 11 June 1979 to address issues related to



Figure 6-6: Capt Larry Johnson, Chief Computer Graphics Section, AFGWC, founding member of National Weather Association

AFGWC's use and development of models and Model Output Statistics (MOS) products. On 1 August 1979 Brigadier General Kaehn approved the following Council recommendations as AWS policy: AWS (AFGWC) would continue using numerical weather prediction models, subject to HQ AWS approval of basic model; AWS (AFGWC) would not perform basic numerical weather prediction model development, but instead would adopt operational models developed by others; AWS would continue to rely on MOS products of National Weather Service's Techniques Development Laboratory (TDL) for support of AWS units stateside and in Alaska; AFGWC would develop and implement MOS capability to meet requirements of AWS unit overseas; AFGWC would save stateside and Alaska data fields from its models so that a capability could be developed if TDL's support faltered; and AWS would continue to maintain a liaison cell at TDL to handle AWS' requirements, and insure that TDL's MOS products continued to be responsible to military's needs.

2 Jul Assistant Secretary of Air Force for Financial Management directed the Air Force Vice Chief of Staff to revalidate System Development Corp's (SDC) 1976 computer "architecture" study of AFGWC. Separate contracts subsequently awarded Aerospace Corp. and SDC. Final reports, available 11 December 1979, reached diverse conclusions: SDC basically revalidated its 1976 study, recommending AFGWC continue with Univac line and hang array processors on them to obtain additional computer power; Aerospace also recommended continuing with Univac line, but to acquire "super-computers" competitively for additional computer power needed later.

19 Jul Air Force signed \$4.5 million contract (combination rental/purchase price) with Sperry Rand Corp for installation of two Univac 1100/81 computers at AFGWC. The computers were delivered by the end of the month. The changeover was completed on 8 November and Univac 1100/81s officially declared operational effective 1 December 1979.

13 Aug Installation and testing commenced at Travis and Mather AFBs of upgrade kits in AN/GMQ-10 transmissometers for conversion to solid-state technology with AN/GMQ-32 nomenclature. Testing was successfully completed in October 1979 after which all AN/GMQ-10s were to be converted to AN/GMQ-32s in 1980.

19 Sep German Military Geophysical Office (GMGO) approved the 2WW/AWS concept for establishing an AWS unit at Traben-Trarbach, GMGO's fortified combat weather center complex. Heavily dependent on communications, the concept would, AWS believed, unify planning forecasts for NATO's Central Region and significantly improve weather support to USAREUR forces. AWS subsequently forwarded the concept to the Air Staff for approval. [First AWS officers assigned were Lt Col James Plummer and Major John Rubenacker.]⁵

1 Oct AFSC's SAMSO was inactivated and two new organizations, the Ballistic Missile Office, Norton AFB, and the Space Division, Los Angeles AFS, assumed its functions. The latter organization also assumed responsibility for DMSP.

3 Oct OFCM's crosscut reviews for OMB on nation's need for advanced weather radar and automated observing system published. The reviews concluded that the radar requirement was valid and recommended NEXRAD concept approval, provided PDP (Program Development Plan) was

⁵ E-mail, Demmert, Paul, Maj, USAF Ret., *RE: Review of Document*, 29 Jun 2011. [First assigned personnel added based on personal reflection of Maj Demmert]

formulated in time for FY 1982 budget cycle. The PDP addressed a mix of Doppler and non-Doppler sites, and the communications necessary to disseminate NEXRAD data nationwide. The PDP stipulated procurement of demonstration models be made in connection with FY 1982 budget review. A sister review concluded that automated systems based on current technology would not meet DoD's and DOC's needs for information on "present" weather, and recommended acceleration of sensor development to meet those needs so that fully-automated systems could be deployed at sites where staff reductions were possible. Report also recommended procurement of new sensors and processors by all agencies be held in abeyance until coordination mechanism was established to mesh agency requirements and assure benefits of joint procurement of common equipment. Recommendations subsequently briefed to President's science advisor and then to OMB, who essentially approved them in its FY 1981 budget decision.

11 Oct Commander, Army Mission (CARMISH) at the American Embassy in Tehran wired AWS for a description of the equipment that Det 7, 2WW had abandoned at the AWS observatory in January following the Shah's overthrow. A representative from Tehran University had expressed interest in reopening the observatory and the American Embassy was anxious to pursue the matter. However, before preliminary talks had progressed very far, the embassy was overrun by militant university students on 4 November 1979. They took 53 American hostages, demanding the U.S. return the Shah to Iran to face trial for crimes he had allegedly committed against Iranians.

12 Oct Lowest pressure ever observed, 870 millibars, recorded in eye of Typhoon Tip by dropsonde operator Sergeant Roger Ritchie, flying with Det 4, HQ AWS, and the WC-130-equipped Typhoon Chasers. The new low pressure equated to a 700-mb height of 1,944 meters. Data was verified and transmitted to the Joint Typhoon Warning Center by Aerial Reconnaissance Weather Officer, Captain Carol Belt, also assigned to Det 4. JTWC surface analyses revealed that the circulation pattern associated with Typhoon Tip as it intensified had a diameter of 1200 nm, which broke the previous record of 720 nm set by Typhoon Marge in August 1951. Captain Belt stated, shortly after she returned from the mission, that "... the second penetration was beyond description. This is unquestionably the most awe-inspiring storm I have ever observed. In the 2½ hours that transpired between the first and second fixes, the Moon had risen sufficiently to shine into the eye through an 8 nm clear area at the top of the eyewall. To say it was spectacular is totally inadequate... "awesome" is a little closer." Typhoon Tip crossed Southern Japan as an extratropical system, causing much damage and loss of life. Flooding from Tip's rains breached a fuel retaining wall at Camp Fuji west-northwest of Yokosuka, Japan. The fuel caught fire causing 68 casualties, including 11 deaths, among the U.S. Marines stationed there.⁶

16 Oct The Government Accounting Office (GAO) published and forwarded to Congress a Report to the Congress of the United States; the Federal Weather Program Must Have Stronger Central Direction. The report was extremely critical of OFCM, averring that federal weather programs were costly and in urgent need of stronger central direction because OFCM had become ineffective as coordination mechanism, and was unable to handle problems leading to unwarranted duplication. "GAO believes that a 'national' weather service may be the most effective organization for providing central direction," the report read. The Air Force declined formal comment and on 5

⁶ Art., Dunnavan, George M., LtJg, USN, JTWC, *Super Typhoon Tip (23)*, 1979 Annual Typhoon Report, JTWC, p. 77. [Note: The 1937-1987 was modified based on a recommendation by Bernard C. Barris, Lt Col, USAF, Ret., Historian of the Air Weather Reconnaissance Association]

November 1979 the DoD stated there was a continuing need for weather support to successfully discharge its many and varied missions and promised continued cooperation with other federal agencies to ensure the most economical weather support.

22 Oct AWS asked MAC to either fund or abandon a study on the survival, recovery, and reconstitution of AFGWC. On 31 December 1979 MAC recommended it be abandoned due to its “extremely high costs” for backup computers and because of relatively low risk to AFGWC in all but nuclear war. On 13 February 1980 AWS conveyed to MAC its decision to cease all attempts to acquire a backup computer capability for AFGWC.

25 Oct The first meeting of OFCM’s ICMSR (Interdepartmental Committee for Meteorological Services and Supporting Research) occurred this date. To tighten and revitalize interdepartmental coordination on meteorological affairs as recommended by the GAO, OFCM formed ICMSR by merging two former committees: ICMS (Interdepartmental Committee for Meteorological Services) and ICAMR (Interdepartmental Committee for Applied Meteorological Research). William S. Barney, a former AWS Vice Commander, chaired the meeting.

16 Nov President Carter approved a directive (Presidential Directive/National Security Council-54, “Civil Operational Remote Sensing”) permitting Commerce and Defense Departments to continue operating separate meteorological satellite programs, although an appropriate coordination mechanism was to be established to insure more effective cooperation and prevent duplication.

16 Nov AFGWC/WF, received the first support assistance request from Det 2, Hq AWS for the Iranian hostage rescue [Operation EAGLE CLAW]. The secretive nature of the operation led to the formation of a special cell to handle various aspects of the production and delivery processes of required weather products. Initial cell coordinator was Maj Frank Wells. The contingency nature of this cell led to the permanent existence of AFGWC/WFG, Contingency Support Cell.⁷

28 Nov Senate ratified Executive K, “Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques,” which had been approved by the United Nations General Assembly in December 1976 and signed by the U.S., Russia, and 32 other nations in May 1977.

1 Dec AFGWC commenced limited operational WWMCCS support to MAC, ADCOM, TAC, and USEUCOM.

14 Dec “Zebra Class” (officially, Class 790807) graduated from Chanute’s forecasting school. The class was composed of senior NCOs, all former 252XXs (chief observers). This event culminated a 6-year effort to merge the enlisted weather career field into one “ladder” where one could progress from recruit to chief.

⁷ Memo, Wells, Frank H., Maj USAF, *History of Special Support to Det 2, Hq AWS*, AFGWC History 1 Jan – 30 Jun 1980, Tab 2-54.



Figure 6-7: “The Floor” at AFWGC. Maps on the wall, blue smocks, acetate overlays, and grease pencils. (Late ‘70s-early ‘80s.

1980

29 Feb BGen. Kaehn asked NGB to establish an ANG position at HQ AWS for purpose of advising the AWS commander and his staff on matters relating to provision of weather support to reserve forces. The NGB approved the request in June, and on 9 December 1980 Lt Col Ronald L. Godbey reported for duty at HQ AWS for a full-time, four-year tour. Godbey was the former 181 WF commander.

Mar AWS published the first fourteen of twenty-one 100-series *Forecaster Memos* distributed in 1980. The publications concentrated on the climates and weather of Africa, the Middle East, and Southwest Asia and reflected a renewed national and DoD interest in those areas.

1 Apr Federal Meteorological Handbook (FMH) 1B implemented--combined and standardized USAF and Navy observing procedures for the first time.

24 Apr Iranian hostage rescue attempt [Operation EAGLE CLAW⁸] ended unsuccessfully with disaster at Desert One. A 2 May AWS white paper (based on post-mission analysis) concluded that except for restricted visibility from unforecast suspended dust, all AWS forecasts (including those for the hideout location, C-130 routes in and out, and Teheran itself), had verified. At JCS direction, a panel of three independent experts was later formed. Their 21 May report corroborated the AWS white paper. AWS support was found to have been professionally planned and executed; forecasts were as accurate as the available data and state-of-the art allowed.

⁸ Web, *Operation EAGLE CLAW*, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/Operation_Eagle_Claw, 25 May 2012. [The go-ahead for the operation was ordered by President Carter on 24 April 1980. The operation was an attempt to put an end to the Iranian hostage crisis by rescuing 52 Americans held captive at the U.S. Embassy in Tehran.]

18 May Mount St Helens [State of Washington] volcano erupted. AFGWC was deluged with queries on ash cloud movement, fallout, particle sizes, chemical consistency of debris, cleanup procedures, etc. AFGWC/CC activated the Contingency Response Capability (CRC) team to produce ash cloud position forecasts.

21 May Palehua became a fully-automated Solar Electro-Optical Network (SEON) observatory (Det 6, 1WW) with activation of the automated AN/FRR-95 RSTN system.

24 Jun Viz Manufacturing Co. presented AWS with plaque “in recognition of the friendly cooperation and support” that helped make it possible for the company to build four mission radiosondes. AWS used about 5,000 of the instruments in a year.

Jul For the first time, AWS picked an AWS Senior NCO, NCO, and Airman of the Year. First winners: Master Sergeant Leonard C. Hume, Jr. (Det 4, HQ AWS, Andersen AFB, Guam); Technical Sergeant Donny Weaver (Det 3, 5WS, Fort Bragg, NC); and Sergeant Harald Naestvold (USAFETAC, Scott AFB, IL).

17 Jul Space Division accepted DMSP Mark IV transportable terminal prototype from Harris Corporation’s Government Systems Group at Melbourne, Florida.

28 Aug Based on an HQ AWS review, BGen Kaehn approved the recommendations to reassign 2WS from AFGWC to HQ AWS. On 19 September 1980 AWS sought MAC approval for the transfer and on 27 October 1980 received it. The transfer became effective 1 January 1981.

2 Sep OL-A, Det 50, 2WS, was activated at Johnson Space Center, Houston, Texas. Manned by a captain, the unit advised the Manned Space Flight Support Group on Space Transportation System (Space Shuttle) environmental issues and supplied the DoD manager for the Space Shuttle with staff meteorologist support during orbital flight tests.

4 Sep MAC urged Air Staff to get immediate decision from Government Services Administration (GSA) on whether to acquire Univac general-purpose computers to meet new AFGWC requirements or “waste over \$30 million for a competitive replacement that will add nothing to our capability and disrupt support to high priority operations.” On 15 September, Air Staff provided reassurance that its support for a Univac “central core” will continue. On 21 November GSA agreed that the Univac continuance “seems reasonable,” but suggested AFGWC develop a long-range software improvement plan. AFGWC’s plan was completed and accepted in 1981.



Figure 6-8: Meteorological Satellite Coordinator operating the AN/TMQ-35 MARK IV DMSP satellite readout van, 1981.

3 Oct AFDIGS became fully operational in “Lower 48” and Alaska. System provided transmitted weather charts in only 2-1/2 minutes. Pacific and European AFDIGS became operational on 15 December 1980.

16 Oct Brig General Kaehn received first non-rated officer aircrew member badge awarded in MAC from General Robert E. Huyser, CINCMAC. MAC succeeded in restoring the badge in 1978 after aerial weather reconnaissance officers were denied the right to wear standard aircrew member wings in 1959.



Figure 6-9: AFDIGS displayed at Hq AWS, Scott AFB, IL, being reviewed by Capt Merrilee A. Powell and Maj Eldon E. Schmidt.

29 Oct A JCS memorandum, this date, assigned the Air Force responsibility for furnishing weather support to Joint Deployment Agency and Rapid Deployment Joint Task Force (RDJTF). In 26 November 1980 letter, the Air Staff assigned the mission to AWS, adding that AWS resources already dedicated to USCINCREC (Readiness Command) support (1WS) were to be utilized “to the maximum extent possible” in fulfilling the mission.

25 Nov Computer flight plan (CFP) test showed AFGWC capable of producing more than 100 CFPs an hour under optimum conditions. AFGWC processed 233,753 computer flight plans during 1980.

1981

1 Feb AFGWC produced first AWS global solar optical coverage chart.

26 Feb OFCM forwarded to the Office of Management and Budget (OMB) a crosscut review of roles and missions of Nation’s three numerical meteorological processing centers: AFGWC, Fleet Numerical Oceanography Center, and National Meteorological Center.

6 Mar The Air Force sought an eight-year delegation of procurement authority from GSA to remain with Univac computer line at AFGWC. In return, it promised to initiate an aggressive computer software improvement program for AFGWC. In its 24 April 1981 reply, the GSA granted USAF sole source procurement authority for the Univac line for 18 months; authority to remain with Univac for the balance of eight years would be contingent upon GSA’s review of USAF’s software improvement plan for AFGWC.

30 Apr “Single Career Ladder” concept for AWS enlisted people fully implemented; AFSC 252X1 (weather observer) was eliminated.

1 Jun Air Staff reorganization of its Directorate of Operations and Readiness (AF/XOO) reassigned the Airspace and Traffic Services Division (which contained a weather program function) to Deputy Director for Operational Support. Office symbol changed from AF/XOOTF to AF/XOORF.

3 Jun Installation of 56-kilobaud circuit between AFGWC and USAFETAC completed. The system replaced the discontinued ARPA (Advanced Research Project Agency) drop at AFGWC.

7 Jul The Air Force Chief of Staff forwarded a strawman DMSP requirements document to the JCS, which subsequently relayed it to Navy and USMC for comment. As a result, on 5 October 1981, the JCS sent to the Air Force validated joint requirements for DMSP.

13 Jul Based on AWS' input, MAC proposed to the Air Staff a policy on AFGWC support to Navy. The policy, approved as written, was relayed by AWS to AFGWC on 4 September 1981. It stated that AFGWC could approve Navy requests for support which were nonrecurring, required no additional resources to fulfill, and did not impact support to other customers.

11 Aug AFGWC's 2400-baud AUTODIN circuit to Tinker AFB AUTODIN switching center replaced with 4800-baud circuit to Hancock Field AUTODIN switching center to give AFGWC added AUTODIN capability for new requirements.

24 Aug Circuit activated between AFGWC and NASA's Goddard Space Flight Center to provide AFGWC with data from Meteosat weather satellite.

1 Sep Air Force Directorate of Space (AF/XOS) established under DCS Plans and Ops (AF/XO). The Space Operations Division was to manage such space and missile programs as DMSP.

9 Sep New 9600-baud data circuit between National Weather Service and AFGWC operational.

18 Sep MAC returned public affairs function to AWS after consolidation move nine years ago. Staff Sergeant Ethel (Sue) Shearer reported as full-time Public Affairs specialist, AWS *Observer* editor.

21 Oct "Dialup" weather radar capability installed at AFGWC for its severe weather forecasting section.

27 Oct LtCol Frederick F. Haddad, Jr., Det 2, 7WS, Hanau AI, Germany, was first recipient of USAF's new Lance P. Sijan Leadership Award.

1982

6 Jan In response to MAC's December 1981 query, the Air Staff advised this date there were no operational contingency plans requiring USAF to maintain rainmaking equipment, i.e., removable flare ejector racks mounted on the fuselages of AARS' WC-130s. When racks in storage at Keesler AFB were subsequently turned over for disposition, it marked the end of a capability that began in 1967 when AWS WC-130s conducted rainmaking operations in Southeast Asia.

7 Jan A memorial plaque--containing the names of AWS Killed in Action (KIA) and Missing in Action (MIA) personnel from World War II, Korea, and Southeast Asia, as well as names of weather reconnaissance crews lost in line-of-duty accidents--was dedicated at HQ AWS. BGen Kaehn presided at the ceremony.



Figure 6-10: Dedication of plaque at HQ AWS bearing the names of weathermen KIA/MIA in World War II, Korea, Vietnam, and weather reconnaissance crews lost in line-of duty accidents. BGen Kaehn (left), CMSgt George Horn, and others of the project committee.

17 Mar The Air Staff approved a DAR for the upgrade of AFGWC's two Univac 1100/81 computers to Univac 1100/82s, and the implementation of the "optimized" MAC computer flight plan program. The upgraded computers were declared operational on 16 June 1982.

30 Mar The AWS informed AFGWC that the AWS short wave fade network, used since the mid-1960s, would be terminated. AFGWC was to continue producing alerts and advisories by using X-ray data from GOES satellites, models which related X-ray intensity to short wave fade and numerous HF (high frequency) communicators. AWS's short wave fade network was shut down on 1 January 1983.

30 Mar Six paratroopers of the 82d Airborne Division were killed during Exercise GALLANT EAGLE 82 at National Training Center near Fort Irwin, California. Five of the dead suffered hard landings or were dragged to their deaths by high winds⁹ on the western half of Silver drop zone. Also because of the high winds, more than 150 others suffered injuries, most at Silver and Gold drop zones.

31 Mar Daily transfer of Space Environmental Support System (SESS) data from AFGWC to USAFETAC terminated after six and one-half years. SESS data were replaced by AFGWC's

⁹ E-mail, Mongeon, Al, "Air Force Weather Updates," 23 Aug 2012. [Note: deleted the word "undetected." Al Mongeon was the project lead for the operation and reported, "The wind forecast provided to the 82d Airborne was briefed as 17kts (this was considered a marginal forecast based on limits at that time). The go/no-go decision was an 82d Airborne decision. As observed at the DZ [drop zone], the AFGWC (A-team) forecast was verified."

Astrogeophysical Data Base (AGDB). A “cleaner” and far more useful data file, AGDB was sent on a weekly basis to USAFETAC’s OL-A, Asheville, NC.

20 May USAF signed a contract with Lockheed for \$2.3 million in Fiscal Year 1982 for software, personnel, and maintenance needed to implement the “optimized” MAC computer flight plan system at AFGWC.

1 Jul An AWS annual Programming Plan (A²P²) was published, marking AWS’ discontinuation of its Command, Control, and Communications Programming Plan (C³P³)--AWS’ mechanism for competing for Air Force funds in annual Program Objective Memorandum (POM) cycle.

2 Jul Turnover papers on the first two AN/TPS-68 tactical weather radars were signed at Tinker AFB. Initial operational capability was declared on 2 August 1982.

27 Jul NCOs presented the “Order of the Sword” to Brigadier General Kaehn in formal ceremony held at the NCO Club, Scott AFB, IL. General Kaehn was first AWS Commander ever to receive the prestigious award.

27 Aug “Optimized” MAC computer flight plan system at AFGWC declared operational.

4 Oct Published this date was the first joint Training and Doctrine Command (TRADOC) /MAC pamphlet *Military Operations: Joint Operational Concept for Army Tactical Weather Support*.

21 Oct A secure 1200-baud circuit between AFGWC and Joint Special Operations Command at Fort Bragg became operational.

15 Nov Per AWS instructions of 12 November 1982, the TAF function at AFGWC was terminated. Henceforth, AWS field units issued TAFs.

3 Dec In a letter to MAC, AFMEA (Air Force Management Engineering Agency) formally approved the details of a base weather station manpower standards study. Initial application of the new standards validated 395 additional AWS spaces (80 officer, 315 enlisted).

20 Dec Upgrade of the COMEDS circuits from 1200 to 2400-baud commenced. The upgrade, completed on 9 August 1983, not only doubled speed of system but also allowed for transmission of NOTAMs.

21 Dec DMSP spacecraft F-6 successfully launched at 0235Z from Vandenberg AFB, California. It was first successful launch of new Block 5D-2 series DMSP weather satellites and the first successful DMSP launch since June 1979 (F-4).

1983

1 Jan Det 26, 28WS, 2WW, activated at RAF Greenham Common, UK, to support new Ground Launched Cruise Missile (GLCM) unit. Appointed commander effective same day was Captain Curtis A. Reutner.

20 Jan Boeing Aerospace Company stated its requirements for AFGWC support to ASAT (the air-launched, antisatellite) program tests.

22 Jan Arrival of First Lieutenant Emilo R. Banos-Nieves (Det 25, 5WW) at Le Mesa International Airport near San Pedro-Sula, Honduras, for Exercise AHUAS TARA marking the beginning of continuous deployment of AWS personnel to that troubled Central American nation.

1 May Space Command assumed management responsibilities for 1000th Space Operations Group (formerly SAC's 4000th Space Operations Group) and all DMSP responsibilities previously assigned to SAC.

9 May Operational this date, AFGWC's version of Global Spectral Model (GSM) (20-wave, 9-layer model) transferred from National Meteorological Center (a 40-wave, 12-layer model). Concurrently, AFGWC implemented Hough analysis program four times a day, making it the first weather central in the world with operational, 6-hour weather cycling system.

15 Jun Sacramento ALC signed contract with International Creative Data Industries for an AN/FMQ-8 temperature-dew point set that would replace the AN/TMQ-11. A total of 183 sets were procured at a cost of \$6.8M. First operational sets were installed in January 1987 after operational tests were conducted in 1986. Installation was accomplished by Engineering and Installation (E&I) personnel.

5 Jul AWS closed out AWS PAD 79-1, "AWS Probability Support." AFGWC also suspended work on the AWS MOS system.

14 Jul AFGWC asked AWS for permission to delay work on Relocatable Window Model (RWM) until Global Spectral Model (GSM) was operational; delay covering RTNEPH to Advanced Weather Analysis and Prediction System (AWAPS) Class IV computer until Fiscal Year 1990; and an increase in work hours for implementing AWAPS from 38,829 (or 14.3 man-years, as specified in AWAPS DAR) to over 61,000 man-hours. AWS Chief of Staff on 21 September 1983 agreed to petition AMC for delay of RWM until GSM was operational; to extend work to 41,800 man-hours (20.7 man-years); and to eliminate RTNEPH (Real-Time Nephanalysis model) conversion to Class VI computer from the AWAPS program.



Figure 6-11: AN/FMQ-8 Temperature Dew Point Measurement Set, sensor and electronics on top and indicator on bottom.

20 Jul European Digital Graphics System (EURDIGS) circuit to AFGWC became operational this date.

1 Aug Sam E. Parish became Chief Master Sergeant of the Air Force. Parish began his Air Force career in December 1954 as a weather equipment operator in AWS. In 1973 he was named senior enlisted advisor for AWS, which was followed by assignments as the senior enlisted advisor for USAFE (1977) and SAC (1981).

1 Aug RTNEPH replaced 3-dimensional nephanalysis (3DNEPH) model at AFGWC. RTNEPH was designed for more efficient computer operations and software maintenance. It incorporated minor improvements in use of satellite and surface data, analyzed clouds in four floating layers (vice 3DNEPH's 15 fixed layers), and furnished additional data quality information for more effective use in climatological studies.



Figure 6-12: Chief Master Sergeant of the Air Force Sam E. Parish poses with SrA Linda M. Bogart, AWS 1984 Airman of the Year winner.

1 Aug Six minutes after Air Force One landed with President Reagan aboard, a microburst with winds of 120 knots, struck Andrews AFB causing estimated \$465,000 damage to Andrews.

5 Aug Colonel William E. Buchan relinquished command of 3WW's 11WS to become Chief Meteorological Officer, SHAPE (Supreme Headquarters Allied Powers Europe), Mons, Belgium. Replacing RAF's Group Captain Haworth, Buchan was first non-British officer to fill chief meteorological officer position since SHAPE's formation in World War II.

Sep Using MAC Crisis Action Team (CAT) WWMCCS Intercomputer Network (WIN) terminal on time-sharing basis, AWS established a permanent AWS WWMCCS teleconference at HQ AWS (DOJ). Teleconference was used to support contingencies and JCS-directed exercises.

29 Sep NOAA signed \$2.368 million contract with Tracor, Inc., for development of two prototype IWR (Improved Weather Reconnaissance) systems. The Air Force underwrote \$700,000 of the contract.

1 Oct 4th Weather Wing reactivated at Peterson AFB, CO, replacing 5WW's 12WS which was inactivated this date at Colorado Springs, CO. Effective 1 January 1984, HQ AWS' 2WS at Andrews AFB, MD, was reassigned in place to 4WW.

21 Oct GAO published report entitled “Air Force Global Weather Central Initiates Positive Action to Assess Adequacy of Software Improvement,” which praised AFGWC’s software improvement program. The DoD concurred on 2 December 1983.

25 Oct Under Operation URGENT FURY, combined U.S. air, sea, and land forces invaded Grenada to evacuate American students. Before combat operations were officially declared ended on 2 November, nine men from Detachment 3 of 5WW, 5WS at Fort Bragg, NC, deployed to Grenada and furnished weather support during the fighting. All nine received Bronze Stars.



Figure 6-13: SSgt James Methvan, from Det 3 of the 5WW’s 5WS at Ft Bragg, poses near a Russian AN-2 aircraft at Pearls airport, Grenada, used by Soviet Embassy, 1 Nov 1983.

28 Oct After nearly two years of delays, AFGWC WWMCCS Intercomputer Network (WIN) terminal declared operational.

22 Dec Contract signed by Sperry Corporation for upgrading Univac 1100/21 computer system of USAFETAC’s OL-A at Asheville, NC, to Univac 1100/62.

1984

1 Jan AWS eliminated Terminal Aerodrome Forecast Verification (TAFVER) program in favor of Operational Verification (OpVer) program more attuned to operator criteria.

6 Jan Ribbon-cutting ceremony for new \$6 million MAC consolidated computer facility, Building 1575, at Scott AFB that eventually housed USAFETAC’s computer systems--USAFETAC completed moving its computer apparatus to Building 1575 on 15 August 1984.

27 Jan As a test case, Sergeant Robert C. St. John, assigned to Det 4 of 7WW’s 17WS, Altus AFB, OK, became AWS’ first Forecaster Assistant by completing weather specialist and weather technician courses back-to-back.

1 Feb AFGWC ceased issuing MOS bulletins for stateside units and the National Meteorological Center began issuing them.

24 Feb Air Staff sought MAC’s (AWS’) comments regarding what position the U.S. should assume when the 1978 international “convention” (treaty) banning weather modification as a weapon of war was formally reviewed by signatory nations in September 1984. In its 20 March 1984

response, AWS recommended there should be no changes that might translate into a prohibition of weather modification by military (to include research and development of techniques).

2 Mar Air Force awarded \$16.6 million contract to Canadian Commercial Corp (Hull, Quebec) for full-scale development of Automated Weather Distribution System (AWDS). In turn, on 12 April 1984, CCC awarded the contract to MacDonald Dettwiler and Associates, Limited, of Richland, BC. The contract award represented another six-month slip in the program.

12 Mar TRADOC Weather and Environmental Support Office (TWESO) established under the Combined Arms Combat Development Activity (CACDA) at Ft Leavenworth, Kansas. It functioned as the Army focal point for weather and surface hydrological services.

30 Mar Crisis Action Weather Support System (CAWSS) became accessible to all WIN users with access to HQ USAF, National Military Command Center (NMCC), or Alternate NMCC (ANMCC) computers. WWMCCS environmental support on three computers was furnished daily through the CAWSS and the NMCC Environmental Support System (NESS) for exercises and crises.

4 Jun MAC orders published this date inactivated all MAC Training Advisory (MTA) operating locations with ANG weather flights effective 1 October 1984.

1 Jul USAREUR tactical forecast unit moved from Campbell Barracks, Heidelberg, AI, Germany, to German Meteorological and Geophysical Office (GMGO) facility at Traben-Trarbach, Germany. Associated official organizational actions effective this date: OL-A, 2WW, at Traben-Trarbach inactivated; Det 14, 7WS at Heidelberg inactivated; Det 13, 7WS, activated at Traben-Trarbach.

2 Jul Amdahl 470V/8 computer delivered to USAFETAC to replace IBM 4341. USAFETAC computer operations moved to new Consolidated Computer Facility (MAC, AFCC, and ARRS), on opposite side of Scott AFB on 15 August. Testing completed and Amdahl 470V/8 accepted on 5 September 1984.



Figure 6-14: SSgt Mike Thompson and Mr. Gene Weber (CMSgt, Ret) at work in CONUS Severe section of AFGWC, 1983. Mr Weber would continue to serve AFW for over 50 years.

14 Jul AN/CPS-9 weather radar at Maxwell AFB removed and replaced by AN/FPS-77; AN/CPS-9 was the first radar specifically designed for meteorological use, and the one at Maxwell (serial number 001) was the first ever installed, on 20 June 1954. Maxwell's CPS-9 was the last in

the AWS inventory. It was shipped to Scott AFB for display before eventually entering the AWS museum.

1 Aug Original edition published of AWSR 105-7, outlining support to electro-optical weapon systems with the application of tactical decision aids.

22 Aug With reassignment of its commander, Captain James Warnke, Det 12 of 7WW's 15WS at Selfridge AFB became AWS' only all-civilian detachment. Mr. John Pacek assumed duties as interim meteorologist-in-charge.

1 Sep The 4800-baud, full-duplex circuit between AFGWC and AFTAC declared operational.

20 Sep During its fourth and final meeting at AFGL (L.G. Hanscom AFB), Weather 2000 Steering Group approved the final draft of the mission analysis for immediate publication/distribution. *Weather 2000* was distributed to the field in April 1985 as *ESD Technical Report 84-198*. The report documented the result of a year-long effort launched in August 1983. *Weather 2000* grew out of a growing conviction in AWS that it was necessary to move beyond the earlier, outdated planning document known as *Weather 85* and to plan for new and improved weather support capabilities needed to meet requirements anticipated for the year 2000 and beyond. The three-volume report contained 177 specific recommendations.

16-17 Oct First ever AWS airmen "forum" at HQ AWS. The airmen came to Scott AFB to receive a series of briefings on AWS activities.



Figure 6-15: AWS commander, Col Chapman, addressing first AWS airmen "forum" at HQ AWS, October 1984.

30 Oct Published this date was MAC Sup 1 to AFR 35-30, 4 November 1982, which specifically delineated 37 positions in AWS eligible for wear of USAF's new space badge.

30 Oct AFGWC completed formal implementation of High Resolution Analysis System (HIRAS) model.

13 Nov Under AWAPS contract, two Sperry 1100/72 computers delivered to AFGWC: System B (PLN 33) commenced operations this date and System A (PLN 32) commenced operations on 11 December 1984. The computers functioned as front end/data base systems for AWAPS Cray X-MP “super” computer.

19-20 Nov First meeting of International Polar Orbiting Meteorological Satellite (IPOMS) group in Washington, DC, at which NOAA won support for continuation of two polar-orbiting weather satellites. Earlier, OMB had sought to eliminate second polar orbiter from NOAA’s Fiscal Year 1986 budget request.

1985

25 Mar AWAPS, using the Cray X-MP “super” computer, formally dedicated during ribbon cutting ceremony.

4 Jun AFLC’s Sacramento ALC awarded a contract to Space Data Corporation (Tempe, AZ) for 39 Meteorological Data Systems (MDS) Model 691s (17 for AWS and 22 for the Army) as replacements for the AN/GMD-2 and AN/GMD-4 rawinsonde sets. Subsequently given the nomenclature AN/GMD-5, the MDS underwent qualification/initial testing and evaluation from 10 April to 10 May 1986, after which 7WW’s 6WS (M) accepted delivery of the first unit and transported it to Hurlburt Field, FL.



Figure 6-16: An NCO provides Col Ron Haines, AWS/LG, a demonstration of the WSR-74C operational replacement radar, 1986.

19 Jun AFLC’s Sacramento ALC awarded a sole source contract to Enterprise Electronics Corporation for 24 WSR-74C weather radars that were to be an operational radar replacement for the remaining AN/FPS-103s and some AN/FPS-77 weather radars. Enterprise delivered the first set, subsequently given the nomenclature AN/FPQ-21 (it had a 12’ diameter antenna, while the WSR-74s had an 8’ antenna) to Ft Sill on 5 February 1986.

30 Jun AFLC’s Sacramento ALC awarded a contract to the University of Lowell for 19 replacement ionospheric sounders. The first sounder was installed at Argentia NAS, Newfoundland, and on 7 October 1985, AFGWC received the first data from it.

10 Jul AFLC’s Sacramento ALC awarded a contract to Tele-Signal Corporation (Hauppauge, NY) for tactical cloud height devices as replacements for the AN/TMQ-14, AN/TMQ-2, ML-121, and ceiling balloons. The system received a nomenclature of AN/GMQ-33 Cloud Height Measuring Set.

9 Aug Initial operational capability declared for Satellite Data Handling System (SDHS) at AFGWC. Final operational capability declared 17 April 1986.

4 Sep NASA approved AWS' request for a weather officer to fly on a future shuttle mission. In December AWS Commander, BGen George Chapman, selected Major Fred P. Lewis to be the first weather officer in space.

28 Sep AFLC's Sacramento ALC awarded a contract to Sutron Corporation (Herndon, VA) for digital wind measuring sets to replace the AN/GMQ-11 and AN/GMQ-20 wind measuring sets. Subsequently given the nomenclature AN/FMQ-13(V), difficulties with its design slipped the scheduled delivery of the first set to late 1987.



Figure 6-17: MSgt John Justice uses one of the SDHS graphic display terminals, December 1985.

30 Sep The last of the 15 backbone communication circuits of the Military Dedicated Service "A" network disconnected, terminating Service "A" support in AWS.

21 Oct Based on SAC's long-standing requirement, the Washington Area Contracting Office purchased a WSR-74C weather radar that was installed at Shemya AFB, AK, this date.

9 Dec Tele-Signal Corporation shipped the first five production AN/GMQ-13 cloud-height set digital indicators (IP-1456) to Chanute AFB; it shipped the next ten to McClellan AFB on 30 December 1985 for further distribution to bases around the world based on individual project support agreements prepare by various AF engineering and installation organizations.

1986

8 Jan First overseas Meteorological Data System (MEDS) circuit accepted in Alaska at Eielson AFB, marking the initial milestone in the replacement of obsolete weather teletype systems with more modern equipment in Alaska, Europe, and the Pacific.

24 Feb Directorate of Training, HQ AWS, recommended AWS begin working toward implementation of a single schoolhouse concept, i.e., a single basic weather career training course combing and integrating the existing weather specialist (observer) and weather technician (forecaster) courses.

19 Mar Last rocket launched from Shemya AB, ending the era of Air Force rocketsonde operations.

26 Mar First Sperry 1100-91 installed at AFGWC as new System 6, the first step in a program to replace five mainframe computers with larger, more powerful systems.

31 Mar National Weather Service Digital Facsimile (DIFAX) circuit to AFGWC converted from landline to satellite.

14-15 Apr Four detachments of 28th Weather Squadron supported Operation EL DORADO CANYON¹⁰, an airstrike on five targets in Libya. The U.S. conducted this “controversial but highly successful mission that hit Col Muammar Qaddafi squarely between the eyes. Working with carrier aircraft of the US Sixth Fleet, Air Force F-111s of the 48th Tactical Fighter Wing flew what turned out to be the longest fighter combat mission in history.”¹¹

28 Apr AWS units initiated support to the U.S. effort to track the movement of radioactive contamination from the Chernobyl reactor accident in the Soviet Union. AFGWC provided extensive data and modeling support to the Lawrence Livermore National Laboratory Atmospheric Release Advisory Capability (ARAC) assisting ARAC in producing their radioactive contamination products. Det 3, 1WW, personnel flew air sampling missions aboard 54th WRS WC-130s.

Jun AFLC’s Sacramento ALC awarded a contract to Tele-Signal Corporation for 401 tactical meteorological surface observing systems to replace the AN/TMQ-22 tactical meteorological stations. Subsequently given the nomenclature of AN/TMQ-34, first article testing commenced in April 1987 with delivery of production items to commence in October 1987.

11 Jun AFLC’s Sacramento ALC awarded a contract to a Finnish firm, Vaisala, for tactical wind measuring sets to replace the AN/TMQ-15 wind sets. Due to difficulties with the contractor, first article testing slipped to July 1987, with delivery of the first production items not expected until 1988. [The new set was eventually named as the AN/TMQ-36, Tactical Wind Measuring Set]



Figure 6-18: AN/TMQ-34, Meteorological Measuring Set. Carpenter's rule was used for snow depth measurement.

20 Jun State of the art Global Spectral (forecast) Model was implemented at AFGWC, providing a significant reduction in forecast errors. Run on an extremely fast Cray “super” computer, the model described the global atmosphere more accurately at a higher resolution than before.

14 Jul AWS personnel began support to Operation BLAST FURNACE, a 4-month operation to interdict drug production and traffic in Bolivia. US Southern Command’s weather support cell

¹⁰ Hist., 2nd WxWg History, AWS, 1986

¹¹ Art., Boyne, Walter J., *El Dorado Canyon*, Air Force Magazine, Mar 1999, p. 56-62

provided centralized weather support for the operation and Det 25, 5thWW activated a weather support force and deployed five weathermen to Bolivia.¹²

Sep First Volant Lightning training class held at Hurlburt Field, FL. The ongoing program trains 120 AWS staff officers per year to live and work in realistic field conditions in preparation for meeting wartime commitments.

Oct First “dial up” computer flight plans using AFGWC data provided directly to aircrews from remote terminals.

31 Dec As of this date, new ML-658/GM altimeter-barometer digital (DBASI) sets were installed at 197 sites worldwide, with only five sites remaining to receive them.

¹² Hist., *AWS History, 1986*, p. xxvi. [Note: Added date; corrected the country from Columbia to Bolivia; and identified the organizations supporting the operation.]

CHAPTER 7—CHRONOLOGY 1987-1996

1987

5 Jan The Air Force announced that, effective 1 October 1987, the 54th Weather Reconnaissance Squadron of MAC's 23rd Air Force at Andersen AFB, Guam, would be inactivated (its six WC-130E/H would be retired) and the Air Force Reserve's 815th Weather Reconnaissance Squadron at Keesler AFB would be converted to a tactical airlift squadron.

6 Apr Air Staff approved new meteorologist occupational specialty¹ badge for wear by AWS personnel. This event "opened up the floodgates" for the creation of other occupational specialty badges.²

15 Apr Air Force Systems Command's (AFSC) Space Division transferred command and control of DMSP system to Air Force Space Command (AFSPC) in response to Air Staff direction issued with the creation of the U.S. Space Command, and its component AFSPC. From June 1986 through August 1987, MAC DCS Plans and the AWS headquarters staff negotiated with AFSPC to preserve the traditional MAC and AFW roles and responsibilities in regards to DMSP. Under the terms of Operational Order 3450-88, issued by the Commander in Chief of the U.S. Space Command on 25 September 1987, MAC and AWS largely retained their traditional responsibilities.

16 Apr U.S. Special Operations Command (USSOCOM) established at MacDill AFB, FL. At USSOCOM's request, the JCS assigned responsibility for staff meteorological support to the Air Force (AWS).

1 May In a reorganization of HQ AWS, the Deputy Chief of Staff (DCS) for Logistics was dissolved and a new directorate, the DCS for Program Management, was created.

1 May A network of automated observing stations was established in Honduras to provide remote meteorological sensing and reporting in support of continuing heavy exercise commitments. The network consisted of two fixed and four mobile stations that automatically transmitted into the AWN weather observations which included temperature, dew point, wind, and pressure data.



Figure 7-1: Completed DoD weather training "School House" at Chanute Technical Training Center, Chanute AFB, IL.

¹ AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*, Attachment 3, p. 174, 18 Jul 2011.

² E-mail, Frederick, George, Col, USAF Ret., *RE: Review of Document*, 30 Jun 2011. [Personal reflection of Col Frederick who was on the Air Staff during this period. He recalls that Bill "White Shoes" Johnson was the point man in the Pentagon for the badge approval. "It was considered a real coup at the time since no one thought it would make it and we were told all along that it had no chance. Perseverance and good timing with other career fields interested in the same thing made it happen."]

1 Jul Air Weather Service commemorated the 50th anniversary of the birth of the Army Air Corps weather service. The headquarters marked the occasion with a two-day celebration that included an open house, an anniversary ball, and the dedication of a flagpole in front of the AWS headquarters building as a lasting memorial to the men and women of AWS.

15 Aug The 54th Weather Reconnaissance Squadron, based on Guam, flew its last typhoon reconnaissance mission. On 30 September, MAC deactivated the squadron. On 1 October, the 815th Weather Reconnaissance Squadron (AFRES), became the 815th Tactical Airlift Squadron (AFRES), assigned eight C-130 airlifters and, with Congressional direction, four WC-130 weather reconnaissance aircraft.

4 Sep BGen Chapman and BGen Joel M. McKean, Chanute Technical Training Center Commander, broke ground for the new \$6.5 million facility, where the Air Training Command planned to consolidate all DoD weather training activities.

10 Nov AWS began Qualification Operational Test and Evaluation (QOT&E) of the AN/FMQ-13 Wind Measuring Set at Patrick and Scott AFBs. The test concluded on 20 Jan 1988. This test event was 9 months later than initially scheduled. The AN/FMQ-13 program sought to replace outdated AN/GMQ-11 and AN/GMQ-20 wind measuring sets with modern, no-moving parts, solid state equipment.

16 Dec UNISYS Corporation completed installation and officially delivered the on-line UNISYS 1100/72 system at the Automated Digital Weather Switch (ADWS), Carswell AFB, TX. In December 1986, Air Force Communications Acquisition Center (AFCAC) awarded a contract to the UNISYS Corporation to replace the obsolete Sperry 1108 with two UNISYS 1100/72 computer systems. UNISYS completed installation of the first new computer, an off-line system, in March 1987.

1988

Mar 5th and 7th Weather Wings deployed weather forces to Palmerola AB, HN, in support of an emergency deployment Exercise GOLDEN PHEASANT which turned into a real world contingency operation.

23 Jun HQ AWS authorized their units to “immediately...begin...providing Tactical Decision Aids (TDA) weather effects support for all Army operations involving Army E-O (electro-optical) systems,” using Air Force-developed and HQ AWS-approved Mark II TDAs.

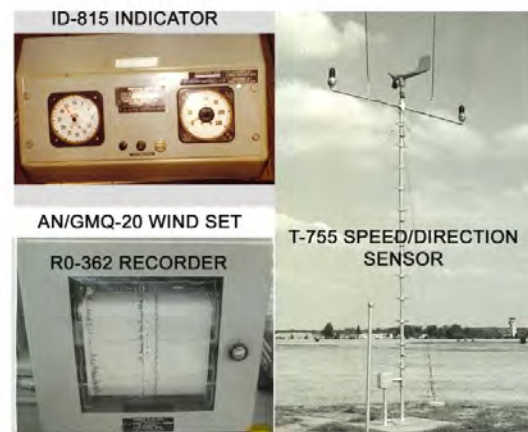


Figure 7-2: AN/GMQ-20 Wind Set, would eventually be replaced with AN/FMQ-13 Wind Set

31 Aug The AFGWC Forecasting Services Division (WF), Production Branch, and Tropical Section reached initial operating capability (IOC) on the Satellite Data Handling System (SDHS).

12 – 19 Aug AFGWC provided support for the record breaking helicopter flight (longest distance flown non-stop, longest time in air) for 2 UH-60 helicopters from Antigua to Elgin AFB.

30 Sept The AFGWC Chief Forecaster, Synoptician, Horizontal Weather Depiction (HWD) Sections transitioned to the SDHS environment.

7 Oct The Army's Training and Doctrine Command (TRADOC) approved concept of operations for Army Special Operations Forces weather support drawn up by AWS. Concept would be incorporated into the new joint Army-Air Force manual, 34-81/AFM 105-4.

Nov The Office of the Secretary of Defense (OSD) eliminated all Pre-Strike Surveillance/Recognizance System (PRESSURS) full scale development funding for the 1990-1993 fiscal year. Lockheed had initiated development testing at Eglin AFB, FL on 26 Apr and continued through the remainder of the year. This effort was an attempt to place a "weather pod" on aircraft that would provide flight weather information as the aircraft traversed through its mission profile.

7 Nov The AFGWC Special Project Division canceled all satellite imagery film requirements for sprint support and decreased their use of the display machine as the SDHS provided most of that data.

1989

Jan AWS began an initiative to acquire an additional 178 AN/TMQ-34 Tactical Meteorological Observation Systems and 218 AN/GMQ-33 Cloud Height Sets in addition to the 401 TMQ-34s and 224 GMQ-33s it already purchased.

5 Jan Secretary of Defense, Frank C. Carlucci accepted recommendations of the Commission on Base Realignment and Closure to close 86 military installations in the continental U.S., including five Air Force Bases, one of which was Chanute AFB, IL, home of Air Training Command's (ATC) "Weather School House."

20 Jan ATC proposed, in view of the projected closure of Chanute AFB in July 1993, relocating weather training function to Keesler AFB. The command subsequently approved constructing a new \$8.6 million weather training facility at Keesler.

20 Jan – 1 Feb Exercise BRIM FROST 89, a Joint Chiefs of Staff (JCS)-directed joint field training exercise sponsored by the Army's Force Command to train and exercise Joint Task Force Alaska in defending Alaska against invasion. Units from AWS's 9th, 11th and 25th Weather Squadrons and the Air Force Reserve's 107th and 208th Weather Flights participated in the exercise.



Figure 7-3: A1C Eric Andrews takes an observation with the TMQ-34 Tactical Meteorological System.

1 Feb The National Guard Bureau redesignated the 200th Weather Squadron as a Weather Flight. For the past 24 years, the 200th managed the Air National Guard (ANG) weather program. Establishment of an ANG Support Center to manage ANG programs and lack of a wartime mission for the squadron, and fiscal constraints led to the units redesignation.

16 Feb HQ AWS informed its units in the field that AWS planned, with Air Staff approval and in keeping with a decision by Colonel John Kelly, AWS/CC, on 8 December 1988, to acquire GOLDWING tactical communications systems through the Army's Forces Command instead of the Quick Reaction Communications Terminals (QRCT) that it had originally planned to procure.

Mar DMSP Systems Program Office awarded contract to Aerojet ElectroSystems of Azusa, CA, to build five special sensor microwave imager sounder (SSM/IS) for incorporation on board DMSP satellites.

2 Mar Following completion of the AN/TMQ-36 Tactical Wind Measuring Set QOT&E in February, Sacramento ALC granted conditional approval to Vaisala, Inc. for the production of the TMQ-36, subject to the company making a number of design changes.

6 – 20 Mar Period of strong solar activity caused an uncommon Polar Cap Absorption event that crippled High Frequency (HF) communications, caused interference and high noise levels for Very High Frequencies (VHF), degraded radar performance, caused satellite communications problems, enhanced satellite charging, satellite tracking, and compass alignment problems.

29 Mar The Tactical Air Command announced at a Battlefield Weather Observation and Forecast System (BWOFS) program management review that it would host only manual electro-optical tactical decision aids (EOTDAs) on its planned force-level command and control system, the Contingency Tactical System Automated Planning System, until such time as conventional weather support software was available for integration into the system at the same time.

30 Mar The AFGWC Cray X-MP supercomputer was upgraded at a cost of \$1,717,000.00 to the S4400 model with the addition of 2 million words memory, a DCU-5/DD-39 disk storage subsystem, and an input/output processor (IOP).

Apr AFGWC discontinued use of Interactive Processing and Display System which had been in continuous use since 1975 as a prototype for AFGWC exploration of interactive graphics techniques.



Figure 7-4: A1C Joey Mumm, 17th WS, Travis AFB, CA, measures wind speed using a Simms anemometer for a low altitude parachute extraction system drop, during TEAM SPIRIT 89 at Yoju extraction zone, KR. (MAC News svc) (USAF Photo by SSgt Mark Allen)

Apr Reconfiguration of North Atlantic and Caribbean Meteorological Data System into one system to be called Atlantic Meteorological Data System began.



Figure 7-5: The revised “Floor” at AFGWC. SDHS Consoles arranged in groups redefined the look of the AFGWC “Floor” – gone were the large map tables, grease pencils, blue smocks, and acetate overlays.

Apr Operation ELF (European Liaison Force) ONE ended with the termination of hostilities in the Iran/Iraq war. Since the fall of 1980, AF E - 3s and KC-135s had flown more than 6,000 sorties and 87,000 hours to augment the Royal Saudi Air Force's radar coverage of Saudi airspace.³ The DMSP deployed a Mark IV tactical terminal to Dhahran [DMSP Site 12], first to support Operation EAGLE CLAW [refer to 24 Apr 1980 entry] and then continued to support ELF ONE. AWS and AF Communications Command (AFCC) provided personnel on 30-day temporary duty assignment to operate and maintain the MARK IV.⁴ AWS ended weather support to ELF ONE on 1 Aug.⁵

7 Apr Installation of new IBM 3090-200E Joint Operational Climatological Support mainframe computer at U.S. Air Force Technical Applications Center (USAFETAC), Scott AFB, IL, completed.

11 Apr The High Frequency Regional Broadcast (HFRB) system at Elmendorf AFB, Alaska, the second of a projected eight HFRBs, became operational.

³ Extract, Coleman, George N. III, CMSgt USAF Ret, *Operation ELF ONE*, 25 May 2012. [The document contains information about ELF ONE from various sources]

⁴ E-mail, Kappert, John, CMSgt USAF Ret, to Coleman, 27 Jul 2011 and Kandler, Raymond, Lt Col, USAF Ret to Coleman, 27 Jul 2011. Note: These e-mails represent the personal recollections of an AFCC and AWS representative that were involved in the management of DMSP operations for AFCC and AWS respectively.

⁵ Extract, *Op. cit.*, Coleman [AWS history extract]

21 Apr AWS Commander, Col John Kelly authorized low-level talks with the Air Training Command and U.S. Navy concerning single schoolhouse concept.

25 Apr The Army's Atmospheric Science Laboratory conducted a successful proof of concept demonstration of the pre-Integrated Meteorological System (IMETS), an Army test weather system developed by Harris Corporation under contract to the Atmospheric Sciences Laboratory. The IMETS now entered the "proof of principle" stage.

May AF Geophysics Laboratory released prototype of new microcomputer electro-optical tactical decision aide (EOTDA).

1 May Using DMSP Special Sensor Microwave/Imager (SSM/I) data, AFGWC issued its first bulletins describing 30-knot wind radii of tropical cyclones for the Joint Typhoon Warning Center's (JTWC) entire area of responsibility.

25 May Defense Commercial Communications Office released a request for information to industry for the replacement and upgrade of the existing continental U.S. Meteorological Data Systems (COMEDS).

Jun The AF completed the project that modified eight active duty and four reserve WC-130 aircraft for hosting Improved Weather Reconnaissance Systems.

Jun AWS completed the program that replaced ML-512 Mercurial Barometers at base weather stations worldwide with ML-658/GM Digital Altimeter-Barometer.

1 Jun Det 7, 4th Weather Wing, activated as Space Forecast Center, Falcon AFB, CO.

1 Jul Satellite Data Support System (SDDS) program, a formal Satellite Data Handling System (SDHS) enhancement effort, successfully completed.

24 Jul DCS Program management, HQ AWS, informed Sacramento ALC that the FMQ-13 Wind Measuring Set did not meet AWS requirements because of its inaccurate wind measurements. The manufacture, Sutron Corp., had to correct deficiencies identified during factory testing before AWS would agree to further testing at operational locations.



Figure 7-6: MSgt John Carlson explaining FMQ-13 wind system indicator to SSgt Katherine Zupan. Recorder [on top of indicator] was a dot matrix printer. (USAF Photo)

8-21 Aug AWS personnel provided weather support to US Central Command's search and rescue contingency operations in Ethiopia seeking to find aircraft carrying U.S. Congressman Michael Leland. The 1st Weather squadron, MacDill AFB, FL., provided weather support to the operation from 8 through 21 Aug. From 9 through 13 Aug, Det 75, 6th Weather Squadron, Hurlburt Field, FL., provided en route weather support to 1st Special Operations Wing assets (three HC-130 aircraft and six MH-60 helicopters) deploying to Ethiopia from 9 through 12 Aug. It also deployed one forecaster, who, however, was in Ethiopia only about one hour before being sent back to the U.S. by the local commander.

26 Aug Air Force Operational Test and Evaluation Center (AFOTEC) issued Quick-Look NEXRAD IOT&E Phase II report. The report concluded that NEXRAD met Department of Defense operational effectiveness requirements, but that it had a number of deficiencies and problems that the contractor, UNISYS, would have to correct. The Center issued its final report in December 1989. After correcting the deficiencies, UNISYS could begin fielding.

31 Aug Departments of the Army and Air Force issued revised edition of joint Army-Air Force manual, AM 34-81/AFM 105-4, "Weather Support for Army Tactical Operations," superseding edition of 31 August 1984.

1-15 Sep Exercise CABANS 89, a JCS-directed, US Southern Command-sponsored special operations exercise held in Honduras. AWS provided weather support to the exercise with a weather force consisting of 6 officers, 6 forecasters, and 3 observers. Additionally, the Southern Command Forecast Unit acted as the theater forecast unit.

6 Sep AFCAC awarded a contract to UNISYS Corporation to replace existing Univac computer systems at Croughton, GB and Hickam AFB, HI Automatic Digital Weather Switches with four UNISYS 1100/71 computer systems (two at each switch). The contract included funding (\$4.1 million) for only the Croughton switch. First 1100/71 computer installed at Croughton in October.

8 Sep Chief of Staff of the Air Force (CSAF) General Larry D. Welch directed Air Force Reserve to assume aerial weather reconnaissance mission and instructed Air Staff to prepare a plan for transferring the mission to the Air Force Reserve.

11 Sep BGen Kelly approved a proposal by the Defense Support Project Office of the Office of the Secretary of the Air Force to modify DMSP, Mark VIB tactical terminals under procurement by the Space Systems Division to give them capability to relay satellite data to outside users. On 27 September the Air Staff directed Space Systems Division to incorporate the additional capability into the Mark VIB.



Figure 7-7: 2nd Lt Nhung Nguyen, an AWS engineer assigned to AWS Ground Programs, Testing and Engineering Division, evaluates the NEXRAD Principal User Processor (PUP) subsystem.

14 – 22 Sep Hurricane Hugo, Western Atlantic. After racking Antigua, Virgin Island, and Puerto Rico, Hugo struck coast of South and North Carolina on the evening of 21 September with winds up to 135 miles per hour, causing severe destruction in various communities, including Charleston, South Carolina, and Charlotte, North Carolina, as it pushed inland. The 53d Weather reconnaissance Squadron flew 10 and the 815th TAS (AFRES) flew 6 WC-130 weather reconnaissance missions into the hurricane

19 Sep - 30 Nov AWS deployed 45 persons to Exercise BRIGHT STAR 90, a large scale, JCS-directed, joint exercise conducted in the Middle East by the U.S. Central Command. Deployed AWS personnel represented 16 detachments from seven squadrons.

Oct – Nov AWS fielded 44 GOLDWING tactical communications systems. However, systems still needed communications security tapes that would enable them to communicate with Army GOLDWINGS and modifications to their Alden 9315 TRT recorders that would make it possible for the broadcast transmissions. The AWS GOLDWINGS were also incompatible with U.S. Army Europe Automated Weather System (UAWS).

14 Nov AFGWC declared initial operational capability on the Relocatable Window Model.

1 Dec Improved Point Analysis Model implemented at both AFGWC and USAFETAC.

5 Dec Acceptance testing of the modified digital Imagery Processing System produced by Tau Corporation and installed at the Solar Electro-Optical Network site at Palehua, HI, successfully completed.

14 Dec AFGWC's Communications Front End Processor (CFEP) reached initial operational capability.

19 Dec Operation JUST CAUSE began with the deployment to Panama by various Military Airlift Command (MAC) airframes the first of 12,000 American Army troops augmenting the 13,000 troops already stationed in Panama. Included in this contingent were the first AWS personnel deployed for the operation. The mission was to overthrow the tyrannical Manuel Noriega regime and restore the democratic process in Panama. Ultimately, 15 members of AWS representing six different detachments from three squadrons (5th, 6th, and 15th) deployed to support the operation. Detachment 25, 5th Weather Squadron, provided support to the operation from its home station at Howard AFB, Panama.

A winter ice storm complicated mission planning and initial airlift. Precipitation and near-freezing temperatures caused freezing rain across much of the SE CONUS at the time, and airfields across the SE had limited amount of deicing fluid/equipment. The MAC Weather Support Unit provided the Senior Airlift Controller accurate temperature forecasts enabling the transfer of deicing equipment from various locations to Pope AFB, NC, to facilitate deicing of the 20, C-141s earmarked to airlift two battalions of the 82nd Airborne Division.⁶

⁶ Moore, T.C., *19891219-SE US/Operation JUST CAUSE*, Military Utility of METOC input to Operational Planning, USAF/A3O-W, Day Without Weather Vignette, 19 Dec 1989. Additional information for: Operation JUST CAUSE available at Joint History Office, <http://www.dtic.mil/doctrine/doctrine/history/justcaus.pdf>.



Figure 7-8: The steely gaze of SSGT Johnny Reid, Det 3, 5th WS, seemed to portend future conflicts. Det 3 provided airborne weather teams to support the Army's XVIII Airborne Corps and subordinate units, including the 82nd Airborne Division, 1st Special Operations Command and the 7th Special Forces Group.

1990

13 Mar Air Training Command (ATC) reported the results of an Occupational Survey Report (OSR) on weather training. ATC scrutinized interpretation of satellite imagery, non-convective severe weather, electro-optics support techniques, and interpretation of numerical weather prediction products. The OSR resulted in a 23 day course extension to the Weather Technician Course.

18 Apr AWS Council recognized Special Operations Forces (SOF) was the number one unfunded manpower requirement. They provided a proposal that allotted 49 enlisted positions from Air Force Communications Command to fill that requirement.

23 Apr Automated Weather Distribution System (AWDS) fly-off competition ended as ESD selected Contel Federal Systems, Inc., (Contel bought out Eaton Corp.) over UNISYS and IT&T FEC to build and install AWDS at 186 locations for \$79 million. [Note: General Dynamics (GD) subsequently bought out Contel] The 18-month competition began in 1988 after completion of IOT&E at Eglin AFB. "Long-haul" communication circuits were provided by US Sprint Communications Company.⁷

Jun AWS submitted a Fast Payback Capital Investment Program (FASCAP) package to provide funds to acquire 12 tactical rawinsonde, AN/UMQ-12, MARWIN sets.

4 Jun AWS/CC, BGen John J. Kelly, Jr., issued a policy letter to the weather wing commanders explaining assignment restrictions for women in combat situations. AWS had initiated

⁷ E-mail, McLellan, Mac, ESC/HBAJ, to Coleman, *AWDS Downselect*, 1 Aug 2011

a review in 1989 that continued into 1990 that resulted in closing a number of weather team positions to women including all special operations, armored cavalry regiments, separate brigades, ranger regiments, division mobile observing teams, and the maneuver brigades of the 101st Air Assault Division.

22 Jun Military Airlift Command Commander (MAC/CC), Gen Hansford Johnson, informed Major Air Command Commanders (MAJCOM/CCs) MAC had initiated a review of AWS structure and operations in the spirit of Defense Management Review and in anticipation of further force reductions. The goal was to achieve economies and efficiencies without degrading weather support quality by introducing unacceptable risks to safety and operational effectiveness.⁸

30 Jun Pacific Air Forces Commander (PACAF/CC), Gen Merrill McPeak, responded to MAC/CC's message of 22 Jun. Gen McPeak, presumably, voiced his desire to obtain operational command and control of weather forces in his theater. AWS was aware of Gen McPeak's position from feedback provided by the 1st WW/CC, Col Kelly Klein.⁹

[Historical note: The issue of unity of command as it related to AWS was addressed by General Carl Spaatz in his monthly newsletter for May 1947 to air force commanders:

*"I have given a great deal of consideration to the proper place for...the Air Weather Service in the future organization of the Air Forces. I have determined for reasons which are sufficient for me, but too voluminous for detailed treatment herein, that, in the best interests of the AAF,... AWS must be [a] permanent agenc[y] in our structure. I realize to some extent this cuts across certain command boundaries, particularly at base level, but this is made necessary because of the benefits which are derived from operation of [this] agenc[y] as [a] world-wide system, with essential ingredients of top management control and an inherent capability of extremely rapid expansion in time of emergency or war."*¹⁰

[Additional note: refer to May 1946 entry on *War and Weather* for another historical perspective on unified command of weather services.]

17 Jul National Aeronautics and Space Administration (NASA)/USAF launched the Combined Release and Radiation Effects Satellite (CRRES) into a highly elliptical, geosynchronous transfer orbit of approximately 217 by 22,236 miles. Launch weather support was provided by the AWS Cape Canaveral Forecast unit. On launch day, a total of nine upper air weather balloon soundings were made starting at launch minus 6 hours. A weather reconnaissance aircraft deployed at launch minus 90 minutes. It evaluated the weather downrange in the flight path of the vehicle and also assessed any weather areas of concern that

⁸ Msg., MAC/CC to MAJCOM/CCs, *Review of AWS Structure and Operations*, 22 Jun 1990

⁹ E-mail, Misciasci, Frank, Col, USAF Ret, to Coleman, *DMR and AF Restructure*, 27 Jul 2011, p1. [Personal recollection of Col Misciasci who was at AF/XOORF as this event evolved. The 30 Jun message is referenced in the 20 Jul MAC/CC message to PACAF/CC.]

¹⁰ Extract, Bates, Charles C. and Fuller, John F., *America's Weather warriors 1814-1985*, Texas A&M University Press, College Station, TX, 1986, p. 138. [This extract appears as attachment 3 in the AWS/CC memo to CINCMAC, 5 Nov 1990.]

may be approaching the Cape. A detailed weather briefing was provided to the General Dynamics launch director and the NASA launch manager prior to retracting the gantry, again prior to fueling, and then immediately before launch.¹¹

The yearlong effort involved 14 separate releases of barium, lithium, strontium, and calcium into the ionosphere and magnetosphere at altitudes ranging from 240 to 21,000 miles above the Earth's surface. The injections created "artificial auroras" which had no adverse environmental effects. By tracking the clouds, scientists were able to measure how electrical and magnetic fields in space interacted with the charged particles.¹² AFGWC provided forecasts for 20 – 40 sites from Canada to Chile in support of this experiment.

20 Jul MAC/CC, Gen Johnson, provided USAF/CC, Gen Michael Dugan, and PACAF/CC, Gen McPeak, the results of the command's review of AWS structure and operations. The results were submitted as a Defense Management Review II (DMR II) initiative that included "Streamline AWS."

*"As a Result of our detailed assessment, we can save 265 positions over a 4-year period. A substantial portion of these manpower savings will result by eliminating 13 squadron headquarters (overseas and CONUS) and restructuring weather wings and HQ AWS staffs. In developing this DMR initiative, we carefully considered various organizational arrangements and concluded that the only way to realize this magnitude of savings without significantly degrading support is to centralize command of all weather units. We believe centralized command, with operational control vested in the supported commander, is the most efficient and effective means to operate, train, and equip our forces and maintain strong weather support for all AF and Army forces worldwide."*¹³

MAC/CC sent another message on this date to all MAJCOM/CCs informing them of the savings associated with the DMR II initiative--\$61.4M through the period 1991-1997 plus manpower reduction of 265 positions.¹⁴

24 Jul Operation LOOKING GLASS ceased continuous airborne alert, but remained on ground alert 24 hours a day. Dubbed the "doomsday plane," a KC-135 from the 2nd Airborne Command & Control Squadron had been on continuous airborne alert for 29 years, ready to assume command and control of the Nation's nuclear forces if command centers at Offutt, the National Military Command Center, and Site R were destroyed. Over the years, units of AWS' 3rd WW, AFGWC, and Det 2, AWS were involved in providing support.¹⁵

2 Aug Iraq invaded Kuwait – Operation DESERT SHIELD began. This was the largest deployment of US forces since Vietnam.

¹¹ Art., *Combined Release and Radiation Effects Satellite—Press Kit*, NASA, Jul 1990

¹² Art., Manni, Richard A., *Artificial Auroras*, Popular Science, Oct 1991, p. 38,

¹³ Msg., MAC/CC to USAF/CC and PACAF/CC, *Review of AWS Structure and Operations*, 20 Jul 1990, (2035Z)

¹⁴ Msg., MAC/CC to MAJCOM/CCs, *AF DMR Round II*, 20 Jul 1990 (2300Z)

¹⁵ Looking Glass, *Op. cit.*

8 Aug Central Command Air Force (CENTAF) Staff Weather Officer (SWO), Lt Col Gerald Riley and two others deployed to the DESERT SHIELD Area of Operations (AOR)—arrived morning of the 9th.

8 Aug AF/XO, LtGen Eberhart, responded to Chiefs of AF Reserve and National Guard Bureau concerns about quality of weather and Notice to Airman (NOTAM) support provided to Air Reserve Component and Air and Army National Guard units by active duty units. The XO offered as a possible solution a dial-in service which exploited available technology to provide aviators direct access to weather and NOTAMs. This service included a dedicated cell of weather forecasters available to answer any questions pilots may have. AFW had implemented a program called Military Aircrew Information System (MAIS) that was similar in nature as the Federal Aviation Administration's (FAA) Direct User Access Terminal (DUAT) system.¹⁶



Figure 7-9: Capt John Murphy (front), Officer in Charge of DESERT SHIELD/DESERT STORM Theater Forecast Unit and SSgt John Cerone preparing weather documents for the Combined Joint Forces Commander.

10 Aug While deployed to the United Arab Emirates as part of Operation DESERT SHIELD, AFSOC CWT member TSgt Ronald H. Kellerman, attached to the 39th Special Operations Wing, “single-handedly built the largest ever weather network using high frequency (HF) radio capability. Traveling to 23 locations, he worked to get other weather teams on line. He acted as ‘network manager and ensured air, ground, sea, special operations forces, and coalition commanders, and mission planners had the weather intelligence that they needed when they needed it. Thousands of observations, pilot reports, forecasts, and surf zone conditions were transmitted on his watch. Without this effort, it would have been impossible to provide accurate and time-sensitive weather information to combat forces throughout the area of operations.”¹⁷

24 Aug Col James W. Goldey, CETCOM SWO and 1ST Wea Sq Commander, arrived in Riyadh accompanied by two weather officers to support CENTCOM and become Officer in Charge (OIC) of the Operation DESERT SHIELD weather support force. Lt Col Riley became full-time CENTAF SWO and OIC of the CENTAF weather support element.¹⁸

¹⁶ Ltr., Williams, Mike, LtCol, AFFSA/XON, *Weather and NOTAM support to ANG Aviation Units*, 8 Aug 1995; Ltr., Baca, Edward D., LtGen, USA, Chief NGB, *Weather and NOTAM Support to ANG Aviation Units*, 17 Jul 1995; Ltr., Whitlow, Mark, LtCol, AFRES/DOTS, *Air Reserve Component (ARC) Weather Support*, 20 Mar 1995

¹⁷ Art., Cunningham, Charles, R., Capt, USAF SMSgt DeCorte, Christopher M., SMSgt, USAF, *Quietly Serving for 70 Years, Special Operations Weather Teams*, [Air Commando Journal](#), Vol 1: Issue 2: Winter 2011/12, p. 26.

¹⁸ Hist., Nawyn, William E., Dr., AWS/HO, *Mission accomplished: The Air Weather Service in DESERT SHIELD/DESERT STORM, August 1990 – April 1991*, AWS Scott AFB, IL, Dec 1992, p. xvi.

29 Aug MSgt Samuel Gardner, Jr., SSgt March H. Cleyman, and SSgt Rande J. Hulec were killed in a C-5 crash at Ramstein AB, DE. They were enroute to DESERT SHIELD.

20 Sep Office of the Secretary of Defense (OSD) issued DMR Initiative (DMRI) 994 based on a Navy study prepared in Nov 1989. Navy proposed consolidation of DoD selected weather services (weather modeling, weather satellite processing, and computer flight plans). Vice Chief of Staff of the Air Force (VCSAF) and Under Secretary of the Air Force (SAF/US) opposed the initiative in a memo to OSD Comptroller (OSD(C)).¹⁹

1 Oct AWS issued Programming Plan (PPlan) 90-2, *Air Weather Service Management Streamlining*, to implement AWS changes outlined in the DMR II initiative titled, "Streamline AWS," which eliminated 265 manpower positions. At a high level, the course of action included reorganization across AWS (elimination of 13 weather squadrons), activation of an Army support wing, and manpower reductions across AWS as the result of fielding new technology.

26 Oct OSD(C) released draft DMR Decision 994 (DMRD)--"cuts HQ AWS manpower and consolidate 'in place' with Naval Oceanography Command; and/or consolidates satellite processing at AFGWC and computer flight plans (CFP), and computer models at the Navy weather center" [FNMOC].²⁰

29 Oct USAF Budget Review Board decided to make DMRD 994 a Major Budget Issue candidate. In addition, others took issue with the DMRD: USTRANSCOM, USSPACECOM, FORSCOM, OUSD (A), and HQ Army nonconcurrent; Assistant Secretary of the AF for Space (SAF/SN) expressed concern and recommended no action without detailed study; and Navy nonconcurrent with consolidation of headquarters.²¹

30 Oct Gen Merrill McPeak became the Chief of Staff of the Air Force (USAF/CC).²² Within a month, he asked AF/XO "how many bodies could we save by eliminating the weather wings, transferring the operational weather people



Figure 7-10: SSgt Gipperich (left) and Capt Skidmore discuss DESERT SHIELD synoptic situation at one of several tactical Base Weather Stations set up at various airfields in Saudi Arabia.

¹⁹ PP, Eadon, Ed, Lt Col, USAF, *Status of DMR 994 (Consolidation of Weather Services)*, HQ AWS/XTP, 5 Nov 90 [Point paper is attachment 1 to AWS/CC memo for CINCMAC, 5 Nov 90]

²⁰ *Ibid.*

²¹ *Ibid.*

²² Web, *CSAF*, Wikipedia, The Free Encyclopedia, 29 Jul 2011, down loaded from http://en.wikipedia.org/wiki/Chief_of_Staff_of_the_United_States_Air_Force

to the wing commanders in each MAJCOM, and moving the functional manager (weather general) to the pentagon.” AF/XOORF, Col. Frank Misciasci, working with AWS/CC, BGen Kelly, provided a response that mirrored the DMR II savings of 265 positions.²³

In addition, AWS provided MAC/CC the benefits of current AWS organization as an...

“optimized structure for operational effectiveness to support unified and specified command, USAF, Army, and national programs. Unity of command by MAC/AWS ensured high technical quality and optimized use of total weather support team (from base weather station to weather central). By USAF and Army regulations, supported commanders have operational control of supporting weather units.” Clear line of operational authority was analogous to unified and specified command arrangements.”²⁴

However, after AWS and MAC senior staff had coordinated on the response, Gen Johnson, MAC/CC, received word from sources at the Air Staff that there would be a “blood bath” if MAC opposed Gen McPeak. Gen Johnson “capitulated” and concurred with the transfer of operational weather people to their supported wing commanders.²⁵



Figure 7-11: Capt Mckito, 24th ID weather team, in 5-ton van equipped with weather gear and associated communications equipment.

5 Nov SAF/US suggested to OSD(C) the AF take the lead on conducting an 8 month to 1 year study of DMRD 994. BGen Kelly would lead the effort with representatives from OSD, Army, Navy, and a technical observer from the Office of the Federal Coordinator for Meteorology.²⁶

21 Nov AF/PR sent letter to AF/XO that identified a proposed restructure for AF/XO which included specific guidance about AWS: policy realignment from AWS to establish Directorate of Weather; transfer 42 authorizations from AWS; disestablish HQ AWS placing base level activities under local commander; and establish AFGWC and its subordinate unit, USAFETAC as a FOA with

²³ Misciasci, *Op. cit.*, p.2

²⁴ PP, Overall, Jim, Col, USAF, *Benefits of Current Air Weather Service Organization*, AWS/XT, 5 Nov 90. [Point paper is attachment 2 to AWS/CC memo for CINCMAC, 5 Nov 90] [In addition, Col Frederick, AWS/CV at the time, remarked in a 2 Aug 11 e-mail to Coleman, “We were frustrated that the AF history did not give us more ammunition as we were fighting this but we assumed that it was intuitively obvious at the time that weather did not respect command lines and crossed geographic and command boundaries with impunity and required centralized command and coordination to be efficient.]

²⁵ E-mail, Frederick, George, Col, USAF Ret., to Coleman, *Re: Review of DMR and AWS Streamlining*, 31 Jul 2011, 1540 CDT. In addition, *op.cit.*, Misciasci, p.2 alludes to this capitulation.

²⁶ Eadon, *Op. cit.*,

1024 positions.²⁷ For all practical purposes this nullified AWS PPlan 90-2. [Refer to 1 Apr 1991 event below for final outcome.]

19 Dec DMSP F-10 launched but did not reach its proper altitude due to problems with the rocket's booster. Because of this, many changes needed to be made to both hardware and software in order to allow AFGWC programs to accept the abnormal altitude. Changes needed to be made to the Satellite Handling System as well as software on System 5 and Site III.

1991

Jan – Feb BGen Kelly sent an advance team of four people [Col Pfeffer, Lt Cols Tom Walters, Ed Eadon, and Mike Mader] to work with Col Misciasci and other members of the AF/XO staff to craft a PPlan to set up AF/XOW and disestablish the AWS command structure, and to work the logistics (manpower spaces, office space, etc.) of establishing XOW. At the end of the period, Col Charlie Tracy reported as one of the first of the new XOW team (Deputy XOW). The AWS team returned to Scott, turning over unfinished tasks to Col Tracy and Col Misciasci to complete.²⁸

7 Jan Draft Weather Operational Support Plan for the Joint Surveillance Target Attack Radar System (JSTARS) published. The plan called for AFW units to provide observations and forecasts of various weather impacting elements for take-off, route, refueling, and orbit operations. Weather technicians provided forecasts of those elements that caused ducting and radio wave propagation difficulties. On board synthetic aperture radar (SAR) and moving target indicator Doppler radar were especially susceptible to ducting and refractive effects.

Deployed in time for DESERT STORM, JSTARS and the associated AF and Army industry team responsible for developing what the AF Association considered one of the "technological stars" of the Gulf War.



Figure 7-12: AFW Airman attached to the 101st Airborne Div using shower and shaving facilities during DESERT SHIELD just prior to the beginning of DESERT STORM.

17 Jan Operation DESERT STORM began with an extensive air campaign. Coalition air forces flew 2000-3000 sorties daily. LtGen Horner, CENTAF/CC, directed all aircraft stay above 10,000ft to avoid lethal antiaircraft fire below 5,000ft. Ceilings at or below 10,000ft became the significant weather parameter for air operations.

4 Feb BGen. Kelly announced the activation of the USAF Directorate of Weather (AF/XOW).

²⁷ Ltr, Fischer, Eugene, Maj Gen, USAF Reorg Task Force, *HQ USAF Restructure*, 21 Nov 1990, atch 2

²⁸ E-mail, Pfeffer, Gene, Col, USAF Ret. to Coleman, *Review of DMR and AWS Streamlining*, 31 Jul 2011. [Personal recollections of Col Pfeffer who was at AWS as these events transpired.]

20 Feb Start of the DESERT STORM ground war – progressed at an extremely rapid pace, it lasted a scant 100 hours. AWS weather teams supporting XVIII corps advanced over 200 miles in 4 days.

24 Feb AWS manning for DESERT STORM peaked at 452. Personnel were based at Headquarters (HQ) CENTCOM, CENTAF, and ARCENT and their field locations, and with HQ Special Operations Command Central and its AF and Army Special Operations Forces (SOF) units.

21 Mar BGen John J. Kelly, Jr. became the USAF Director of Weather and Col George L. Frederick assumed command of AWS.

23 Mar MAC/CC sent a letter to “Men and women” of AWS [before becoming a FOA] expressing his pride in the support AWS has proved to our armed forces for the past 45 years.

Apr AWS/CC, Col Frederick, briefed, CSAF, Gen McPeak, on the plan and timing for standing down all the weather wing headquarters. “McPeak had a large crowd in attendance and he pointed out that “AWS had bitten the bullet and marched out smartly and the rest of the Air Force should take note of this new way of doing business. Like it or not we [AWS] were trailblazers for the likes of Strategic Air Command going away, new names for Tactical Air Command, MAC, etc., and consolidated wings among a number of McPeak ideas. By the end of the summer AWS had transferred all the wings to the supported MAJCOMs. The furling of the wing flags was an emotional moment for many.”²⁹

1 Apr AF/XO message to AWS/CC, AWS Reorganization, recognized the establishment of AWS as a FOA reporting to the AF/XOW.³⁰ Leading up to this day, BGen Kelly and Cols Frank Misciasci, George Frederick, and Gene Pfeffer had worked together behind the scenes preparing sufficient justification to convince Gen McPeak that AWS should stay as the FOA with AFGWC as a subordinate operational center. Gen McPeak allowed AWS to keep its name even though it was a deviation from the other named FOA's which were all designated as Agencies because of the "historical significance of the name."³¹

1 Apr Congress directed the transfer of the weather reconnaissance mission to the AF Reserves at Keesler AFB, MS.

7 Apr US launched a humanitarian relief called Operation “PROVIDE COMFORT to assist the displaced civilians in Northern Iraq. 2nd Wea Wg members, Cpts Niesen and Lentz, served as staff weather officers, along with a 6-member enlisted team of observers and forecasters, provided weather support from Silopi, Turkey.

²⁹ E-mail, Frederick, George., Col, USAF Ret., to Coleman, *Re: Review of DMR and AWS Streamlining*, 31 Jul 2011, 1811 CDT. [Note: Difficult to pin down actual briefing date. AFWA/HO files contain a set of briefing slides that were dated 14 Mar 91. The content of the slides cover the subject matter. Since Col Frederick assumed command of AWS on 21 March and the FOA stood up on 1 Apr, I presume the briefing took place sometime in April.]

³⁰ Msg., AF/XO to AWS/CC, *Air Weather Service Reorganization*, 1 Apr 1991

³¹ Misciasci, *Op. cit.*, p. 2

2 May Chief of Staff of the Air Force, General Merrill McPeak, terminated E-4 NCO (Sergeant) status. In place since October 1967, the removal of NCO status for E-4s would reduce the NCO strength of the enlisted force to 52 percent yielding a better NCO to Airman ratio.³²

10 May Operation PRODUCTIVE EFFORT/SEA ANGEL. US forces deployed to Bangladesh to provide assistance in the wake of a 30 April cyclone and deadly tornadoes that killed hundreds of thousands of people and leaving thousands more homeless. 1st Wea Wg formed its Crisis Action Team to manage weather support. AFW weather teams deployed with the 1/1 Special Forces Group Disaster Assessment Response Team and 4/25th Aviation Regiment from 25th Infantry Division [Tropic Lightning] to Chittagong. The teams traveled light deploying with 9315TRs [HF fax receiver], TMQ-34 [Meteorological Measuring Set], Belt Weather Kit, GMQ-33 [Tactical Cloud Height Set], Taylor barometer, and a WRASSE [weather satellite receiver]. GOLDWINGS [tactical communications set] were not shipped due to cargo constraints. Communication signal reception from High Frequency Broadcast Stations (HFRBS) was very poor and unreliable throughout the entire 30 day deployment period.³³

23 May AWS published, *Air Weather Service Contribution to Winning the War—The Value of Weather Support Operation DESERT STORM/DESERT SHIELD Report 1*. The document quantitatively showed responsive and accurate weather support did provide a decisive battlefield edge! The report provided detailed contributions of weather support. From theater-level support for nominating reconnaissance assets, to individual unit support for Army intelligence preparation of the battlefield, to microscale scale support by the XVIII Airborne Corps SWO in extracting a compromised ground surveillance team, AWS personnel contributed to mission effectiveness, resource allocation, and protection of personnel.³⁴

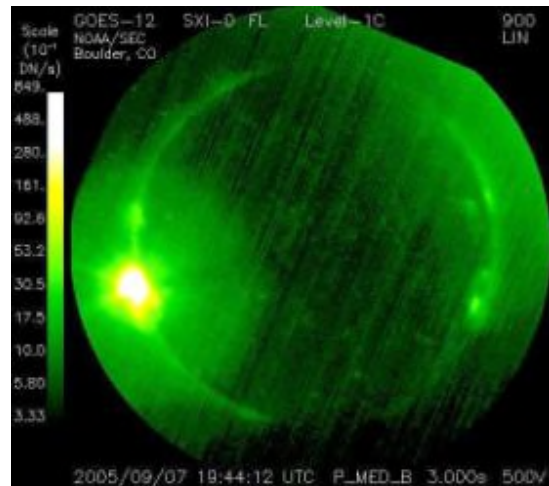


Figure 7-13: This 2005 image is an example of Solar X-Ray imagery collected at AFGWC. (U.S. Air Force image)

1 – 30 Jun AWS Space Environmental Support System (SESS) recorded record levels of both geomagnetic and solar flare activity. The average Ap³⁵ [a measure of the general level of

³² Spink, *Op. cit.*, p.21

³³ Ltr., Kopps, William J. Capt, USAF, Chief, Readiness Branch, 1st Wea Wg to AWS/DOJ, *Operation SEA ANGEL Final After Action Report*, 1 Jul 1991

³⁴ Rpt., *Air Weather Service Contribution to Winning the War—The Value of Weather Support Operation DESERT STORM/DESERT SHIELD Report 1*, 23 May 1991, p. i. [Ap is a measure of the general level of geomagnetic activity over the globe for a given day]

³⁵ Web, Ap, *Geomagnetic Disturbance Index*, NorthWest Research Associates (NWRA), downloaded from <http://www.nwra.com/spawx/ap.html>, 24 Jun 2011, [Ap is a measure of the general level of geomagnetic activity over the globe for a given day]

geomagnetic activity over the globe for a given day] of 38 for the month was the highest ever. The first half of the month saw some of the most energetic solar flares ever recorded. AFGWC recorded six X-ray events that completely saturated the GOES X-ray instruments. The frequency of this level of activity had never before been recorded.

9 – 28 Jun Operation FIERY VIGIL began with the eruption of Mt Pinatubo in the Philippines. This noncombatant evacuation order (NEO) resulted in the transfer of 20,000 people from Clark AB and US Naval Base Subic Bay. Members of Det 5, 20th WS were among the last to leave Clark as they provided surface weather and radar observations to the aircrews conducting NEO flights into and out of Clark.³⁶ Other AWS members from various 1st Wea Wg units deployed to Mactan, PI, with weather and communications equipment to support the Mactan Airlift Control Element. The Philippine AF took daytime observations and the AWS weather team provided observations at night. AFGWC provided trajectory bulletins so aircraft could avoid damaging ash cloud.

30 Jun The Laser Beam Ceilometer (CT-12K) and the Cloud Height Indicator (IP-1456) together were known as the AN/GMQ-24 Cloud Height Set. Installation of the GMQ-24 progressed smoothly with no glitches. By this date, 216 of the projected 254 CT-12Ks had been installed and 148 of the 168 scheduled IP-1456s had also been installed. The GMQ-24 replaced the 1950s designed AN/GMQ-13, Cloud Height Set, commonly referred to as the Rotating Beam Ceilometer.

Aug The first AN/FMQ-13 Wind Set was installed at Selfridge ANG, MI

Fall The AWS/CC, Col George Frederick approved a concept of an AFGWC core tactical forecast unit (TFU). Stemming from DESERT STRORM lessons learned, the TFU would “deploy an advance team of experienced personnel to any theater of operations not having an established centralized support facility, i.e., Korean Forecast Unit or European Forecast Unit, to serve as the initial cadre for providing theater weather support. The first use of this concept was in support of Operation KEEN EDGE, an exercise held in Japan in Jan 1992.

30 Sep The following AWS units were inactivated: 1st WW, 2nd WW, 3rd WW, 4th WW, 5th WW, 2nd WS, 3rd WS, 6th WS (Mobile), 15th WS, 17th WS, 25th WS, 28th WS, and 31st WS.

The following weather squadrons were transferred: 11th, 20th, and 30th WS to PACAF; 7th WS to USAFE; 1st and 5th WS to TAC.

The former wing headquarters staffs became directorates of weather (DOW) on their respective supported MAJCOM staff.

Oct AF/XOW conducted the first Worldwide Weather Conference. Senior weather leaders from the active, reserve, and guard assembled to address the future of the newly organized AF weather community. The outcome was a new vision statement.

“A Total Force team of professionals providing responsive and accurate weather support to air, land, and space operations--anytime, anyplace; dedicated to improving capabilities to give America's defenders the winning edge in war and peace--now and into the 21st century.”

³⁶ Hist., Pagliaro, Daniel, E., *The History and Legacy of the 20th Operational Weather Squadron*, 2006.

15 Oct Global Weather Intercept Program (GWIP) operations terminated at Clark AB, Philippines. The radio site moved to Owada, Japan and the Weather Intercept Concentrator Unit (WICU) moved to Yokota AB, Japan.

15 Nov AWS ended its support to the Military Man in Space program. Support to this weather officer in space project had been ongoing since AWS initial advocacy in 1985 [see 4 Sep 1985]. Lack of resources, DoD prioritization, environment, and politics, contributed to the decision to end the program.

28 Nov DMSP F-11 was launched.

6 Dec AWS published DESERT SHIELD/DESERT STORM Report 2, Lessons Learned. It addressed management at various levels, plans, weather support, weather information systems (communications and weather equipment), training, supply, relations with foreign meteorological services, and joint interoperability. The last paragraph of the executive summary concluded:

“As we would expect and can continue to expect in future operations there was room for improvement in each major area. However, we must not let that overshadow the overall success attained by the [Weather Support Force] WSF. The positive achievements outweigh the shortfalls in every major area. There are numerous examples of the talent and ingenuity of the WSF contributing to winning the war. The bottom line is AWS personnel were intimately and completely involved in the planning and execution of the air and ground wars and made a definite contribution to winning the air and ground wars. We can all be proud of those who served.”³⁷

1992

Jan – Jun To meet year-end congressionally mandated manpower strengths, AFW personnel were confronted with the threat of selective early retirement boards, voluntary separation incentives, special separation benefits, and an officer reduction in force boards.

Jan Operation PROVIDE HOPE, was a Department of State led, DoD supported, emergency relief operation for the Commonwealth of Independent States (CIS) [regional organization consisting of former Soviet Republics]. AFGWC provided terminal aerodrome forecasts (TAFs) and 24-48 hour outlooks for all primary destinations.



Figure 7-14: Andrews Base Weather Station briefing function AWDS displays – no more clipboards of teletype bulletins, maps displays, and teleautowriters.

³⁷ Rpt., *Air Weather Service Contribution to Winning the War— Lessons Learned Operation DESERT STORM/DESERT SHIELD Report 2*, Executive Summary, 6 Dec 1991, p i-iv.

3 Jan AFW received an exemption to the overall civilian hiring freeze that DoD initiated in FY 90. AFW units providing support to flying operations could hire observers and forecasters since those personnel were necessary to maintain flight safety.

14 – 17 Jan AFGWC/DOF supported Operation SILVER EAGLE, a joint airdrop exercise with Botswana forces, with drop zone forecasts for an area in southern Botswana. Aircrews and troops staged out of Italy/Spain and through Ascension Island.

22-23 Jan AWS/CC, Col George Frederick, visited the Air Force Academy to request more emphasis on a meteorological curriculum. In a meeting with the dean of faculty and the chairperson of the economic and geography departments, it was determined that pilots needed a better understanding of the impact of weather on overall Air Force operations. Col Jim Head, of the Physics department “was the real powerbroker” behind the effort.³⁸ AWS’ goal was “to have a full-up curriculum beginning in the fall of 1993.” At the Academy’s request, AWS installed a suite of six AWDS for use in the program. This provided cadets hands-on introduction to current weather data, products, and communications beyond the standard academic meteorology coursework they received in the program. In March 1994, the meteorology laboratory was formally dedicated to Lt Gen Thomas S. Moorman, fifth Superintendent of the Academy and fifth Commander of AWS.³⁹

31 Jan AF realignment, base closures, and host nation approval documentation created significant challenges to the management of AWDS installations. By this date the baseline number of systems had shrunk to 168 from a March 1990 baseline of 186. AWS had instituted well-defined requirements and configuration control processes to effectively manage AWDS changes submitted by users.

Apr Detachment 5, Hq AWS was activated at Keesler AFB, MS. Dubbed the “Weather Training development Facility,” its mission was to “produce weather training materials for AFW.

May USAF Mobility center completed an Initial Operational Test and Evaluation (IOT&E) on the AN/UMQ-13, Meteorological Data Station (MARK-IVB). The team found the MARK-IVB operationally effective and suitable to support AF missions. The AF Procurement Executive Officer for Space (AFPEO/SP) authorized Space Systems Division to exercise an option for Lockheed to produce six fixed systems at a cost of \$13M. Over the next several years, Lockheed would install MARK-IVBs at Guam, Hickam, Elmendorf, Kadena, Lajes, and Sembach.

Jun Due to an Air Force directed change in officer versus enlisted requirements; AWS converted 40 FOA officer positions to enlisted.

17 Jun All unclassified operations (except for Over the Horizon Backscatter (OTHB) support) of SESS of AFGWC transferred to the Space Forecast Center at Falcon AFB. Final closure of AFGWC’s SESS took place on 1 Oct. 92.

³⁸ E-mail, Frederick, George, Col, USAF Ret., to Pfeffer, Gene, Col, USAF Ret., *Re: Review of 1990-1995 Period*, 5 Aug 2011, 1358 CDT; e-mail, Frederick, to Coleman, *Re: CC Visit to USAFA*, 5 Aug 2011, 1938 CDT.

³⁹ E-mail, Frederick, George, Col, USAF Ret., to Pfeffer, *Re: Review of 1990-1995 Period*, 5 Aug 2011, 0740 CDT; e-mail, Demmert, Paul, Maj, USAF Ret., to Coleman, *Re: Review of 1990-1995 Period*, 4 Aug 2011, 2047 CDT; and e-mail Pfeffer, Gene, Col, USAF Ret., to Demmert, *Re: Review of 1990-1995 Period*, 4 Aug 2011, 2056 CDT

Jul NEXRAD, Weather Search Radar - 88 Doppler (WSR-88D) began full-scale production.

3 Jul AFGWC/DOF provided initial support to Operation PROVIDE PROMISE, a combined US/NATO effort to provide food and medical supplies to war-torn Bosnia-Herzegovina. AFGWC provided flying TAFs for Sarajevo and Zagreb along with analysis and forecast of the Balkan region. Eventually, the European Forecast Unit took over responsibility for the duration of the operation.

Aug The Weather School moved from Chanute AFB, IL to Keesler AFB, MS.

4 Aug AF/XOW, BGen John J. Kelly, sent SAF/AQSS the Mission Need Statement (MNS) 014-92, for the Global and Theater Weather Analysis and Prediction System (GTWAPS). The MNS documented the need to replace AFGWC's numerical weather analysis and prediction models with higher resolution, more accurate atmospheric analyses and forecasts. Planned operational date was the late 1990s.

6 Aug Deputy Oceanographer of the Navy and the Air Force, Deputy Director of Weather, "approved the formation of four study teams to address 16 proposed areas of cooperation." The effort was known as the NAVAF cooperation initiative. This initiative helped eliminate duplication of services. Daily operational support, staff interaction, and Joint Typhoon Warning Center were the first topics addressed. This cooperative effort was an outgrowth of DMRD-994 effort [refer to 5 Nov 1990 entry].

30 Sep AWS turned off its magnetometer observing network consisting of instruments at Loring AFB, ME, RAF Upper Heyford, GB, Goose Bay, CN, and College, AK. AFW would now depend on a US Geological Survey managed network of instruments.

31 Dec Surface observing equipment installations completed by this date: All but 14 of the AN/GMQ-24, Laser Beam Ceilometers; 123 of a planned 143 AN/FMQ-8 Digital Temperature Dew Point Measuring Systems; and 26 AN/FMQ-13, Wind Measuring Sets had been installed. Plagued by lack of installation funds, many of the remaining installations were completed through "self-help" initiatives.



Figure 7-15: Last forecaster training class at Chanute Technical Training Center, Rantoul, IL. (Scanned from special edition of *Observer*, 1993)

1993

In 1993 Military conversions continued with 22 billets changed from officer to enlisted; 31 weather officer authorizations changed to civilian slots; and 24 non-weather positions converted to civilian.

Jan. – Jun AFGWC continued to provide weather bulletins and target forecasts in support of Operation SOUTHERN WATCH, the enforcement of the United Nations (UN) no-fly zone in Southern Iraq.

3 Mar Assistant Vice Chief of Staff of the AF approved the Cloud Depiction and Forecasting System (CDFS) II, MNS 005-92. CDFS II would provide accurate global, and theater cloud depictions and forecasts for effective planning, deployment, and employment of national strategic resources, global power projection assets and mobility forces.

14 Apr The transportable portion of the MARK IV-B program was canceled due to cost increases and simultaneous reductions in funding. Instead, transportable requirements would be met through service life extension of the MARK IV and a Small Tactical terminal, pre-planned product improvement initiative.

27 Apr Last observing and forecasting classes conducted at Chanute AFB, IL ended this date. Amn Staci N. Coleman, one of six observers, remarked, "I've always wanted to be in someone's history book."⁴⁰



28 May AWS Change of Command. Col Frank J. Misciasci, Jr. assumed command of AWS from Col George L. Frederick, Jr.

Figure 7-16: Graduates of last observer class with BGen John J. Kelly, Jr., AF/XOW (center). From left AB Gregory J. Strong, Amn Staci N. Coleman, AB Erik V. Ronse, Gen Kelly, AB Timothy K. Schwader, SrA Leonard F. Lewis, and A1C June F. D. Sevensing. (Scanned from special edition of Observer, 1993)

Jun The Laser Beam Ceilometer [AN/GMQ-24] program became "fully operational." This program replaced the 1950s vintage AN/GMQ-13 Rotating Beam Ceilometer.

15 Aug The Automatic Digital Weather Switch (ADWS) was relocated from Carswell AFB, Texas to Tinker AFB, Oklahoma.

30 Sep AFGWC Completed work to transmit High Resolution Analysis System (HIRAS)/Global Spectral Model (GSM) to Air Force technical Application Center (AFTAC)

⁴⁰ Art, Rhodes, William M. TSgt, USAF, Editor, *Class Roster*, Observer Special Edition, AWS, Scott AFB, IL, 1993, p. 4.

Oct-Nov AFGWC implemented emergency data transfer to add weather bulletin shipments to the SDHS in support of worldwide training Exercise BRIGHT STAR 94 and contingency operations in Somalia and Saudi Arabia.

24 Nov The Transportable AWDS was accepted in its final form.

31 Dec Installations of AN/FMQ-8 Digital Temperature/Dew Point Measuring System, which replaced old AN/TMQ-11 analog systems, were 95 percent complete by the close of 1993.

1994

Jan – Jun AFGWC Special Support Branch provided weather forecasts to national Programs for use during the emergencies in Chechnya, Bosnia-Herzegovina, and Croatia.

Feb DMSP data archival system fully operational. Initiated 17 Aug 1993 with the signing of a Memorandum of Agreement between the DMSP SPO, NESDIS, and AFGWC, AFW units now had access to historical DMSP imagery for meteorological research and technique development.

Feb First-ever operational status for providing weather briefing to the AF Director of Weather (AF/XOW) achieved via the Remote Briefing System.



24 Feb. – 21 Jun AFGWC provided sole support to the Tanker Airlift Control Center (TACC) and On-Site Inspection Agency (OSIA) for Strategic Arms Reduction Treaty (START) inspections.

May BGen Thomas J. Lennon took over the leadership role of AFW from BGen John J. Kelly. An F-111 wing commander during DESERT SHIELD/STORM, Gen Lennon was the first non-weather trained person to assume leadership of the weather function.

5 May President William J. Clinton issued Presidential Decision Directive/National Science & Technology Council number 2 (PDD/NTSC—2), Convergence of U.S. Polar-Orbiting Operation Environmental Satellite Systems (NPOESS). The objective of the directive was to

reduce cost of acquiring and operating polar orbiting environmental satellite systems (POES). The DOC and DoD were to integrate their programs into a single, converged, national system. NASA would support in facilitating the development and insertion of new cost effective technologies to meet operational requirements.⁴¹

Jun AFGWC implemented CLOUDS 95-04 to upgrade Snow Depth Analysis Model to FORTRAN 77 from FORTRAN V; incorporated SSM/I data to detect ice, and incorporate a new spreading algorithm.

July – Aug AFGWC Special Support Branch provided weather forecast to national Programs during the emergencies in Rwanda.

12 Jul AFGWC implemented first of three planned Relocatable Window Model (RWM) advanced physics packages (NMRWM 94-03).

1-26 Aug AWS conducted an operational test and evaluation of the Advanced Computer Flight Plan capability to determine its operational effectiveness and suitability to support Air Mobility Command (AMC) missions.

11 Aug AFGWC implement Swedish Limited Area Model (SLAM) (NMRWM 94-04) as an emergency implementation in support of the Rwandan humanitarian relief effort.

1 Sep AFGWC transitioned High Altitude Turbulence Model output into operational use.

1 Sep The AWS Technology Directorate (office symbol XT) and Director of Operations (office symbol DO) merged on 1 September 1994 and became the Technology, Plans, and Programs Directorate (office symbol XO).

6 Sep AFGWC implemented CLOUDS 94-17 to allow visualization of background brightness fields used in Real-Time Nephanalysis (RTNEPH) to determine clouds using visual satellite data.

Fall Weather flight operators of the 31st OSS/OSW, Aviano AB, Italy convinced 31st Fighter Wing decision makers to keep security and maintenance teams on site at Aviano rather than deploy them to alternate airfields to recover F-15Es returning from an Operation DENY FLIGHT mission.

31 OSS/OSW provided wide-ranging support to more than 90 aircraft operating from a single-runway airfield. Several lines of F-15Es were mission planning for sorties which would bring them back after dark on a day where the prevailing winds were steady and blowing down the 240-degree runway heading—the only night approach direction, which meant an out-of-spec tailwind for a heavy recovery [airframes recovering with a full complement of weapons].

On a few previous similar situations a strong tailwind condition had driven a recovery to the closest legal alternate at the Italian air base at Grosseto, 239 miles away and on the Italian west

⁴¹ PDD, Clinton, William J., POTUS, *Convergence of U.S. Polar-Orbiting Operation Environmental Satellite Systems*, PDD/NTSC-2, 5 May 1994, down loaded from <http://www.fas.org/spp/military/docops/national/cnvrgrpf.htm>

coast. When this occurred, maintenance and security teams were required to “scramble” to be in place to receive the jets, incurring thousands of dollars in TDY costs and taking need manning off site.

The weather forecast called for mountain drainage winds to overcome the prevailing after sunset, but the mission planners, including the deployed Sq/CC had no confidence in the TAF. The lead wing weather officer convinced the planners to keep the security and maintenance teams on site at Aviano because the F-15Es would be able to recover.

The winds remained steady and moderately strong (15 kts, gusting to 20) and straight out of 240 degrees throughout the late afternoon, but started dropping in speed soon after the sun set. Within one hour of sunset the speeds were steady below 8-10 kts and all the F-15Es—on this occasion, a six-ship flight—recovered safely and without incident. The weather forecast was noted by the 31 FW/CC at the next daily standup as a “great call” that saved well over \$50K dollars by avoiding an unnecessary scramble across northern Italy of around 50 personnel.⁴²

1 Oct Detachment 7, AFGWC, assumed the mission of Detachment 11 (Hickam) and Detachment 40 (RAF Croughton), to include worldwide Data Requirements and all Automated Digital Weather Switch functions.

1995

Jan Fielding of the AFGWC NEXRAD Information Dissemination System (NIDS) was approved and funded through AWS. This system would allow AFGWC’s CONUS Severe section access and view all individual WSR-88D radar returns.

Jan – Jun AFGWC provided ongoing support for PROJECT STRIKE which was tied to the Real Time Weather in the Cockpit initiative.

9 Jan – 3 Mar AFGWC provided forecasts for Operation UNITED SHIELD, the evacuation of all United Nations (UN) peacekeeping forces from Somalia.

10 Jan AF/XOW and CNO (C096) published results of discussion concerning several NAVAF cooperation initiatives. They reached agreement on Numerical Weather Prediction, Meteorological Satellite processing, theater METOC Centers, tactical equipment, AFGWC-FNMOC Communications, Automated Weather Network, Dial-in Systems, Computer Flight Planning, and Joint Theater forecast Consistency Concept of Operations. They also agreed to continue cooperation efforts.⁴³

17 Jan AWS accepted the Automated Surface Observation System (ASOS) on 17 January 1995. Congress provided funds and directed AF to procure the NWS/FAA developed ASOS. AWS identified 40 locations that could benefit from the automated capability ASOS provided—auxiliary

⁴² Comoglio, Ronald, Capt, USAF, 31OSS/OSW, *Operation DENY FLIGHT*, Weather Call for Fighter Recovery Operation DENAY FLIGHT Vignette, USAF/A3O-W, Fall 1994.

⁴³ Memo., Shaffer, Al, Lt Col, USAF and Hopkins, Charlie, Cdr, USN, *Navy-Air force Cooperation Initiative Discussion*, joint memo CNO (N096)—AF/XOW, 10 Jan 1995.

airfields, bombing ranges, etc. [Note: this was not the first automated observing system in AFW; refer to Jul 1951 entry]

19 Jan The Combat Weather Facility (CWF) was activated at Hurlburt Field, FL. Its mission was to develop and conduct realistic combat training for AFW personnel. Det 4, AWS was inactivated.

Mar 24th Weather Squadron, Army Operations Weather Flight (24 AOWF) deployed in support of Joint Task Force SAFE BORDER. This operation was a peacekeeping mission established as the result of a border dispute between Ecuador and Peru. The 24th AOWF established a weather observation sensing strategy for the area of operations using Army Special Forces and Navy SEAL (Sea, Air, and Land) team personnel, equipped with AN/TMQ-34 Metrological Measuring Sets.⁴⁴

30 Mar AFGWC completed Weather Information Processing System (WIPS) expansion and declared the system fully operational.

26 Apr HQ AWS completed a Strategic Plan to guide the organization into the 21st Century. After a yearlong effort, AWS identified six goals and associated objectives. These were measurable targets achievable within 1-2 years to reach the desired goal. The goals were to plan for and provide, 1) standard weather systems, 2) centralized weather products, and 3) technical advice and help; 4) ensure standardization of procedures and interoperability; 5) assess the technical performance and effectiveness; and 6) establish people, environmental, and support process goals. The headquarters and centers developed top-level action plans to achieve the strategic plan goals.

18 May Col Joseph D. Dushan assumed command of AWS from Col Frank J. Misciasci, Jr.

25 May SAF, Sheila E. Widnall, announced the designation of the CWF as a Reinvention Laboratory. The CWF was challenged to overcome specific AFW deficiencies—combat skills, capability of operations in data-sparse regions, dissimilar peacetime and wartime operations, and lack of combat weather tactics, techniques, and procedures. They would achieve this by using a three-tiered concept of “Know the Weather,” “Apply the Weather,” and “Own the Weather.”⁴⁵

31 May The Government Accountability Office⁴⁶ (GAO) issued an audit report titled *Weather Forecasting, Radar Availability Requirement Not Being Met*. GAO conducted a review of the NEXRAD program at the request of the Chairman, the Honorable Robert S. Walker, of the

⁴⁴ Paper, Vinson, James M., SSgt, *A White Paper on The Weather Observation Network for JTF-SAFE BORDER*, Apr 1995. Faxed 24th Weather Squadron to AF/XOW 23 Apr 1995; filed in AFWA/HO 1996-2000 supplemental folder.

⁴⁵ Memo, Widnall, Sheila, SAF to Dir. Defense Performance Review, *Establishment of CWF as a Reinvention Laboratory*, 25 May 1995. [See enclosure]

⁴⁶ Web, *Government Accountability Office*, Wikipedia, downloaded from http://en.wikipedia.org/wiki/Government_Accountability_Office, 15 Jan 2012. [GAO is the audit, evaluation, and investigative arm of the U.S. Congress. Prior to 2004, the name was General Accounting Office.]

Committee on Science, House of Representatives, between October 1994 and May 1995. The team interviewed personnel from HQs AWS and ACC, and seven AF bases that operate WSR-88D radars. From Jan 94 through Jan 95, the reported percent of operational AF NEXRADs meeting the 96 percent operational availability requirement each month ranged from 38 to 90 percent. The report identified inconsistencies of availability data collection and logistics delay as significant contributors to the low availability rates. The auditors recommended the SAF direct the AFW Directorate of Weather improve the reliability of the AF NEXRAD availability data and to correct any shortfalls that these data show.⁴⁷

1 Jun AFGWC implemented CLOUDS 95-04 to upgrade Snow Depth Analysis Model from FORTRAN V to FORTRAN 77, incorporated SSM/I data to detect ice, and incorporated a new spreading algorithm.

23 Jun USAF/XOWX provided AWS the results of BGen Lennon's presentation to the 1995 Spring CORONA Conference (a meeting of CSAF and all of the MAJCOM/CCs). In his "Weather Horizons" briefing he highlighted three issues where he needed CSAF redirection

"Issue: since disestablishment of AWS in 1991 there was no global standardization of weather operations; fix – standup an AFW Stan Eval team.

Issue: Numerous drawdowns created a loss of technical leadership within weather; fix – there should be one functional manager (within weather) to control all the weather billets.

Issue: existence of global communications for weather operations; fix – standup a communications function within the FOA."

General Fogleman, CSAF, approved all three issues for implementation.

15 Aug AF/XOOB issued a Department of Air Force Movement Directive to move USAFETAC to Ashville, NC, collocated with the National Climatic Data Center. The move was projected to take place beginning in late fiscal year 1996 and continue through fiscal year 1998.

1 Oct USAFETAC was redesignated as Air Force Combat Climatology Center (AFCCC) to more adequately describe the unit's mission and value to the combatant commands.

16 Oct AWS provided AF/XOW a no-cost solution for re-establishing the Aerospace Sciences (DN) function within the FOA. Manpower specialists had determined that 13 additional authorizations were required to stand up a separate DN function. This was cost prohibitive. Col Joseph Dushan, AWS/CC, believed that a number of ongoing initiatives by the AWS/XO directorate would satisfy AFW's need for increased technical services and publications – Meteorological Technical Information Publication System (METTIPS) computer program; Meteorological enhancement Seminars (MES) (a "traveling road show" of technical assistance); and the Cooperative Program for Operational Meteorology, Education and Training (COMET) program.

⁴⁷ Rpt, *Weather Forecasting, Radar Availability Requirement Not Being Met*, GAO/AMID-95-132, GAO, May 1995.

14 Nov At 1400 Central Standard Time, all non-essential AWS civilian employees were placed on a brief furlough until the US Congress passed the Fiscal Year 1996 budget appropriation or issued a new continuing resolution authority. Many civilians were disgruntled over the use of the term mission essential. Col Joseph Dushan, AWS/CC, assured civilian personnel that all employees were considered essential and necessary to the AWS mission and were part of the team. Employees were heartened to hear those words.

14 Nov AF/XOW provided DDR&E/ELS a follow-up on GAO May 1995 report on NEXRAD availability. AFW had taken the following steps to address the problem: instituted a process to verify standard AF maintenance reporting system was consistent with NEXRAD availability reporting procedures—by Sep AFs 20 radars were within 0.5% of the required 96 percent availability; identified critical points of failure—on-site spares, the uninterruptable power supply, and the communications line quality; and reiterated AF policy to AF major commands, stressing the importance of NEXRAD data, and the AF obligation to make the data available.⁴⁸

30 Nov HQ USAF/CC, Gen Ronald R. Fogleman, informed the MAJCOM/CCs it was “time for the air Force to take the initiative” in outsourcing and privatizing “support services for our combat units.” AF had established a new division within Deputy Chief of Staff for Logistics as the single point for all outsourcing and privatizing efforts. Weather, under the category of operations support, was one of the identified outsourcing candidates.⁴⁹ On 4 Jan 96, the AF/XOW staff informed MAJCOM weather functional leads that Gen Fogleman’s goal was for MAJCOMs to include outsourcing and privatization plans in their Fiscal Year 98 Program Objective Memoranda. It was the AF/XOW’s position that weather should be shown as a “core mission of war and not just a support function.” Rationale for this position was provided to assist weather functional leads in their deliberations within their individual commands. The track record within AFW had shown that it was not cost effective to privatize weather operations and most importantly it would be damaging the AF and Army’s ability to effectively conduct combat operations.⁵⁰

28 Dec AF announced the integration of communications, computer, and information management functional areas with an office symbol of these combined assets as SC. This action led to the planning for the transfer of personnel from the Standard Systems Group (Tinker AFB, OK) to the AWS/SC, which was established in Oct 91 when AWS became a field operating agency.

31 Dec The AN/FMQ-13, Wind Measuring Set program had completed 179 of 196 installations.

⁴⁸ Memo, Clark, Ray, Maj, USAF, Follow-up on GAO Report: "Weather Forecasting: Radar Availability Requirement Not Being Met" (DDR&E/ELS memorandum, 27 Oct 95), AF/XOW, 14 Nov 1995

⁴⁹ Memo, Ronald R. Fogleman, Gen, USAF, *Outsourcing and Privatization*, HQ USAF/CC, 30 Nov 1995

⁵⁰ Memo, John M. Haas, Col, USAF, *Outsourcing and Privatization*, HQ USAF/XOWR, 4 Jan 1996 [Note: This is the cover letter that has USAF/CC memo above attached along with briefing XOWR provided AF/CVA on 3 Jan 96.]

1996

5 Jan Maj William Tasso, AWS/XORR, prepared a position paper on *Incorporating “Own the Weather” into PME [Professional Military Education] Curriculums*. He posed, “We [AFW] have failed to educate the customer on the benefits that AFW provides in the successful prosecution of military operations.” Efforts to market capabilities in publications and the designation of meteorology as a core subject at the United States Air Force Academy (USAFA) were superb ways to reach some users of AFW services, but they only reached a small segment of the USAF population. The three tiered process of “Know the Weather”, “Apply the Weather,” and “Own the Weather”⁵¹ was proposed as the basis for further education of additional “*future* leaders.” He further posed, “The USAF accession programs and professional military education appear to be the ideal avenues...” He supported his position based on a review of the Air Command and Staff College (ACSC) 1995 seminar course material. “Of 300 plus readings contained in 40 lessons, there [was] not a single reading [dealing] with the importance of weather support to military operations.”⁵² This document served as source information for BGen Lennon’s concern about the lack of weather awareness in AF operations. [Reference 28 Jun entry below]

16 Jan AWS reestablished the aerospace science function (AWS/XON) to provide AFW the tools, techniques, and methodologies necessary to measure AFW technical health and assist with improvements of AFW operational capability.

Feb AWS published the results of an operational demonstration of the Tactical Forecast System (TFS). Hosted on standard desktop personal computers, TFS software was the base weather station’s second-generation micro-processor based integrated processing, analysis, and display capability. It provided AFW a step towards achieving “same in peace as in war” capability. AWS conducted the demonstration at Shaw AFB, SC from 31 Jul – 4 Aug 95 to illustrate the operational effectiveness and suitability of the TFS for deployed weather operators using non-secure and secure internet protocol router network (NIPRNet) (SIPRNet) communications. The results indicated TFS was effective using NIPRNet. However, SIPRNet could not be evaluated because an approved interface was not yet developed.

Feb AWS published AWS/TN-96/001 *Use of Polar-Orbiting Meteorological Satellite Data by AFW*. Written by Maj. Michael Bonadonna and Capt. Louis Zuccarello, the document identified and justified polar-orbiting meteorological satellite requirements of AFW. Specific requirements for atmospheric weather parameters and thresholds and space environmental parameters were identified. In addition, it contained references to all known studies and documents that justify the requirements. TN/96/001 served as a source for the AF contribution to the Joint Staff Joint Requirements Oversight Council (JROC) deliberation on NPOESS requirements.

Feb – Mar Thirty-nine AFW people deployed in support of Operation JOINT ENDEAVOR, NATO’s implementation force (IFOR) to establish regional stability in the Balkans. Most came from the 617th Weather Squadron, with headquarters in Heidelberg, Germany. They provided crucial

⁵¹ Windall, *Op. cit.*

⁵² PP, Tasso, William, Maj, USAF, Incorporating “Own the Weather” into PME Curriculums, AWS/XOOR, 5 Jan 96

weather observations and planning/execution forecasts for airlift, helicopter, convoy, and bridging operations.

12 Feb In response to an Army Cold Regions Research and Engineering Laboratory request, AFGWC began providing direct support for the Army's Vth Corps and 1st Armored Division for Operation JOINT ENDEAVOR. Support included snowmelt runoff and resulting stage/discharge information for the Sava River [northern border of Bosnia and Herzegovina].

26 Mar AWS/CV, Col Gerald Riley, informed 72nd SPTG/DPCSE, of AWS actions to relocate all functions, ten civilian personnel authorizations, and resources providing weather communications operations support activities currently at HQ SSG OL-B, Tinker AFB, OK. Five would transfer to Det 7, AFGWC at Tinker. The other five would transfer to HQ AWS at Scott AFB and reside in the SC directorate.

1 Apr 10th Combat Weather Squadron (10th CWS) was activated and assigned to 720th Special Tactics Group at Hurlburt Field, FL. The squadron was comprised of five detachments and one Operating Location (OL) that were co-located with their customer(s). Customers supported included Special Forces Groups (SFG), Ranger Regiments (RGR), Special Operations Aviation Regiments (SOAR), Psychological Operations Groups (POG), Special Warfare Training Groups (SWTG), Civil Affairs (CA) units, and Special Operations Support Battalions.⁵³

4 Apr Secretary Air Force (SAF) Legislative Liaison office provided Congress a response to FY96 National Defense authorization Act Conference Report, which directed SAF to report on the measures needed to conform the operation of AF NEXRAD radars to the NWS operation standards. AWS, in coordination with the MAJCOM directorates of weather and AF/XOW, had prepared a short synopsis of differences between the AF and NWS radars and showed it would cost \$48.74 million to bring the AF radars to the same operating standards. AWS recommended a less costly solution (\$4.427 million) that focused on improving availability of radar data.

19 Apr AWS/CC, Col Joseph Dushan signed AWS Programming Plan (PPlan) 96-001, *AFCCC Relocation*, to identify the events and plan the activities necessary to relocate AFCCC from



Figure 7-18: SSgt. Jody Ball releases a weather balloon during a Special Operations Weather Team exercise near Hurlburt Field, Fla. Sergeant Ball, a Special Operations Weatherman, was assigned to the 10th Combat Weather Squadron at Hurlburt. (U.S. Air Force photo by Chief Master Sgt. Gary Emery)

⁵³ Web, USAF 10th CWS, SpecWarNet, downloaded from http://www.specwarnet.net/americas/10th_cws.htm , 14 Jan 2012.

Scott AFB to Asheville, NC. Large cuts in AFCCC manpower were programmed for the end of fiscal year 1998 during the early 1990s. To continue providing top-notch climatology products and services to the warfighters and other customers, consolidating AFCCC with Operation Location A (OL-A), AFCCC and relocating to the Federal building in Asheville, NC was the most effective solution.

19 Apr AFGWC/CC, Col Jack Hayes, announced the plan to regionalize operations of AFGWC into logical theaters of operations, Europe, Pacific, Tropics, etc. The goal was to provide detailed weather effects on specific theater mission areas. Initial operating capability was achieved on 29 May.

8 May AF/XOWP, Maj Bob Tiefenbach, briefed the senior Meteorological and Oceanographic (METOC) Officer conference on AF's proposed change to Joint METOC Coordination Organization (JMCO) concept as defined in Joint Publication 3-59. AF proposed a two tier approach to JMCO. Identify an existing METOC center designated as JMCO coupled with a small forward deployed liaison consultation team providing focused emphasis on Area of Responsibility (AOR) at Joint Force Air Component Commander (JFACC), Joint METOC Coordination Cell (JMCC), Joint Force Land Component Commander (JFLCC), and Joint Force Special Operations Component Commander (JFSOCC).

23 May AFGWC published the performance specifications for Military Aircrew Information System (MAIS). It was designed to provide AF and Army Guard and Reserve aircrews access to weather and NOTAM products and support from a support center manned by weather forecasters. The support center would provide aircrews clarification or assistance in interpreting weather products as needed. Using funds provided by the Guard and Reserve, AFGWC initiated contracting actions to develop the much needed capability.⁵⁴

28 Jun Departing Director of Weather, BGen Thomas Lennon, submitted an end-of-tour memorandum to USAF/CC, General Ronald Fogleman. BGen Lennon expressed his concern with the lack of weather awareness in AF operations, from initial flying instruction, to combat operations, to safety board reporting. Instituting a meteorology program at the USAFA was a step in the right direction, but more awareness was needed. He also believed weathermen had lost their focus on operations. He was concerned with the officer-to-enlisted ratio and grade distribution in AFW and believed the weather function should not be aligned as other career fields. He attributed an all-time low of forecasting skill to restructuring and budget exercises over the last 20 years. These events led to less science (officers) and less art/experience (enlisted technicians) to the point where forecasting skill was at an all-time low.⁵⁵ This document became the basis for near-term transformation activities of AFW.

30 Jun The Defense Information Systems Agency (DISA) published *AWDS VSAT [Very Small Aperture Terminal] Network Systems Engineering, Final Report*. The report identified the

⁵⁴ Doc., *Performance Specifications for MAIS*, 23 May 1996

⁵⁵ Ltr., Lennon, Thomas J., BGen, USAF, Director of Weather, Memo to General Ronald R. Fogleman, AF/CC, 28 Jun 1996

communications architecture and equipment configuration of a system that would allow AFW's AWDS to ingest more satellite and radar data and eventually convert from dedicated communication circuits to common user communications. The solution was a combination of VSAT Ku⁵⁶ band receiver located at each AWDS location pointing to one of three DISA contracted communication satellites. Sites [referred to as "orphan sites"] located in Panama, Guam, and Azores would have a slightly different solution.

Jul BGen Fred P. Lewis took over the leadership role of AFW from BGen Thomas Lennon.

1 Jul At 0800Z, the United States converted from the familiar Surface Aviation Observation (SAO) code to the International Civil Aviation Organization's (ICAO) Meteorological Aviation Weather Report (METAR) code. All CONUS weather observing agencies (USAF, USN, FAA and NWS) complied with the World Meteorological Organization standardization by adopting the globally recognized format for recording and reporting surface weather observations, METAR. AFW units overseas had been using METAR since 1 Jan 1968.

15 Jul AWS/CC, Col Dushan, approved the 1996 AWS Strategic Plan. The planning process began in the spring of 1994 and concluded with a 3-day off-site in February 1995. The team corresponded with primary operators who relied on AWS products and services. After extensive deliberation and coordination, AWS developed a new vision statement:

***"Total force professionals arming America's combat forces with the winning edge
-- the world's best military weather capability."***

The planning environment was described and weaknesses, opportunities, and constraints identified. Of note were: weakness—"Need to fully embrace the AFMC Integrated weapon System Management concept;" opportunity—"National interest in space environmental support;" and constraint—"Increased trend for MAJCOMs to 'go it alone' [posed] a threat to standardization as well as FOA initiatives to increase [combat forces] satisfaction."

Aug Col Tamzy House and others published *Weather as a force Multiplier: Owing the Weather in 2025*. This was a research paper prepared for the AF 2025 project, a Chief of Staff, Air Force (CSAF)-directed effort to examine the concepts, capabilities, and technologies the United States would require to remain the dominant air and space force in the future. The authors proposed that "In 2025, US aerospace forces can 'own the weather' by capitalizing on emerging technologies and focusing development of those technologies to war-fighting applications." The paper outlined a strategy for the use of a future weather-modification system to achieve military objectives. The use of "own the weather" in this context was different than the context of "know the weather, apply the weather, own the weather" as embraced in SAF Windall's 1995 memorandum designating the Combat Weather Facility (CWF) as a reinvention laboratory.

⁵⁶ The Ku band is a portion of the electromagnetic spectrum in the microwave range of frequencies ranging from 11.7 to 12.7GHz. (downlink frequencies) and 14 to 14.5GHz (uplink frequencies). (<http://www.tech-faq.com/ku-band.html>)

1 Aug The Manual Observing System (MOS) contract was awarded. This was an effort to reduce the deployment foot print of a first-in weather team during initial days of a contingency. This was one of the initial efforts of the CWF to improve deployed weather team's effectiveness.

8 Aug Air Force Combat Climatology Center (AFCCC) Replacement (AFCCC-R) program contract was awarded for \$6,039,335. This program provided replacement equipment for processing and storage of climatic information in AFCCC's new location in Ashville, NC.

14 Aug AF/CC approved recommendations and action items submitted by a Lightning safety Review Panel in response to CSAF question "What is AF's policy on lightning protection?" The question was asked following a lightning strike at Hurlburt Field, FL, 18 Apr 1996, which resulted in death and injuries to military members. Three areas were addressed: 1) Update AF guidance for lightning safety; 2) Acquire required resources for base weather stations; and 3) Scientific validation of current technology for detection of lightning and protection from its effects. AF/XOW developed an action plan for AFW in order to comply with the panel's recommendations.

Sep Building on the issues BGen Lennon mentioned in his end of tour report, AF/XOW, BGen Lewis, briefed CSAF on the need to reengineer the weather function. CSAF gave his approval to proceed and established May 97 for completion of a strategic plan. In addition CSAF requested XOW bring the reengineering plan to CORONA TOP (Jun 97) (periodic meeting of AF 4-star Generals).⁵⁷

13 Sep Col George Yurchak, Jr., Chief of Operating Location-B (OL-B), Standard Systems Group (SSG), released "*XENA – The Air Force Weather Communication Vision.*" OL-B SSG prepared the document in response to the spring 1995 CORONA conference where BGen Lennon identified the need to "fix" AFW communications [see 23 Jun 95 entry]. XENA identified the doctrine, architecture and investment strategy needed for 21st Century warriors to "...*exploit the information gathered on the elements of the atmosphere and the space environment to tilt the tide of battle in their favor.*" Doctrinally AFW communications would be global, secure, mission tailored, value added, and joint. Architecturally it would be seamless, robust, automated, full spectrum, and standards compliant. The investment strategy included a mix of preplanned product improvement, commercial-off-the-shelf, and research and development solutions.⁵⁸ With this study AFW entered into an era of transition from expensive, weather specific, dedicated communication circuits to common-user communication solutions.

1 Oct Air Force Global Weather Central redesignated as Air Force Global Weather Center.

1 Oct Combat Weather Facility redesignated as Air Force Combat Weather Center (AFCWC).

⁵⁷ E-mail, Lewis, Fred, BGen, USAF, to MAJCOM/DOWs, et al., AFW Reengineering Update #1, AF/XOW, 3 Dec 96, p. 3.

⁵⁸ Memo, George Yurchak, Jr., Col, USAF, *XENA – Air Force Weather Communications Vision*, OL-B SSG, Tinker AFB, OK, 13Sep 96

21-25 Oct BGen Fred Lewis conducted an AFW Functional Review⁵⁹ to lay the foundation for reengineering AFW. He identified various factors such as, changes in technology, warfighter needs, acquisition processes, dwindling resources, and doctrine, were forcing AFW to create a unique product and service structure more relevant to the warfighter. The assembled senior leaders discussed the function's enduring principles and reviewed key areas identifying strengths and weaknesses. They identified potential improvements in the following areas: 1) operations—integrated with the combat decision cycle; focused, tailored, responsive, accurate products and services; 2) acquisition—move toward rapid prototyping, maximize commercial/government-off-the-shelf hardware/software (software same in peace and war); improve communications and technology base to allow sharing information at all levels, all the time; 3) training—improve focus (realign resources to maximize benefits); 4) functional oversight—better mentor people to be future leaders and weather warriors, improve forecast processes and capabilities; 5) marketing—weather personnel knowing warfighter needs, warfighter knowing AFW capabilities.⁶⁰

7-21 Nov AWS conducted a follow-on operational test and evaluation (FOT&E) of the AN/TMQ-43, Weather Terminal Set (commonly referred to as the Small Tactical Terminal (STT)) and a demonstration of the Tactical Forecast System (TFS) and Manual Observing System (MOS) using a deployed weather operations scenario. The scenario simulated the mission of two deployed weather support teams, one supporting an Air Force Forces (AFFOR) headquarters and the other supporting an Army Corps headquarters. Two test crews were deployed, one to Hurlburt Field, Fl. and the other to Shaw AFB, SC.

Dec AFGWC implemented a new cloud forecast model called Advect Cloud (ADVCLD). ADVCLD retained the 5-Layer's unique capability to directly incorporate cloud fields into the initial analysis, but provided increased resolution, improved trajectories, longer forecast range, and the extension of trajectories into the tropics. AFGWC began providing DoD customers forecast cloud products in the 1970s. Now, ADVCLD executed every three hours, producing forecasts at 47.6 km resolution from 0 to 12 hours and at 95.2 km resolution from 0 to 48 hours.

3 Dec AF/XOW informed MAJCOM directorates of weather of current thoughts on the AFW reengineering efforts and provided them the latest briefing for their use in explaining to their staffs the scope of the reengineering effort. He solicited their input and asked them to forward their ideas to Lt Col Joel Martin, the reengineering integrated process team leader. He thanked them for their outstanding support and wrote, "Together, we can make AFW the Warfighters choice for battlespace weather information on demand for Global Reach, Global Power, and Global Engagement, providing the knowledge needed to own the weather."⁶¹

⁵⁹ Lewis, *Op. cit.*, 3 Dec 96

⁶⁰ *Ibid.*, p. 4

⁶¹ *Ibid.*

CHAPTER 8—CHRONOLOGY 1997-2006

“No one is ever really interested in the weather until they are impacted by the weather. The same is true of solar weather.”

— TSgt. Donald R. Milliman, NCOIC, Detachment 2, 2nd Weather Squadron (AFWA), Sagamore Hill, MA

1997

10 Jan AF/XOO announced a fundamental change to the way pilots received notice to airman (NOTAM) information. NOTAMs were divorced from weather communications circuits. Pilots would access NOTAMs via common user communication links using World Wide Web (WWW) technology.

6 Jan AWS published the AFW Concept of Operations (CONOPS) for Meteorological Operations Capability (MOC). The document described how AFW would operate and sustain weather systems fielded in the early 21st century. MOC began as an effort to bridge the gap between existing capabilities, near-term planned capabilities, and those required by 2025. Future weather systems had a forecast platform and as much as possible, an automated observing capability. The Forecast System 21st century (FS21) succeeded existing weather and weather effects information management systems in response to a growing need for more and faster value-added weather information delivered to the warfighter. FS21 supported global in-garrison and deployed Air Force and Army operations. The Observing System 21st century (OS21) provided enhanced state-of-the-art sensor capabilities, automated as much as was technologically feasible, for in-garrison and deployed surface and upper-air observing requirements.

27 Jan AF/XOWP encouraged AFW Army support units to take advantage of the US Army Intelligence Center’s Staff Weather Officer and NCO course. Recent classes had been severely underutilized. The Center, located at Fort Huachuca, AZ., offered a two week indoctrination course twice a year and it was designed to provide introduction information about Army missions, tactics, operations, supply, equipment, etc. This was an excellent means for junior to mid-level personnel to receive the basic knowledge needed to initially integrate themselves into Army operations.

31 Jan AFGWC’s Air Force Weather Information Network (AFWIN) reached operational capability. AFWIN provided the remote, NIPRNet connected user with the capability to select, retrieve, and display AFGWC products using commercial-off-the-shelf (COTS) web browser software.

14 Feb AF/XOW submitted an organizational change request for AWS as part of AFWs ongoing reengineering efforts. The request asked for approval to reorganize HQ AWS and its major subordinate unit, AFGWC, to notionally become Air Force Global Weather Agency (AFGWA). AF/XPM subsequently approved the request on 9 Apr 97 to inactivate AFGWC, but redesignate HQ AWS as the Air Force Weather Agency (AFWA) (instead of AFGWA), and move it to Offutt, AFB, NE. The move was designed to improve weather support by putting management overhead into production. It streamlined the weather function by reducing “top heavy” management overhead,

eliminated stand-alone headquarters, and removed a management layer between the field and production center. In addition the move enabled AFW to eliminate 72 unfunded manpower positions and overcome the impact of converting 49 officer-to-enlisted positions.

15 Feb Transfer of Lead Command for Space Environmental System Acquisition and Modernization from Air Weather Service to Air Force Space Command (AFSPC). Program Action Directive (PAD) 97-01 directed the transfer of lead command for space environmental system acquisition and modernization thereby with AFSPC becoming lead MAJCOM for the total space environmental support system.

24 Mar The DoD Next-Generation Radar (NEXRAD) Program Director, Lt Col Jamilkowski (AWS/SY), informed National Weather Service (NWS) the NEXRAD Joint System Program Office was unable to locate a site for the Griffiss AFB, NY, WSR-88D radar that met both DoD requirements for low-level coverage over Ft Drum, NY, and NWS desires for low-level coverage over Syracuse, NY. The 1993 Defense Base Realignment and Closure (BRAC) decision to close Griffiss enabled the DoD to move the Griffiss radar to a more optimal location to support the Ft Drum resource protection and aviation missions. Spragueville, NY, was the initial location, but the JSPO eventually installed the radar in the town of Montague, NY.¹

18 Mar Navy/Air Force Cooperation (NAV/AF COOP) Pre-Executive Steering Group met to review the progress the NAVAF COOP Working Group had made towards implementing agreed upon areas of cooperation. This was the third annual meeting since the Oceanographer of the Navy and the AF Directorate of Weather issued joint direction in 1994 committing respective staffs work 16 specific initiatives spread across eight areas. The group's mission was "to continually improve environmental support to the warfighter while preventing unnecessary duplication, focusing on the strengths of each service and building on existing cooperative efforts."

4 Apr AF Safety Office (AF/SE) published revised lightning safety procedures. These procedures were in response to 14 Aug 1996 CSAF directed update of AF guidance for lightning safety. Each AF installation developed local procedures to implement a two-tiered lightning notification system consisting of watches and warnings. Watches would be in effect 30 minutes prior to thunderstorms being within 5 nautical miles and a lightning warning would be in effect whenever any lightning is occurring within 5 nautical miles.

16 Apr Space Weather Analysis and Forecast System (SWAFS) Operational Requirements document was approved. The SWAFS program would upgrade/replace the computer systems and provide space weather models for use by the 55th Space Weather Squadron (SWXS) at Falcon AFB, CO. The 55th SWXS was the primary agency providing real time space environment support to DoD and National Program operations.

1 May AWS/CV, Col Gerald Riley Jr., requested AFSPC/DRF notify SMC/CI [DMSP system program office (SPO)] to proceed with their proposed Small Tactical Terminal modification. The modification would reduce the size and weight of the system while enhancing its processing

¹ Rpt., Fruchter, Susan B., Acting NEPA Coordinator, NOAA Policy and Planning Office, *Environmental Assessment Summary and Finding of No Significant Impact for Ft. Drum Military Reservation, New York, Area NEXRAD Facility*, 2 Jul 1997.

speed. The SPO would replace the 17 inch external monitor with a 16 inch liquid crystal digital monitor integrated as a workstation with CD-ROM, detachable keyboard, and tape drive; upgrade the processor from a SPARC 20 to a SPARC ULTRA; and replace two tracking antennae with one, 3 foot antenna capable of receiving both high and low resolution data from polar-orbiting civilian satellites as well as DMSP.

4 Jun CSAF approved AF/XOW's plan to reengineer the Air Force weather function at a briefing provided by Brig Gen Lewis this date.

Jul AF weather stations at Prince Sultan AB, SA and Al-Jaber AB, KW, received Interim Tactical Weather Radar (ITWR) for forecasters use in providing support to the Operation SOUTHERN WATCH area of operations. Joint Task force Southwest Asia (JTF-SWA) monitored and controlled airspace south of the 32nd Parallel (extended to the 33rd Parallel in 1996) in Iraq, following the 1991 Gulf War. Plagued by initial poor operational availability, AWS deployed a team of military and contractor personnel to restore the systems and reinstall the antennae into hard shelters.

9 Jul The 24th Weather Squadron, Theater Weather Flight (WSS), Howard AFB, Panama, was awarded the 1996 Moorman Award during ceremonies at the Pentagon. The unprecedented event marked the first time General Thomas S. Moorman, Jr., Vice Chief of Staff of the Air Force and his father, Lt. Gen. (retired) Thomas S. Moorman, Sr., were in attendance for presentation of the award named in honor of the senior Moorman. Representing USSOUTHCOM, Brig. Gen. Mark Schmidt, Commander, 24th Wing, Howard AFB, Panama, accepted the award from the vice chief of staff on behalf of the members of the 24 WS/WSS. He noted the important role weather forecasting played in accomplishing missions over a large geographical area containing diverse weather activity. "Weather forecasting is vital to the USSOUTHCOM mission because divert bases can be as much as 100 miles away," he said. He defined forecasting as "invaluable" (to the mission) and lauded the award recipients for a 90% accuracy rate during 1996.²

1 Aug AF/XOW published the AFW Strategic Plan for reengineering the weather function. The plan addressed serious challenges that required immediate action to prepare AFW for the 21st Century Air Force: structure must be optimized to gain a winning combat edge; manpower reallocations, enhanced training, and an improved career path were required to address cuts, grade reductions, and loss of experience; integrate into Joint and Component operations at all levels providing a seamless transition from peacetime to wartime weather operations.

Routine 24-hour forecasting was transferred from base/post-level to newly created OWSs. Combat/unit weather teams (CWTs) at the base/post-level provided a single entity led by the senior weather representative: typically, a weather flight under the operational support squadron (OSS) at AF bases, and flights, detachments or operating locations at Army installations.

4 Aug AF/XOW tasked AWS/CC to ensure AFW weather systems are compliant with the appropriate Year 2000 (Y2K) Computer System Vulnerability guidance. Center commanders were to validate their assigned systems were compliant no later than 1 Aug 1998. Rather than posting

² Art., Van Blaricum, Scott C., Maj USAF, *Moorman Presents Moorman, Historic Ceremony Honors Theater Weather Flight*, *Observer*, Vol. 44, No. 6, Jul/Aug 1997, p. 18

progress in the Defense Integration Support Tools (DIST) database, AWS was to use the AF Automated Systems Inventory database to ensure continued funding of AFW systems.

25 Aug AF/XOW expressed concern to SAF/AQR about the recent decision to cut research and development funding in the FY99 amended POM. This was a “serious” situation as it left the AF with limited capabilities to leverage and transition new technologies to improve AFW “go-to-war” capabilities. XOW proposed a possible alternative to provide a level of funding in the new Air Force Weather Agency (AFWA) to support AF-wide weather research needs. These funds along with a small cadre of researchers would focus their efforts on documented AF warfighter needs, thus maximizing the return on AF Science and & Technology investment dollars.

2 Sep AWS/SY requested AMC, ANG, and ACC units participate in an operational test of the Meteorological Information Standard Terminal (MIST) Block I. MIST replaced Air Force digital Graphics System (AFDIGS) and Automated Digital Facsimile System (ADFS). Those weather units that did not receive AWDS were still relying on AFDIGS and ADFS to receive weather products. MIST provided a capability for these units to view weather products in a similar fashion as those units which used AWDS.

12 Sep Col Joseph D. Dushan relinquished command of AWS to Col John L. Hays in a change-of-command ceremony. Col Hays would continue to serve as the Commander of AFGWC for a brief period.

25 Sep The contract for the NEXRAD Transition Power Maintenance Shelter (TPMS) was awarded this date with cost for CONUS sites set at \$185K and overseas cost ranging from \$335-640K per system. The TPMS was part of the “get well” plan to improve NEXRAD system availability.

1 Oct AF/XOW published AFW’s Mission Support Plan (MSP). The AFW MSP [similar in nature to the *Weather 85* and *Weather 2000* plans prepared in previous years] served as a baseline document that identified high-level roadmaps which outlined potential solutions to identified deficiencies. Using a strategy to task analysis the integrated process team identified the key enduring weather operational tasks that must be accomplished to support the successful completion of AF, Army, and National Program operational missions—data collection; analysis and forecasting, tailoring/visualization for the warfighter, and dissemination. Deficiencies identified during an earlier mission needs analysis effort were mapped to the task areas and potential solutions were identified. These solutions were mapped for implementation into near-term [0-6 years], mid-term [7-15 years], and far-term [16-25 years]. The MSP would serve the weather force as the basis for modernizing AFW with a focus on improved warfighter success.

13 Oct AF/XOW nonconcurred with AWS’s position to reprioritize the overseas fielding of TPMS. AWS attempted to minimize the impact of higher overseas costs by slipping TPMS installation at overseas radar locations into later years while the government explored less costly installation methods. Brig Gen Lewis wrote, “Do not agree! The people that need it most do not get it! We need a better option.” He directed AF/XOWR to find the funds to meet the original order of installation.

15 Oct AWS was redesignated as HQ AFWA and resided at Offutt AFB, NE, and AFGWC was inactivated. Col John L. Hays became the first Commander of this renamed organization.



Figure 8-1: Martin Bomber Building (Bldg D) Offutt AFB, NE--home of newly formed Air Force Weather Agency. The smaller building was the Frady Fitness Center, It was demolished several years later.

29 Oct AFWA achieved initial operational capability of the Pennsylvania State University/National Center for Atmospheric Research (PSU/NCAR) Mesoscale Model Version 5 (MM5). A single 36 kilometer window was run twice a day over both Bosnian theater and CONUS, producing cloud water forecasts every 6 hours out to 36 hours.

6 Nov AFWA conducted an FOT&E of AWDS software release 3.4.0 and Product Viewer 1.2.0 at three operational locations – Mt. Home AFB, ID, Peterson AFB, CO, and Scott AFB, IL (USTRANSCOM). The evaluation concluded the improved versions were operationally effective and suitability for worldwide fielding.

23 Nov AFWA/XPPM issued the initial program management plan for the Weather Information Processing System - Replacement (WIPS-R) program. AFWA's processing center (previously known as AFGWC) was reliant upon a proprietary mainframe processing architecture. WIPS-R was a phased program extending over several years and would eventually result in an open-systems architecture using workstations in a client-server environment. Initially WIPS-R would replace Systems 1/4, some subsystems of Systems 5/6/A/B, and associated peripherals. In addition, it would provide the foundation for consolidation and relocation of AFWA's Automatic Digital Weather Switch from Tinker AFB to Offutt AFB.

10 Nov ACC/CC, Gen Hawley, approved the Weather Systems Support Cadre (WSSC) Concept of Operations. The document identified operational concepts designed to resolve DESERT SHIELD/DESERT STORM logistics issues as well as address new logistical challenges for future deployable weather systems. The cadre consisted of communications and weather personnel

assigned to two units, 3rd CCG, Tinker AFB, OK, and 5th CCG, Robins AFB, GA. The concept called for the Air Force or Army Component Senior Weather Officer to identify to the AFFOR/A6 for first-in or sustainment support of an exercise, contingency, or wartime support. When deployed, a WSSC team would initially support theater-wide deployable weather system activations. When needed WSSC members could deploy forward to an operating location and provide technical assistance weather teams as they attempt to perform operator maintenance.

1 Dec HQ USAF published Program Action Directive (PAD) 97-10, Reengineering Actions for AFW. It directed the end-to-end restructure of AFW and implemented the reengineering of weather functions in accordance with the AFW Strategic Plan.

1998

29 Jan Automated Digital Facsimile System (ADFS) (8 locations) and AF Digital Graphics System (AFDIGS) (52 locations) terminated operations this date. ADFS and AFDIGS were being used by locations that did not receive AWDS equipment in the early 1990s. The Meteorological Information Standard Terminal (MIST) program provided these locations with a personal computer workstation capability that provided display and analysis functions for text, graphics and imagery weather products.



Figure 8-2: SSgt Craig Gaillardet attaches the lightning detector to the base unit of the AN/TMQ-53 Tactical Meteorological Observing System (TMOS). Sergeant Gaillardet, a combat weather forecaster with the 7th WS, and other members of his team conduct realistic training to optimize support to their supported US Army unit. (USAF photo by MSgt John E. Lasky)

25 Mar Booz-Allen & Hamilton, Inc. published a revised MIST implementation plan to address the activities required to field MIST Block 2. Block 2 replaced 182 alphanumeric [MEDS] terminals and upgraded the Block 1 workstations to Block 2 configuration. The fielding of MIST provided all CONUS weather forces similar capabilities whether they used AWDS or MIST.

31 Mar AFWA published technical note AFWA/TN-98/001 Freezing Precipitation by Eugene M. Weber. A product of 11 years of research, collecting and analyzing freezing precipitation occurrences over the continental US, it focused on the area from the Rockies to the East Coast. The intent of the study was for forecasters to recognize “setups” for freezing precipitation using model guidance. Further investigation of the air masses affecting their locations could then be looked at through Skew-Ts. Designed for the novice to identify synoptic pattern recognition favorable for freezing precipitation; it also would serve the experienced forecasters as a winter season review.

Apr The Special Operations Weather Teams (SOWT) of Detachment 2, 10th Weather Squadron, Fort Campbell, KY, served some of the most demanding military customers in the world. To meet mission requirements, Detachment 2 personnel stood ready to deploy with the 5th Special Forces Group (Airborne) and the 160th Special Operations Aviation Regiment (Airborne). This

group of dedicated weather professionals were airborne qualified and completed either an Army or AF Survival evasion Resistance and Escape course. In addition they had the opportunity to attend a wide variety of training courses, including land navigation, airborne operations, small unit tactics, and advanced marksmanship training. They honed their warfighting capabilities in exercises at the National training Center, Fort Irwin, CA and the Joint Readiness Training center, Fort Polk, LA. Det 2 had a stringent mobility commitment as personnel participated in hundreds of deployments to countries all over the world—Panama, Cuba, Guyana, Belize, Oman, Pakistan, Djibouti, Italy, Haiti, Somalia. When not deployed or involved in formal training, personnel enhanced their SOWT tactics, techniques, and procedures using the latest in deployable weather equipment.³

20 Apr AF/XOW published the AFW Reengineering Concept of Operations. The document served as a guide for commanders as AFW stood up Operational Weather Squadrons (OWS), restructured weather flights/detachments, and implemented the AFW Strategic Plan.

The tenet of reengineering was an improved organizational structure for AFW to optimize support to the warfighter. Regionally-focused OWS would eliminate the redundant execution of a separate detailed analysis and forecast process at each location possessing a weather support force. One unit within a combatant command/MAJCOM/CONUS area, the OWS, stepped through the meteorological analysis and forecast process to develop forecast products for all aerodromes, tactical training areas, intelligence evaluations, and area of operations, within that region. This provided Weather flights/detachments more time to concentrate on supported units tactics and procedures to learn and understand the effects weather had on their missions. These units then evaluated and applied forecast products to provide mission-tailored, relevant weather support for specific operations at the tactical level of operations.

29 May AFWA became the National Weather Service's Aviation Weather Center (AWC) back-up facility after successfully completing a series of six live back-up tests. AFWA's CONUS Severe Forecast Operations work center issued regional short-term icing, turbulence, and thunderstorm forecasts for all commercial aviation in the event the AWC was unable to produce those products.

22 Jun AFW operations began a new era this date, as the Alaskan Weather Operations Center became the first reengineered weather unit in the Air Force.

1 Jul Air Force Combat Climatology Center (AFCCC) moved from Scott AFB IL to Asheville NC. The unit moved 19 Officer, 65 Enlisted, and 25 Civilian's, and equipment. The desired civilian level after the move would become forty.

14Sep AFWA goes "On the Air." A new arm of the American Forces Network stood up at AFWA and began broadcasting weather information to military troops and their families. The new service was available to anyone with access to the American Forces Network.

25 Sep Col Charles W. French assumed command of AFWA from Col John L. Hayes in a change-of-command ceremony.

³ Art., Harding, James, SrA, *Anatomy of a SPECS-OPS Unit*, Observer, Vol. 45, No. 1, April 1998, p. 11

25 Sep AFWA/CC validated ten AFWA automated information systems compliant with Y2K guidance.

1 Oct AF ended the 37 year Operation LOOKING GLASS mission. On this date the U.S. Navy's fleet of E-6Bs replaced the EC-135C in performing the mission.⁴ This new mission, dubbed TACAMO [Take Charge and Move Out] allows the President and the Secretary of Defense direct command and control capability for America's strategic forces of ballistic nuclear missile submarines, intercontinental nuclear missiles and strategic bombers. If the US Strategic Command, Global Operations Center is unable to function in its role, the E-6B TACAMO can assume command of all U.S. nuclear forces. Flying aboard each ABNCP is a crew of 22, which includes an aircrew, an Information Systems Officer and team, an Airborne Emergency Action Officer (an Admiral or General officer), an Intelligence Officer, Meteorologist, and an Airborne Battle Operations Team. In addition to being able to launch ICBMs, the E-6B can communicate Emergency Action Messages (EAM) to nuclear submarines running at depth by extending a 2½-mile-long trailing wire antenna (TWA) for use with the Survivable Low Frequency Communications System (SLFCS).⁵

Dec Air Force Research Laboratory's (AFRL) advanced technology development Project 2688 delivered the following capabilities to AFW during 1998: Night Vision Goggle (NVG) Operations Weather Software (NOWS) Version 4.0—this version improves flight safety by predicting changes in goggle detection ranges due to night illumination and weather; infrared target scene simulation (IRTSS) software for AF mission planning systems for planning sorties employing infrared guided munitions; Module for Coupled Ionospheric-Thermospheric Forecast Model that predicts satellite communication outages.⁶

31 Dec AFWA/XOOP published HQ AFWA's Y2K Operational Contingency Plan. The Plan ensured the mission of AFWA at Offutt AFB would not be affected by unforeseen system or equipment failures that may arise as the result of potential threats associated with Y2K.

1999

Jan The Army Research Laboratory (ARL) published its annual report on the Integrated Weather Effects Decision Aid (IWEDA). IWEDA assisted the Army commander in making intelligent command and control decisions regarding the allocation or use of weapon systems and in mission planning. IWEDA produced detailed graphic and text information regarding the what, when, why, and where of pertinent environmental impacts on 70 weapon systems (including 16 threat systems). Impacts are displayed graphically in terms of a Weather Effects Matrix (WEM) which color codes the impacts on the system(s) of interest with green (favorable), amber (marginal), and red (unfavorable) cells over time. Map overlays allowed a detailed inspection of the spatial distribution of the impacts. Fielded as part of the Army's tactical weather system, Integrated Meteorological System (IMETS), Block II, the Staff Weather Officer at the IMETS validated input meteorological parameters before client applications could run the application.

⁴ Looking Glass, *Op. cit.*

⁵ Web, TACAMO, Wikipedia, the free encyclopedia, down loaded 28 Jul 2011, from <http://en.wikipedia.org/wiki/TACAMO>

⁶ Rpt., *FY 2000/2001 Biennial Budget Estimates, RDT&E, Descriptive Summaries*, Feb 1999, p. 344.

7 Jan AFWA/DNX approved the CONOPS for Tactical Decision Aid Support (TDAS). By 2025, AFW envisioned weather operations would rely on strategic weather centers to provide worldwide tactical decision aid (TDA) information. Units at other echelons would generate tailored TDA products for specific missions and areas of interest. The TDAS program began an effort to bridge the gap between existing capabilities, near-term capabilities, and those required in 2025. The initial effort was up and running in Nov 1999 providing global information for Target Acquisition Weather Software (TAWS) and Night Vision Goggle Operations Weather Software (NOWS)

15 Jan MAJCOM Directorates of Weather signed a Memorandum of Understanding (MOU) that defined reengineered weather operation responsibilities for the implementation of Operational Weather Squadron (OWS) support to base/post Weather Flights (WF), AF and Army units; to include their Reserve components located within the continental US. The MOU provided guidance and documented agreement on meteorological support. The provisions of the agreement would be gradually implemented over a period of years as the CONUS OWSs were activated and weather support responsibilities were incrementally migrated from base/post WFs to OWSs.

18 Mar AF/XOW prepared a response to Enterprise Electronics Corporation (EEC) claim that the AF was at... "the threshold of going to war with toys!" EEC was under the impression the AF was prepared to purchase a less capable radar than the one EEC had recently provided to the Navy and Marines. XOW stated, "The prime reason for this procurement requirement [was] to acquire a new transportable/tactical weather radar." Several alternative solutions were investigated, including joining an existing Navy radar program, but the planned Navy system did not fully meet Air Force requirements. The effort was still in source selection and EEC was one of the prospective bidders so XOW was not at liberty to discuss specific details of systems under consideration.

24 Mar – 20 Jun The North Atlantic Treaty Organization (NATO) conducted Operation ALLIED FORCE in the Balkans - also referred to as "Air War Over Serbia" (AWOS). The total number of AF and Navy weather support personnel that supported the AWOS effort exceeded 280, with AF supplying the majority of those positions with over 180 personnel deployed. A significant number of Allied weather personnel were also involved, most of them supporting their own countries' operations. NATO weather staffing at key locations included AFW, Navy, and Allied weather officers.⁷

25 Mar AF/XOW published the ORD for the Forecast System – 21st Century (FS21). FS-21, represented the next generation solution to known requirements for weather forecast systems in all operational environments and at all levels of employment. To facilitate AFW Reengineering, the AF would transition to FS21 by integrating FS21 with Army Weather Effect Systems and by replacing legacy weather information systems with systems capable of supporting the needs of the new AFW architecture. These systems represented incremental steps towards FS21 capabilities.

⁷ E-mail, Demmert, Paul, Maj, USAF, Ret, to Coleman, George N. III, CMSgt, USAF, Ret, *Re: Review of 1996-2000*, 2 Jan 2012. [Information found in several ALLIED FORCE/NOBLE ANVIL after-action briefings, including Colonel Paul Harris' briefing to Expo 99, JOINT TASK FORCE NOBLE ANVIL METOC Operations, slide 8, METOC Forces. Paul Demmert, on contract with the AF, served as the weather representative to the after-action study team for ALLIED FORCE/NOBLE ANVIL.]

26 Mar ESC/ACW provided AFW a world-wide “End-to-End Operational Status” report of the MIST. For the most part the system was “Green” [ready-to-go] with some areas requiring additional work. A total of 186 personal computers had been distributed and 71% were operational, 20% were partially operational, while 9% were not operational. Issues such as no foreign national access, local communication connectivity, and acceptance of MIST software as standard for some agencies delayed full operational capability. Fielding of MIST allowed AFW to eliminate dedicated communication circuits thus saving thousands of dollars in long-haul communication costs.

24 May AF/XOW formally announced the operational capability of Military Aircrew Information System (MAIS) to MAJCOM, AFRC, and NGB flying communities. The need for improved weather and NOTAM briefing capability initially stated in 1995 was now satisfied. The operational perspective of MAIS evolved as AFW Reengineering took shape. The dedicated forecast cell previously planned for AFGWC was now provided by individual Operational Weather Squadrons strategically located in the CONUS, dedicated to provide aviation support to all AF and Army aircrews. MAIS provided a web-based, flight weather and NOTAM information capability for mission planning designed to help facilitate the flight weather briefing process; however, it was not intended to replace aircrew flight weather briefings. MAIS provided many of the basic weather products needed to plan and execute a mission, but could not cover every possible scenario. Thus a flight weather update was especially important during changing or severe weather situations. Backup or remote service was provided by a toll-free (1-800) dial-in service.⁸

12 Jun NATO initiated Operation JOINT GUARDIAN, Kosovo Force (KFOR) in response to UN Security Council 10 Jun 1999 resolution outlining peacekeeping responsibilities in Kosovo. AFW personnel provided extended weather support at various bases in the area of responsibility with a concentration of support at Camp Bondsteel.⁹

24 Jun AFWA/CC responded to USAFE/DOW’s 26 Mar 99 memo that recommended “The Global Weather Intercept Program (GWIP) be eliminated if not fully, in part....” AFWA did not support the elimination of the GWIP in Europe at this time, because it still remained a vital



Figure 8-3: SSgt. Patricia Ballou, combat weather forecaster at the Multinational Brigade East U.S. Army Camp Bondsteel, reading sensed weather elements from the TMQ-53. Sergeant Ballou was one of more than five combat weather forecasters deployed to the MNB E Camp Bondstel in Kosovo in support of Operation Joint Guardian.

⁸ SSS, Elkins, LtCol, AF/XOWP, *MAIS Announcement*, 24 May 1999

⁹ Art., *Operation JOINT GUARDIAN, Kosovo Force (KFOR)*, Global Security.org, Military, downloaded from http://www.globalsecurity.org/military/ops/joint_guardian.htm, 3 Jun 2011

means for receipt of global weather information. Analysis conducted by AFWA revealed that the primary upper air and synoptic data source for Romania was from the GWIP. In addition, AFWA addressed the impact of loss of the European GWIP data collection with respect to the meteorological models and subjectively concluded there would be some impact at the Mesoscale model level. AFWA intimated that further analysis would be conducted after Y2K and the current operations tempo slowed down to permit an objective test of impacts to European Mesoscale model output.

Sep SrA Sean Bryan, a weather specialist on temporary duty from the 52nd Spangdahlem AB, DE, to Doboj, Bosnia-Herzegovina, accepted the challenge of his “remote tour.” Besides taking surface weather observations, SrA Bryan had the unique opportunity of working alongside field grade officers from various countries—Denmark, Estonia, Finland, Latvia, Lithuania, Norway, Poland, and Sweden. At 0745 each morning he provided the NordPol¹⁰ Brigade Commanding General and 70 other officers the daily weather brief. He assembled weather information from various sources and created PowerPoint slides that described conditions that would affect the Brigade’s mission of providing humanitarian relief and security assistance to the people of Bosnia-Herzegovina. He included weather information on the capital cities of each country represented in the NordPol Brigade.¹¹

10 Sep AF/XO, Lt Gen Marvin R. Esmond, approved Program Action Directive (PAD) 99-04, *Restructuring Space Environmental Support*. The PAD directed an end-to-end restructuring of organizational and operational responsibilities for the Space Environmental Mission Area. It integrated terrestrial and space weather services within the AF, leveraged AFW capabilities to improve the space weather mission area, and retained strong MAJCOM leadership for program acquisition and modernization. A key element was the realignment of the space weather forecast function from 55th SWXS to AFWA.

17 Sep AF/XOW submitted a report to Congress addressing concerns by the House Committee on National Security over the operational availability of the DoD NEXRADs and the feasibility and benefits of transferring all DoD NEXRADs to the Department of Commerce. This concern was addressed in Congressional language contained in the National Defense Authorization Act for FY98. AF/XOW reported that data for 1998 showed DoD’s radars were available on average at 96.1 percent thus meeting the tri-agency standard of 96.0 percent. This was an improvement over availability averages reported in 1997 (95.5 percent) and 1996 (94.2 percent). Improved supply and maintenance processes contributed significantly to the improved results. The Joint AF and NWS cost study addressing the transferring of DoD radars to DOC estimated the government would incur an up-front cost of \$3.28 million plus approximately \$473 thousand annually if the decision were made to transfer the radars. No decision was forthcoming.

¹⁰ Art., Reed, Aaron, Spc, USA, 100th MPAD, *NordPol Brigade to Rotate Forces*, The Talon, Vol 2, No. 30, 9 Aug 1996. [Note: NordPol literally means North Pole. Attached to Task Force Eagle, the NordPol Brigade provided construction, infantry/armor, military police, medical and support units to the evolving IFOR mission].

¹¹ Art., Davis, Scott, SSgt, USAF, 401st EABGp, PA, *Observer Accepts Challenges of ‘Remote’ Tour*, Observer, Vol. 46, No. 3, Aug/Sep 1999, p. 15.

22 Sep AF Requirements Oversight Council (AFROC) approved AFW's Operational Requirements Document (ORD) for the Observing Systems – 21st Century. This program implemented one facet of reengineering AFW. It permitted automated collection of weather elements and automated fusion of real-time weather data with Command Control, Communications, Computers, and Intelligence (C4I) systems. It replaced aging legacy systems and improved coverage with automatic systems that increased coverage beyond the current manpower intensive systems. The solution was primarily commercial-off-the-shelf equipment and software. Total program cost was estimated at: FY00-05, \$70.436 million Other Procurement funds and \$9.913 million in Research, Development, Test & Evaluation (RDT&E) funds.¹²

1 Oct USA Combined Arms Center SWO, Maj Mike Bramhall, prepared a position paper titled Synchronization of Army Modernization and AFW Reengineering. He addressed the need and made recommendations on how to synchronize efforts to improve weather support to the Army while taking advantage of opportunities to reduce people and equipment on the battlefield. He specifically recommended acceleration of a lighter version of IMETS and the development of a small workstation meteorological satellite capability for units below division level.

1 Oct 55th SWXS was realigned under AFWA. This action returned operational control of the terrestrial-based space weather mission to AFWA for the first time since October 1994. Space Command would retain responsibility for space-based portion. At the same time Lt Col Jeffrey Carson assumed command of the squadron from Lt Col William Keller.

2 Nov AFCCC transitioned Advanced Climate Modeling and Environmental Simulations (ACMES) from a research and development effort into a full-scale production environment. Over the past three years MESO, Inc. in conjunction with Saint Louis University, and the Air and Space Natural Environment Modeling & Simulations Executive Agent (MSEA) had developed a technique to generate climatological products using a high resolution numerical model.

6-10 Dec HQ AFWA conducted a Qualification Operational Test and Evaluation (QOT&E) of the Operational Weather Production System Phase II (OPS II) at the 25th OWS, Davis-Monthan AFB, AZ. Results indicated the OPS-II met minimum requirements for the 25th OWS to accomplish its mission. Various functions worked effectively in allowing forecasters to produce alphanumeric and graphic products and distribute them to multiple users. The success of this test permitted the OWS to integrate OPS-II with other squadron operations.

2000

Feb U.S. Central Command (USCENTCOM) conducted six major rapid response operations since the end of Operation DESERT STORM: Oct 1994—Operation VIGILANT WARRIOR; Aug 1995—Operation VIGILANT SENTINEL; Sep 1996—Operation DESERT STRIKE; Jan 1998—Operation DESERT THUNDER I; Nov 1998—Operation DESERT THUNDER II; and Dec 1998—Operation DESERT FOX. The 31-member ARCENT Combat Weather Team (CWT), assembled from eight military installations, provided daily weather support

¹² E-mail, AF/XOR to Multiple addressees, prepared by Hannon, Greg, Maj, and Schuenemeyer, Ken, Mr., AF/XOR, *Minutes of 22 Sep 99 Air Force Requirements Oversight Council (AFROC)*, 1 Oct 99. [Note: e-mail is embedded in a series of e-mails.]

for each of these operations to three forward-deployed headquarters located in Kuwait, Saudi Arabia, and Qatar.¹³

3 Feb AFWA informed Commander, FNMOC, of AFWA's intent to reengineer and relocate the ADWS function from Tinker AFB, OK, to Offutt AFB, NE. AFWA was prepared to provide office space and automated tools needed to support up to five Navy personnel at HQ AFWA, in order to continue the close, cooperative arrangement between the Navy and AF personnel who manage the AWN,

9 Feb PACAF/XP submitted an organizational change request to establish the 17th Operational Weather Squadron at Hickam, AFB, HI, and consolidate the Joint Typhoon Warning Center functions under a single commander as part of the CSAF-directed AFW reengineering effort.

15 Feb AMC/DOWO issued a coordinated memorandum that clarified roles and responsibilities of AFW forces supporting tanker operations. ACC weather support unit would be responsible for CORNET¹⁴ and GLOBAL POWER¹⁵ while 15th OWS would be responsible for GLOBAL REACH¹⁶ missions.

17 Feb AF/XOR, Brig Gen Daniel P. Leaf, revalidated the SWAFS requirements as stated in the SWAFS ORD dated 1 May 1997. AFWA had submitted a draft ORD 24 Nov 1999 to reflect changes due to AFW reengineering which moved the location of SWAFS beddown from 55th Space Weather Squadron, Schriever AFB, CO, to AFWA. Since the basic operational requirements were unchanged, no update was required.

Mar Exercise THOR's THUNDER, a weather mobility and field exercise, was conducted at Florida Air National Guard's Weather Readiness Training Center (WRTC) at Camp Blanding, FL. The exercise evaluated the deploying capabilities of ANG Weather Flights. Participating units were graded on their abilities to deploy according to current tasking documents. The evaluation process began with the official unit notification and encompassed deployment, employment in a tactical environment and redeployment to home station. The WRTC was established in 1992 to provide standardized combat skills training not available elsewhere. Additional courses were included to emphasize the Air Expeditionary Force wartime skills needed for weather support missions. All courses were open to all AFW personnel.¹⁷

¹³ Art., Wall, Eugene M., Capt, USAF, *Third US Army Weather Team*, Observer, Feb/Mar 2000, p. 11

¹⁴ Inst., CJCSI 4120.02C, 22 Dec 2011. [Coronet – Movement of air assets, usually fighter aircraft in support of contingencies, rotations, and exercises, or aircraft movements for logistics purposes.]

¹⁵ Web, *Global Power*, GlobalSecurity.org, downloaded from <http://www.globalsecurity.org/military/ops/global-power.htm>, 14 Jan 2012. [Global power is the unclassified nickname for HQ ACC- tasked bomber out-of-CONUS long-range missions. Under this plan, all operational bomb wings are tasked once per quarter to conduct a Global Power training flight.]

¹⁶ Doc., AFDD – 1, 2011, p. 51. [Global Reach is defined as the ability to apply US power worldwide by delivering forces to crisis locations.]

¹⁷ Art., *Preparing the Weather Warrior*, Observer, Feb/Mar, 2000, pp. 20-21.

13 Mar AFW and The Weather Channel entered into a cooperative effort to exchange data between organizations. Brig Gen Lewis, AF/XOW, and Mr. Rymond Ban, Sr Vice President, The Weather Channel, signed a memorandum of understanding that defined the purpose, objectives, and various conditions of the effort. One aspect AFW hoped to achieve was to “jointly examine new methods and technologies to process, disseminate, and present weather data and forecasts.”¹⁸

15 Mar AFWA/SC completed all actions related to the Year 2000 (Y2K)/Leap Year Rollover operation and stood down the dedicated project office. The *History of the AFWA Y2K Project* documented the actions that began in 1996. Public Law 105-261 required two operational evaluations or an end-to-end functional test of all AFW mission-critical systems. AFWA evaluated AFWA Global Weather Division operational systems and ESC evaluated AF weather weapon system equipment. STRATCOM and USSPACECOM conducted evaluations that evaluated a subset of weather systems supporting the selected missions. Mission impact to AFW systems was minimal and customers either had workarounds in place or had alternative sources of data available.

20 Mar ESC contracting office posted a special notice in the Commerce Business Daily announcing the Government would host an Industry Day to discuss the requirements for the OS-21 Fixed-base Sensor System. The intent was to solicit feedback from industry and clarify technical requirements as necessary. The outcome would define a strategy for executing the program. This was the first step that would eventually lead to an evolutionary change in the reengineering of base weather stations and the method for making surface weather observations. Even though a person would still be in the loop, for the most part future weather observations would be automated and the need for a dedicated “weather observer” would soon end.¹⁹

19 Apr The 28th Operational Support Squadron weather flight, Ellsworth AFB, SD, in coordination with the 15th Operational Weather Squadron (OWS), Scott AFB, IL, provided 28th Bomb Wing leadership ample notification of an impending blizzard that dumped 19 inches of snow with wind gusts as high as 60 knots. The collaboration between base weather and the OWS was a testament of the reengineered AFW concept of operations. Through their combined efforts, the weather flight provided 36-hour advanced notice so wing leadership could adjust flying schedules, preposition snow removal assets, and prepare the base population (medical care, security, and feeding) for the major winter storm. Weather flight personnel relied on the locally prepared Terminal Forecast Reference Notebook (TFRN) to identify the blizzard producing weather regime that began to develop. They provided the 15th OWS key information about the local topography and how it would influence storm development. The OWS personnel began issuing watch, aerodrome forecasts, and eventually blizzard warnings with ample lead time and accuracy. The 28th BW Operations Group Commander remarked, “It is routine for the pros in our weather shop to alert us to impending severe weather when no one else sees it coming. These folks are indeed the ‘best of the best’ at the top of their game.” The local TV weatherman forecasted 1-2 inches of snow that afternoon, once it finally changed over from the rain. He never mentioned wind. The National Weather Service

¹⁸ MOU, Springer, Timothy, Lt Col USAF, AF/XOWP, *Memorandum of Understanding (MOU) between The Weather Channel, Inc. and United States Air Force Weather*, 13 Mar 2000; e-mail, French, Charles, AFWA/CC to Key Staff, *AFW-TWC MOU 031300.doc*, 15 Mar 2000

¹⁹ Notice, Radsliff, Cecilia, Capt USAF, ESC/ACW, *Observing System-21st Century (OS-21) Program Fixed-Base System (FBS)*, 20 Mar 2000

forecast office, Rapid City, SD, forecasted 8-10 inches of snow beginning late morning, with gusty winds at 25 to 35 knots.²⁰

20 Apr MAJCOM/DOWs signed revised MOU to facilitate execution of reengineered weather operation responsibilities for the implementation of OWS support to base/post WFs. The revision incorporated changes recommended during the annual review cycle and superseded the 15 Jan 1999 document.

9 May Director of the Joint Typhoon Warning Center, Lt Col Stapler, sent “kudos to all involved in delivering” DMSP MARK IV-B remote viewing modification to the Pacific theater of operations. As Typhoon Damry was approaching Kadena AB, Japan, AFW operators at JTWC pulled DMSP fine data from the Kadena MARK IV-B to the JTWC client workstation at Pearl Harbor Hawaii and analyzed the first super typhoon of the year to threaten the northwest Pacific. This new capability provided “a serious enhancement to [JTWC’s] tropical cyclone reconnaissance network capability.”²¹

15 May PACAF/XP submitted Organization Change Request (OCR) to establish the 20th OWS at Yokota AB, Japan, effective 1 Oct 2000.

1 Jun U.S. Army Training and Doctrine Command (TRADOC) staff weather office published CONOPS and Tactics, Techniques and Procedures (TTP) for the Joint Contingency Force (JCF) Advanced Warfighting Experiment (AWE) conducted at the Joint Readiness Training Center, Ft Polk, LA, in September. The document described the merger between Army modernization and AFW reengineering. It addressed weather support to Army forces participating in the JCF AWE. Lessons learned were translated into new Army weather support doctrine, revised Combat Weather Team manpower requirements, and refined tenets of AFW reengineering.

10 Jun AF/XOW concurred²² with the National Weather Service proposal to make “Dual Polarization” as the next big improvement to NEXRAD, following the Open Systems Radar Acquisition. The benefit from Dual Polarization would be vastly improved discrimination of suspended objects, e.g., differentiate between suspended water and hail, characterize suspended dust, etc. For AF operations, one could also better isolate large flocks of birds (bird strike potential). AFW’s share of effort would be \$7 million over 3-4 years in the FY04-06 time period.²³

²⁰ Art., Randall Bass, Maj, USAF, 28th OSS/OSW, *Blizzard Out of the Blue*, *Observer*, Nov/Dec 2001, pp.14-15 [So much has changed in AFW over the years, but it is nice to see that something you contributed to over 20 years ago was still being used, reference TFRN. Personal reflection of George N. Coleman III, CMSgt, USAF Ret, who was assigned to Ellsworth 1976-1979, and experienced several similar blizzards.]

²¹ E-mail, Stapler, Wendell, Lt Col USAF, Dir JTWC, to Allen, Robert, Col USAF, PACAF/DOW, *FW: DMSP from Kadena of Damry*, 10 May 2000

²² E-mail, Lewis, Fred, BGen, AF/XOW to Col Shaffer, AFWA/XP, *Re: NEXRAD Dual Polarization Experiment—Authority to Proceed*, 10 Jun 2000

²³ E-mail, Shaffer, Alan R. Col, AFWA/XP to BGen Lewis, AF/XOW, *NEXRAD Dual Polarization Experiment—Authority to Proceed*, 10 Jun 2000

28 Jun AF/XOW updated the 1 Aug 1997 AFW Strategic Plan. The revised plan directly supported the CJCS' *Joint Vision 2020*, "which emphasized the increased role of Information Operations—of which weather information is an important component." It redefined AFW's vision as "*Air Force Weather—the operator's choice for aerospace weather information; providing the knowledge needed to anticipate and exploit the weather.*"

29 Jun AFWA's newly formed space weather element, located in the special support operations branch under the director of operations, issued its first space weather product. This was the first step of a five phased effort in the transfer of the space weather mission from AFSPC to AFWA directed by AF in October 1999. The element supported six DoD mission areas: satellite operations, communications (HF and UHF SATCOM), intelligence collection, single-frequency GPS navigation, space tracking, and high-altitude human flight.²⁴

5 Jul The Air Force Association named the Air Force Weather Agency as the year 2000 recipient of the Air Force Association's Theodore von Karman Award—the highest award presented by the Association annually in the field of science and technology. AFWA earned the award in recognition of its outstanding scientific contributions to the national defense during 1999.

26 Oct AF/XOWR published a CONOPS for Assignment, Training, and Utilization of Forecaster Apprentices (FA) in Weather Flights. AFW recognized an interim need to provide surface weather observing trained FAs directly to field units to alleviate a shortage of personnel capable of creating surface weather observations. The planned effort would yield sufficient personnel until such time as the Weather Flight Operations Course stood up and produced sufficient graduates to man field units at adequate levels.

9 Nov AF/XOW informed AF/XO of a severe solar radiation storm that began at 1850 EST, 8 Nov, and reached a level of S4 on the NOAA Space Weather Scale²⁵. This was the fourth largest solar storm since 1976 and was expected to pose severe radiation hazard to astronauts on the International Space Station as well as passengers on commercial airlines flying at high latitudes. AFW units advised those operators that had a need to know of impacts to their operations.

13 Nov Col Robert H. Allen assumed command of AFWA from Col Charles W. French.

21 Dec AFWA/DN and the Director, Cooperative Program for Operational Meteorology, Education and Training (COMET), agreed to a revised program that would provide AFW with a worldwide, regionally based continuation-training program. COMET would provide ten computer-based training modules, each of which would train forecasters on specified weather elements by season and region.

²⁴ Art., Rowland, Paige, AFWA/PA, *Space Forecasts Transfer to AFWA*, Air Pulse, Offutt AFB, NE, 14 Jul 2000

²⁵ Web, NOAA Space Weather Scales, NOAA, Space Weather Prediction Center, downloaded from <http://www.swpc.noaa.gov/NOAAscales/>, 15 Jan 2012. [Note: Solar radiation storms are rated on a scale that ranges from S1 (Minor) through S5 (Extreme)]

2001

3 Jan AF/XO authorized the closure of the Bermuda Digital Ionospheric Sounding System (DISS). Site closure was prompted by the United Kingdom seeking restitution from the United States for \$3M reimbursement of costs incurred to repair a bridge. This DISS was originally installed in the mid-1980s to support operational testing of the Bangor, ME, Over-the-Horizon-Backscatter (OTH-B) radar for sectors two and three. With the end of the Cold War in 1991, the Bangor OTH-B was redirected to counter-narcotics surveillance for a brief period and ceased operations in October 1997 and was placed in caretaker status.²⁶

16 Jan AF/XOW and the Oceanographer of the Navy (N096) joined together to pursue improvements in military weather modeling by participating with other federal agencies in the development of the Weather Research and Forecast (WRF) model. WRF was the next-generation mesoscale numerical weather prediction system designed to serve both operational forecasting and atmospheric research needs.²⁷ The goal was to implement a coupled oceans and land/atmosphere model to achieve one theater, one forecast, one model, one worldwide effort. This was an outgrowth of previous Navy and AF (NAVAF) coordination efforts to improve joint Meteorological and Oceanographic (METOC) support and recent DoD Inspector General (IG) investigations. AFWA/DN had been participating in the development of the Weather Research and Forecast (WRF) since February 1997.

19 Jan SAF/AQI published Program Management Directive (PMD) 2326 (5)/PE0305111F superseding PMD 2326 (4), dated 6 Oct 95. PMD 2326 (5) designated AFW programs as an "Integrated Weapon System Management" (IWSM) program thus establishing the Air Force Weather Weapon System (AFWWS). The basis for this direction was in part a result of AFW's fiscal year (FY) 00 realignment of AFW programs under the five core competencies of collection, analysis, forecasting, product tailoring/warfighter applications, and dissemination. This directive served as the basis for weather program acquisitions for many years.

19 Jan AF Material Command's (AFMC) Electronic Systems Center began fielding the second-generation interactive graphic meteorological processing system replacing the 1980's AWDS. AFWA published the report of an Operational Utility Evaluation (OUE) of New Tactical Forecasting System (N-TFS) 2.0 conducted in the European theater of operations between 23 October and 9 November 2000. The USAFE Operational Weather Squadron (OWS) at Sembach AB and three Combat Weather Team (CWT) sites, Ramstein AB, Spangdahlem AB, and Grafenwoehr Army Installation (AIN) served as test locations. The evaluation concluded N-TFS 2.0 was operationally effective and suitable for use by weather forces in both garrison and tactical operations. As a result of successful testing and consent from all MAJCOMs world-wide fielding could begin.

²⁶ Art., *Over the Horizon Backscatter radar: East and West*, USAF Fact Sheet, posted 24 Mar 2008, downloaded 16 Jan 2012, from <http://www.acc.af.mil/library/factsheets/factsheet.asp?id=3863>

²⁷ Web, *Weather Research & Forecasting Model*, <http://www.wrf-model.org/index.php>, downloaded 5 Jan 2012

6 Feb The 55 Civil Engineering Squadron personnel briefed the Offutt military construction (MILCON) priority list for FY04-13 to the 55 Wing (WG) Facilities Utilization Board, chaired by the 55 WG commander. The list included AFWA's requirement for a new building as a "non-ACC MILCON submittal for FY04." The minutes reflected "this paperwork [would] be sent through HQ ACC to Air Staff, but [would] not be part of ACC's submittal. AFWA [would] have to defend their project after it gets to Air Force level." This marked the genesis of the MILCON project that would provide AFWA with a state-of-the-art weather computing facility as well as space for various staff functions.

9 Mar AFWA initiated actions, following procedures listed in Office of Management and Budget Circular A-76, *Performance of Commercial Activities*, to contract out software development being accomplished by 29 enlisted people.

23 Mar Air Force Weather Airman participated in a Cable News Network (CNN) web-based program to demonstrate how the meteorology profession enhanced military operations. Maj. Stephen Romolo, commander of Army Forces Command's weather staff operations at Fort McPherson, GA, SMSgt Chris Rambali, of the ACC weather division at Langley AFB, VA, and A1C Tanylle Casper, a weather apprentice from the 15th OWS, Scott AFB, IL, visited CNN studios in Atlanta, GA, 12 Mar, to participate in the taping of a CNNfyi.com program called "Storm! On the horizon." The military portion of the Webcast, an interactive, on-line program for eighth and ninth-graders and their teachers, focused on how military weather personnel support AF and Army during peacetime and combat operations. The Airman performed experiments on air pressure, responded to questions students emailed to CNNfyi.com, and talked about the different types of equipment the military used to observe and predict the weather. According to CNN officials, the Web site received more than 400,000 hits from around the world and approximately 100,000 page views were viewed.²⁸



Figure-8-4: Staff Sgt. Rebecca Jones, a broadcast weather technician with the American Forces Network Weather Center at AFWA, reads a script for an upcoming AFNWC broadcast. (Photo by Ryan Hansen)

4 May AFWA forecasters contributed to the daring rescue effort to evacuate Dr. Ronald Shemenski from Amundsen-Scott Station in Antarctica. Dr. Shemenski developed pancreatitis after one of his gall stones plugged a duct between his pancreas and gall bladder.²⁹ AFWA's numerical forecast models for the ice-covered continent provided enhanced understanding of the harsh environment.

29 May AF/XOWP published implementation procedures and updated policy for releasing weather data, products, and software to U.S. allies. AF/XOW provided initial policy to MAJCOM

²⁸ Art., Cortchie Welch, SSgt, USAF, AMC/PA, *Air Force Forecasters Weather 'Storm!' on CNN Webcast, Observer*, Mar/Apr 2001, p.11

²⁹ Art., Bradford, Sue, globaserve.net, *Eleven Other Americans Extracted from South Pole*, 24 Apr 2001, p. 2. Downloaded 16 Jan 2012 from <http://rense.com/general10/ex.htm> . [Note: Event was in AFWA/HO files but the reason of the doctor's illness was found in this article.]

DOWs and Operational Weather Squadron CCs in a 13 November 2000 memo, *AFW Policy on International Transfers of Software/Data*. AFWA as the “Defense Department center of excellence for weather satellite imagery” could now provide allies access to high-resolution satellite pictures and night vision goggle operational weather software. This was essential to coalition operations in future multinational tasked forces.

Jun The budget of the AF weather FY01 program was \$164,770,000. This was a \$15 million decrease over the FY00 actual of \$179,935,000.

14 Jun The space weather forecast mission was transferred to AFWA from the 55th Space Weather Squadron (55 SWXS) at Schriever AFB, Colorado, reversing the transfer of the space weather forecasting mission to Schriever when the 55th *Space Weather Squadron* was activated on 1 Mar 1997.

14 Jun AF/XOW confirmed with National Weather Service (NWS) AFW’s commitment to the Weather Research and Forecasting (WRF) model being the METOC community’s model of choice. XOW proposed the formation of a working group to study the feasibility of the NWS running the WRF model as the primary model for the Contiguous US and Alaska, with the Air Force [AFWA] running it for the remaining areas of the world.

15 Jun American Forces Network (AFN) viewers around the world in more than 170 countries began seeing enhanced forecasts on the network’s “Weather Update” shows. Aimed at bringing a “touch of home” to service members, Government civilians and their families, AFN added three-dimensional motion graphics and animated icons for the new shows. Until 1998 when American Forces Radio and Television Service partnered with AFWA and created the AFN Weather Center (AFNWC), regional and local weather reports were non-existent at all but a very few of the largest AFN outlets.

6 Jul AF/XOWP published AFI 15-180, Air Force Weather Standardization and Evaluation Program (AFWSEP). AFWA conducted the first standardization visit at the USAFE OWS in August with specific guidance from XOWP to focus the visits “...towards standardization, with absolutely no intimation of evaluation.”



Figure-8-5: USA Hunter UAV takeoff from Petrovec Airport, Skopje, Macedonia

16 Aug 3rd Weather Squadron used Joint Air Force and Army Weather Information Network (JAAWIN) and Small Tactical Terminal (STT) weather satellite products to support Army’s Hunter Unmanned Air Vehicle (UAV) while deployed to Skopje, Macedonia. TSgt Joseph Nichols provided the on-scene commander decision assistance information as to where the best chance of cloud-free conditions would be for specific missions.

Sep R. Cargill Hall authored *A History of the Military Polar Orbiting Meteorological Satellite Program*, Office of the Historian, National Reconnaissance Office. The scope of his work

was limited to the program itself. He concluded the program “had sparked a revolution in overhead meteorology. It introduced the ‘wheel-mode’ operational satellite, novel attitude-control systems, new satellite-tracking programs, and the operational use of infrared imagery to the field of meteorology.” Indeed, “DMSP significantly increased the image-search system effectiveness of NRO reconnaissance satellites and of SAC SR-71 and U-2 reconnaissance aircraft, while it markedly reduced the number of aerial meteorological sorties.”³⁰

Sep No more weather counters for transient air crews! Air crews could now obtain flight weather briefings electronically. Using computer terminals, in the transient air crew work areas of base/post operations, aircrews interacted with the OWS using web technology and the Program Generation Scheduler/Server (PGS/S) software application. Air crew-requested information was transmitted directly to the briefing cell at the OWS. The completed briefing was returned, either via the computer or a designated fax machine.

11 Sep Terrorist Attack United States! At 0746 central daylight time (CDT), the AFWA

staff was assembled in a meeting room of the Doubletree Suites, 72nd and Center, Omaha, NE, to discuss AFWA’s strategic planning process. At the first break, the staff learned two airplanes had crashed into the twin towers of the World Trade Center in New York City, NY. AFWA/CC, Col Robert Allen, halted activities and told the staff to return to their duty location and await further guidance. All of AFWA responded with purposeful focus on the uncertainty of what the Nation’s leaders would request in the form of weather support. In the early hours, AFCCC/DOC3 developed a short-notice wind study for the National



Figure 8-6: Pentagon damage from 11 Sep 2001 Terrorist Attack

Security Advisor for Reagan National Airport across the Potomac River from Washington, D.C. The study served as a key piece of information in presidential deliberations regarding reopening the airport. Within 2 hours, DOC3 produced a tailwind/headwind/crosswind study for all three runway headings at the airport.

Oct AF/XOW, Brig Gen David L. Johnson, provided a status of AFW to the readers of Flying Safety magazine. He emphasized the team aspects of AFW from the scientists at Offutt AFB, to the forecasters at regional OWSs and local Combat Weather Team (CWT) experts, all providing aircrews with the most accurate weather information [AFW] could provide. He stated, “...you [aircrews] are an important part of the new weather team.” Local CWTs depend on aircrew interaction to enable a better forecast for the mission. CWTs filter through the tremendous quantity of information available to better equip aircrews to accomplish their mission. Brig Gen Johnson,

³⁰ Hall, *Op. cit.*, p. 34.

requested aircrews, “Make [their] weather folks an important part of the Ops Team-you’ll need them to anticipate and exploit the environmental ‘fog of war.’”

12 Oct The AF History office awarded AFWA’s History Office a prestigious Heritage Project Award for the establishment of the Air Force Weather Heritage Center, dedicated in May 2000.

1 Nov AF/XOW revised the AFW Mission Statement: “Deliver to our Nation’s combat forces anytime, anyplace, the highest quality, mission-tailored information, products, and services relating to the terrestrial and space environment... from the mud to the sun.” Previous version implied the Forces to which AFW was providing support were from the mud to the sun. In reality, the information AFWA provided was on the environment that existed from the mud to the sun.

18 Dec AF/XOW and Chief of Naval Operations (CNO) (N096) approved the formation of a Joint METOC Interoperability Board (JMIB) and invited representatives from USA and USMC to fully participate. The formation of a JMIB was a recommendation from a working group formed of AFWA and Naval Meteorology and Oceanography Command representatives. The group believed the current Inter-Service Joint METOC Configuration Control Board (JMCCB) did not have sufficient scope or authority to effectively improve cooperation between the Service METOC communities. The JMIB would replace the JMCCB and support Joint Staff publication Joint Vision 2020 objectives and improve interoperability of METOC data and product delivery within the DoD.

19 Dec Operations ENDURING FREEDOM (OEF) and NOBLE EAGLE (ONE) First 100 Days. After the attacks of September 11, DoD established two operations, ENDURING FREEDOM to conduct the Global War on Terrorism (GWOT), and NOBLE EAGLE to provide protection to the United States homeland. AFWA developed a synopsis of significant contributions to these two operations. AFWA’s support covered Production, Services, Modeling, Communications, Equipment, and Training. Classified operations generated a phenomenal increase in the number of requests to AFWA’s various classified web interfaces. AFCCC updated climatic summaries for various areas of operation and produced 200-plus airfield reliability studies in support of planning force beddown locations.



Figure 8-7: SSgt John "Dusty" Lee transmitting observation from a remote location high in the mountains of Afghanistan.

2002

2 Jan AF/XOW, in collaboration with MAJCOM DOWs and AFWA, published a Weather Search Radar-88 Doppler (WSR-88D) Open Principal User Processor (OPUP) fielding strategy. The strategy fundamentally changed the way CWTs (base weather stations) would view precipitation returns received from WSR-88Ds. CWTs would no longer have a dedicated weather radar display to interrogate radar returns to warn their customers of impending precipitation events that could impact installation resources. As the result of AFW reengineering, the “lion’s share” of responsibility for resource protection at an installation “migrated” from the CWT to the Operational Weather Squadron (OWS). Based on a climatological study performed by AFCCC to determine relative frequency of severe weather, a CWT would receive an OPUP if their installation was in the top 16% for any severe criteria (winds > 50 kts, large hail, or tornadoes). Those CWTs not receiving an OPUP would rely on the plethora of weather displays [radar data, surface/upper air weather observations] available on N-TFS workstations to keep their customers informed of impending events. The only capability a CWT would not have would be the ability to view specific cross-sections of individual storm cells.

19 Feb The Defense Weather Program was audited from April 2001 through January 2002 by the DoD IG. This was the eighth audit in the past 5 years evaluating the effectiveness and efficiency of DoD METOC support provided by the Military Departments to DoD and other Governmental agencies. The objectives of this audit were to evaluate the services and support provided by the Navy and AF regional centers [OWSs and AFWA]; evaluate Navy and AF numerical weather prediction (NWP) models; evaluate the feasibility of jointly developing METOC Acquisition Category III and below programs; and evaluate the management control program as it related to the audit objectives. Results indicated Navy and AF were providing Service-specific, and not overlapping, support from regional centers in the CONUS. In addition AFW reengineered training concept improved the quality of AFW forecasts and the efficiency of resources. Two “findings” were identified. Fleet Numerical Meteorology and Oceanography Center (FNMOC) and AFWA were not capable of providing adequate and uninterrupted backup for each other because they used Service-specific mesoscale NWP models and were separately developing next-generation models (finding A). The Services might not be deriving benefits that could flow from jointly developing, funding, and managing METOC acquisition programs because Navy and AF did not always review and comment on operational requirements documents (finding B). The report identified specific recommendations to correct the findings. Regarding the review of respective management control programs, the DoD IG identified a material management control weakness within the Navy and AF programs. The Oceanographer of the Navy and the AF Director of Weather did not identify operational back-up capabilities for providing uninterrupted METOC support as an assessable unit.

27 Feb On this date, four members from Detachment 3, 7th Weather Squadron, deployed to the Czech Republic to provide front-line weather support to the 2nd Squadron, 6th U.S. Cavalry. The mission of the exercise was to safely and efficiently enable the squadron's Apache helicopter pilots to obtain current flight qualifications by the conclusion of Exercise TALON STRIKE 02. Deploying with a full complement of tactical equipment and personal gear, the team worked in “near calf-deep mud” and overcame high winds, fatigue, inexperience, lines of communication difficulties, and malfunctioning equipment to ready their site for operations. They completed set-up just in time to welcome the arriving squadron of Apaches. Flight inhibiting weather impacted the flying schedule.

However, accurate mission execution forecasts delivered by the weather team identified periods of good weather that enabled aircrews to achieve necessary flight qualifications. The supported commander thanked the team for “outstanding weather support.”³¹

Apr 2nd Lt Andrew “Andy” J. Geyer, while assigned to the 18th Weather Squadron, Fort Bragg, NC, initiated a “Slide Weather Briefer” software development project. Even though this was not a DoD program, the resultant software became known as “Geyerware” and was rapidly accepted and became a standard for METOC support to Army units in CENTCOM area of operations.³² Using conventional weather data as input and Microsoft Excel macro functionality, one could automatically generate relevant weather products for presentation to decision makers at all levels of operations (see figure 8-6).

5 Apr A US Central Command [MARCENT] METOC Officer, J. R. Reusse, produced an information paper that revisited the tragic events surrounding Operation EAGLE CLAW. [Reference 24 Apr 1980 event] He was “under the impression that poor visibility associated with a sand or dust storm caused the aircraft mishap...at Desert One.” He hypothesized, “this was not the case.” Reusse reviewed the mission, location, and mishap. He explained the suspended dust encountered along the route and listed some “facts.” He concluded, “Operation EAGLE CLAW was significantly hampered by the suspended dust phenomena encountered along the flight route. It did increase the “fog of War”, but it [was] not the reason [eight servicemen] didn’t come back from Desert One alive.”

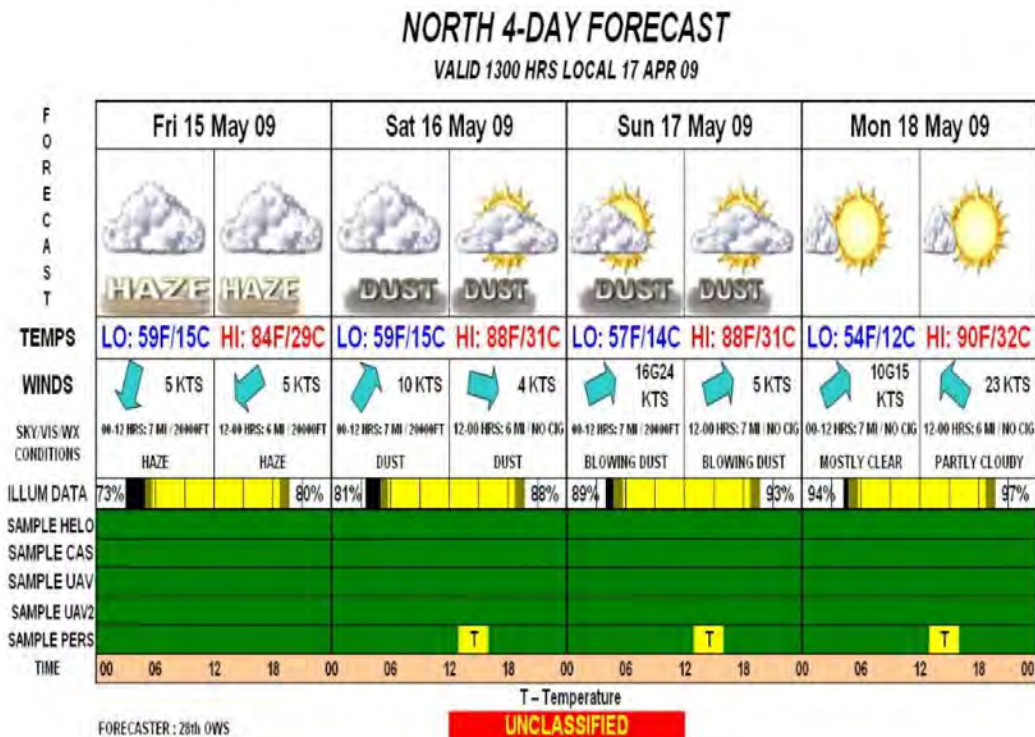


Figure 8-8: A briefing slide prepared using “Geyerware” software developed by 2nd Lt Andy Geyer, 18th Weather Squadron, Ft Bragg, NC

³¹ Art., Bart Hopkins, SSgt, USAF, Det 3, 7th WS, *Exercise TALON STRIKE '02*, *Observer*, Nov/Dec 02, p. 14.

³² Hbk., *Joint METOC Handbook*, U.S. Joint Forces Command, 1 Apr 2011, pp. 212-213.

12 Apr AFWA celebrated its 59th birthday [1943-2002] with AFWA's (AWS) first commander, Lt Gen W. Oscar Senter, USAF Ret, as the honored guest. Gen Senter said, "Near the start of World War II, I was told the weather wing would move from Washington D.C. and I had to make the move. I found a 7-story municipal building in Asheville, N.C., and signed for it right on the spot, and that was the beginning of AWS [AFWA]." Col Robert H. Allen, Commander, remarked, "In the past 59 years, we have seen weather technology grow from pibals and theodolites to meteorological satellites and solar observing networks....In knowing and honoring our past, we can more fully understand that dealing with changes in our force are a given and there will always be new systems, and new operations with new challenges for the weather warrior."

7 May AF Asst. Vice Chief of Staff approved a request to authorize NATO allies and key Pacific Rim countries access to JAAWIN and AFCCC web sites. "AFWA/CV, Col Chuck Benson, termed recent improvements to JAAWIN as truly putting [AFW] into the digital era with a meteorological web site second to none. Now our allied forces can benefit from our success with the revolution in web-based services available through JAAWIN."

25 Jun Cloud Depiction and Forecast System II (CDFS II) obtained full operational capability (FOC). This culminated a 7-year acquisition effort led by Space and Missile Systems Center. This \$52M state-of-the-art model replaced the Real-Time Cloud Analysis Model and constructed a three-dimensional depiction of cloud amount and type from surface and space-based data collection systems. CDFS II ingested, processed, stored, and disseminated merged, worldwide, real-time, 16th mesh (12.5NM grid resolution) cloud analysis and forecast data from nine different geostationary and polar-orbiting satellites. Addition of this new capability enhanced AFWA's conduct of weather operations in support of the Nation's intelligence community. FOC also permitted the cessation of various legacy production capabilities, e.g., Advect Cloud Model (ADVCLD) 8th mesh forecast and Real-time Nephanalysis (RTNEPH) analyses; DMSP SPRINT process supporting RTNEPH, and mainframe computers (Communications Front End Processor (CFEP), Hercules and Xena).

27 Jun Detachment 7 (Det 7), AFWA inactivated. After 37 years [Reference 1 Jul 1965 entry] of managing AFW's Automated Weather Network (AWN), Det 7 transferred operational monitoring and control to AFWA's Weather Data Collection and Dissemination System (WDCADS) at Offutt. Full transition of Det 7 functionality to AFWA established the foundation for the modernization of the AFWA Strategic Center and marked a key milestone in AFW history. A small contingent of support contractors remained in place through 31 Jul 2002 to maintain Tinker's AWN equipment during remaining customer transitions to WDCADS.

28 Jun AFWA turned off its mainframe computers at 28/1218Z. Computer operation was now performed by the new "server-based" architecture.

30 Jun Col Jim Hoke, Individual Mobilization Augmentee (IMA) to the AFWA/CC, retired after 30 years of association with AFW. He was a key link between AFWA and NCEP over the years that facilitated AFWA's improved world-wide mesoscale weather modeling capability.

15 Jul Space weather forecasters, from the recently activated AFWA Space Weather Operations Center (SPACEWOC), issued their first event-level warning to the 614th Space Operations Group based on an observed solar flare. At 15/1959Z, the sun in region 0030 produced a flare that reached X3.0 category in x-rays and had several event-level radio bursts shortly after that time. A North American Air Defense Command radar site confirmed it had “painted multiple inbounds.”

16 Jul The 55th Space Weather Squadron (55 SWXS) Schriever AFB, CO was inactivated. Concurrently, all of its detachments (Det 1, Learmonth City, Australia; Det 2, Hanscom AFB, MA; Det 3, Ramey RSC, Puerto Rico; Det 4, Holloman AFB, NM; and Det 5, Paulehua, HI) were re-aligned under AFWA.

26 Jul Strategic Communications Program (SCOMP) achieved FOC. Beginning in March 2000, this \$32M program converted the AFW product distribution system from an AFW dedicated “9600 baud,” circuit-centric environment to a capability based on space-based Very Small Aperture Terminal (VSAT) and common user communications Non-Classified Internet Protocol Router Network (NIPRNET) data delivery systems. Linking the re-engineered AFWA, 11 operational weather squadrons, and 164 weather flights/detachments, it was hailed as one of the most fundamental changes to AFW in 30 years, SCOMP delivered up to 200 times more data/products to the warfighter than the dedicated AFW circuits could ever deliver, i.e., gridded model data, enhanced analysis and forecast visualizations, and volumes of satellite and radar images.

31 Jul Power to the Automated Digital Weather Switch (ADWS) mainframes at Tinker AFB was turned off. Completion of the 3-year, \$10M Reengineered Enterprise Infrastructure Program (REIP) effort at AFWA enabled the transition of 700 plus customers, 21 data types, and 28 communication circuits from Det 7 at Tinker to AFWA. All Det 7 customers were transitioned by 29 Jul 02. This marked a key milestone in AFW history.

8 Aug AFCWC published an AN/TMQ-53 IR Signature Assessment in response to a 16 Jul 02 request from ACC/DOW. In an ACC IG visit to the 113th Weather Flight, Terry Haute, IN, the IG team discovered the TMQ-53’s transmissometer had a large IR light signature.³³ AFCWC’s assessment confirmed the magnitude of the signature, its impact, and recommended corrective measures to minimize or eliminate some of the IR signatures.³⁴

23 Aug DoD, NOAA, and NASA announced the award of a \$4.5 billion contract to TRW Inc. of Redondo Beach, CA [later absorbed by Northrop Grumman], to build and deploy the nation’s future polar-orbiting, environmental satellite system. The contract was for the Acquisition and Operations phases of NPOESS. NPOESS combined the nation’s military [DMSP] and civilian polar environmental satellite programs into a single national system that would significantly improve weather forecasting and climate prediction. First launch was scheduled for 2009.

³³ Ltr., Dernovich, Eric. Maj, USAF, *Request to Evaluate the TMQ-53 IR Signature*, ACC/DOW letter to AFWA/CC, 16 Jul 2002.

³⁴ Rpt., Richards, Ronald L., TSgt, USAF, AFCWC, *AN/TMQ-53 IR Signature Assessment*, AFCWC, 8 Aug 2002.

12 Sep AFWA’s communications and computer directorate (SC) identified a deliberate intrusion into AFWA’s data processing network. AF Computer Emergency Response Team (AFCERT) revealed that a questionable internet protocol (IP) address was trying to get into several military networks. AFWA’s network operations continued to block the intruder and prevented access to any of AFWA’s data. AFWA/SC reported, “It is not terribly unusual to have such a cyber-attack on our network....”

30 Sep The Space Weather Analysis and Forecast System (SWAFS) initial operational capability (IOC) was achieved. SWAFS’ Initial Spiral was a 33-month effort (FY00-02) that consisted of re-hosting eight threads, from the 55th SWXS, of operational software with enhancements (180K source lines of code) at a cost of \$16.5M, the purchase of \$1M in hardware, integrating capability into the AFWA processing environment, and the transfer of three communications circuits. Completion of the initial spiral enabled the closure of 55th SWXS.

15 Oct The Three-dimensional Variational Data Assimilation (3DVAR) was implemented to provide AFWA an advanced observation integration method that significantly improved forecast model accuracy. The 3DVAR processed nearly 4 times the amount of data than the previous method and included 21 various types of data.

10 Nov The improved Target Acquisition Weapons Software (TAWS) was integrated into mission planning cell of the Air Operations Center (AOC). The new TAWS (a combination of TAWS and Night Vision Goggle Operations Weather Software (NOWS)) provided the integrated “team of Ops, Intel, and Weather” a cross-feed of information that could significantly improve mission planning and execution of the daily air tasking order.

2003

Jan – Feb Charlie Battery, 1st Battalion, 319th Airborne Field Artillery Regiment (C/1-319 AFAR) used AFWA’s Interactive Gridded Analysis and Display System (iGRADS), available on JAAWIN, to overcome weather-induced range errors affecting the fire direction center computed range by as much as 500 meters. Normally, an AFAR battery would have available real-time radiosonde information from a division artillery meteorology team (Met). The use of AFWA products allowed the Army to reduce their deployment footprint by not deploying their Met teams to Afghanistan.

15 Jan AFWA’s unclassified production branch issued their last weather forecast—end of an era! The Continental United States (CONUS) Severe Weather and the Strategic Weather Sections ceased operations. For the past 34 years, CONUS Severe provided Point Weather Warnings (PWW) for as many as 400 locations. PWWs provided an early warning of upcoming severe weather, so officials could take the proper steps to protect people and property. The Strategic Weather Section provided upper-level flight hazards for essentially the entire world for



Figure-8-9: AFWA’s unclassified production branch issued last “person-in-the-loop” weather forecast. TSgt Chris Lee (top), Strategic Weather Section NCOIC and SSgt Jan Burciaga, weather technician, discuss the last product the section issued, after a 46-year mission at AFWA.

the last 46 years. The section had issued 620,865 forecasts during this period. This kind of tailored regional weather support would now be provided by Operational Weather Squadrons (OWS) located around the world. The transfer of functions performed by this branch was a planned part of AFW transformation begun in 1998 as AFW Re-engineering.

19 Feb AFWA implemented the diagnostic cloud forecast model (DCF) using numerical weather prediction MM5 forecast parameters. Model output products of cloud cover over target areas were used by TAWS to improve air strike mission planning.

20 Feb AFCCC, located in Ashville, NC, and 28 OWS located in Sumter, SC, assisted in the planning of military operations in Iraq. Lt Col Tom Frooninckx, 28 OWS/CC, was quoted as saying, “I always say weather forecasters are domino pushers. We start a chain of events, of decision making, which leads to events and operations. The decision could be something as big as ‘All units start the war tomorrow,’ or deciding whether we put snow blades on our vehicles.” AFW had been in “high gear” since 11 Sep 2001, and was now operating “with even more intensity as the possibility builds of war with Iraq.”

Mar Air University Press published Air War College Maxwell Paper No. 29, *Weather Operations in the Transformation Era*, by Col John M. Lanicci. The document would guide the near-term activities across AFW as the AF implemented major transformational changes. In the forward, MGen Bentley B. Rayburn, AWC/CC stated:

“[Col Lanicci outlined]...changes in a concept called weather, intelligence, surveillance, and reconnaissance (WISR), a term first used by the Air Staff to describe the total integration of natural and man-made environments for predictive battlespace awareness (PBA). The WISR concept [was] based on substantially increasing the volume of weather data collected in theater by using the same airborne assets being proposed for PBA, persistent ISR, and time-critical targeting. It [WISR concept] proposes the creation of a four-dimensional database that can be used to integrate the natural environment into the common operating picture.”³⁵

Mar Several months before the start of major military action for OIF, U.S. special operations forces operated clandestinely throughout the northern and central portions of Iraq. Two AFSOC CWT Airmen, SSgt “Dusty” Lee and SSgt Dave Mack, were instrumental in providing critical weather support during this period.

SSgt Lee was in northeastern Iraq, near the Iranian border for the purpose of conducting chemical downwind messaging in the event the Iraqis decided to use chemical warfare against U.S. and coalition forces. Additionally, he conducted forward weather observing operations to collect environmental data in the data sparse region. The data was critical to enabling the close air support assets supporting Special Forces elements from the 10th Special Forces Group that were linked up with the Peshmerga (armed Kurdish fighters), who were fighting Saddam Hussein’s forces. SSgt Lee’s element was involved in heavy fighting on at least six separate occasions during these series of engagements.³⁶

³⁵ Art., Lanicci, John. M., Col, USAF, *Weather Operations in the Transformation Era*, Maxwell Paper No. 29, Air University Press, Mar 2003, p. iii

³⁶ Cunningham, *Op. cit.*, p. 26

SSgt Mack was attached to an Army Special Forces ground team and flew into south central Iraq and then traveled across the country with the team. Mack provided weather observations in the initial phases of the war. When Mack’s team moved toward Baghdad, he provided weather observations for Baghdad Airport until conventional forces arrived. Mack provided observations back to the staff weather officer, Maj Randall Kallenbach, of the Combined Joint Special Operations Task Force in western Iraq, via satellite phone every three hours. The observations were then relayed to other AFW resources for inclusion into classified weather data bases.³⁷

17 Mar The Infrared Target-Scene Simulation Software (IRTSS) was delivered in time for use during the initial stages of OIF combat operations. An F-117 pilot remarked, “IRTSS is a fantastic tool and if anyone doesn’t use it [before the mission], they’re stupid.” IRTSS provided the capability to generate ‘through-the-sensor’ target scene predictions in the thermal IR waveband. As the system accounted for target area geography, mission tactics, weather, time of day, and sensor characteristics, it allowed aircrews to fly-through the target area scene prior to the actual mission. AFWA provided the various weather elements that contributed to the target scene definition. AF/XOW believed IRTSS was one of several success stories in OIF. The IRTSS technology proved to be a valuable tool for increasing aircrew situational awareness during the air campaign. IRTSS was managed as part of AFWWS War Weather by ESC/ACW with user representation provided by Col Mary Lockhart, IMA to AF/XOW, Mr. Leandro Delgado, contractor in AFWA/XPF, and Lt Col Brian Patterson, Air National Guard F-16 pilot.

19 Mar D-Day - OIF war begins.³⁸

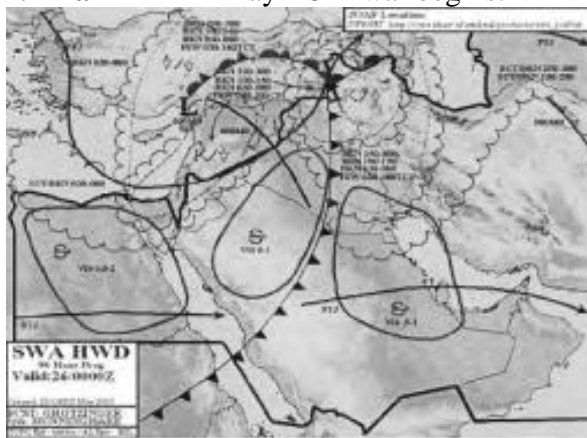


Figure-8-10: “The Forecast” – 22 Mar 2003 Joint Operations Area Forecast (JOAF) valid for 26 Mar 2003 depicts visibilities less than 1 mile caused by sandstorm covering central Iraq.



Figure-8-11: “The Observation” – As allied forces marched towards Bagdad they encountered a massive dust storm. An AN/TMQ-53 installed, on top of a SICPS equipped HMMWV, measured weather elements during the storm.

³⁷ Art., Grigsby, Jodie, AFWA/PA, *Joint Operations Halfway Around the World*, Observer, Vol. 49, No. 7, Nov/Dec 2003, p. 10.

³⁸ Book, Gordon, Michael R. and Trainor, Bernard E., *COBRA II*, Pantheon Books, New York, Appendix, p. 551, 2006

26 Mar Aircrews of the Air Mobility Command, flying fifteen C-17 Globemaster IIIs, successfully completed a nighttime airdrop of approximately 1,000 “Sky Soldiers” from the 173rd Airborne Brigade behind enemy lines into Northern Iraq. It was the largest combat airdrop since the invasion of Panama in December 1989 for Operation JUST CAUSE and a first for the C-17. The objective was to secure Bashur airfield and prepare it for the follow-on airland operation of the remaining portion of the brigade over the next 4 days.³⁹ Weather support was key to this successful operation.

Capt John Roberts was the staff weather officer to the 173rd and was responsible for providing the mission execution forecast. In coordination with AFWA’s Special Operations Weather Operation Center (SOFWOC), 28th OWS, USAFE OWS, and the Central Command Joint Operations Center they issued planning information several days in advance. In the meantime, SSgt Tom Dishon, an AFSOC CWT Airman, along with a 6-man combat reconnaissance patrol was covertly inserted and tasked to establish the Landing Zone for the 173rd. SSgt Dishon prepared surface weather observations and provided limited-data forecasting.⁴⁰

Based on discussions with his combined team, Capt Roberts initially advised postponing the airdrop for a day because an intense low pressure system was impacting the area of operations creating high winds, low ceilings and visibility with snow. Delay was not an option. The political situation dictated the troops needed to be on the ground on the 26th. Capt Roberts with assistance from Lou Riva, an AFWA civilian working at the SOFWOC, and other meteorologists pored over satellite images, surface weather observations, and weather model data to identify a favorable period to execute the mission. They were all in agreement. There appeared to be a very tiny window of opportunity. They identified a break in the cloud formation that would provide a 2-hour window of opportunity the paratroopers could use to get into Bashur.⁴¹

Twelve hours out, Capt Roberts made the call, unfavorable conditions except for a 2-hour period, and the men and their equipment were packed for the jump. They took off from Aviano AB, Italy for the four-hour trip to Iraq, Roberts stayed behind to monitor the mission.

In an interview with the AFWA historian, Capt Roberts related the final moments:

“The final weather decision at the 2 hour mark the people on the ground said, weather conditions don’t permit, we recommend you cancel the mission.’ At which point my heart fell down to my feet, I jumped on the radio [speaking to the pilot in the lead aircraft], I said, ‘disregard the comment on the ground’ cause I found out the guys on the ground were great but all they had was a [Kestrel] 4000 and a radio. [They] didn’t have any laser range or night vision equipment. So they really didn’t have a good estimate on the clouds. And also I could see on the satellite that it was starting to break up so I said, ‘sir you now have 2 hours left for your flight, by the time you get there, keep flying when you get there it will clear by the time you get there.’ So the aircraft kept flying and the generals sitting next to me when I said that....and then the snow stopped at about 30 minutes prior to the time to target the last observation, cause 20 minutes out they were going to go to radio silence just for

³⁹ Art., Bauer, Cynthia, AMC, PA, *Mission Commander Recounts Historic C-17 Airdrop into Iraq*, AMC News Svc, 11 Apr 2003.

⁴⁰ Cunningham, *Op. cit.*, p. 27

⁴¹ Art., Cordes, Henry J., *Weather Forecasters at Offutt Tout Key Role in Iraq War*, [Omaha World-Herald](#), 19 Aug 2003.

safety, in the last ob he said, 800 and a half and I was like oh no there's a good chance that it wasn't going to clear out when the aircraft got there and the aircraft couldn't loop around like when they got there they had one shot and then they'd have to come back home and then right then they said oh wait hold on a second and they said, the guys on the ground told me later right about 30 minutes out they looked up and they saw a couple stars and they knew it was starting to break up and they said ah broken and once it started to break and that convergence zone kinda came through and it was fairly windy on the ground it wasn't above the jump it was about 10-12 knots it lifted up the ceilings and they said it's up to about 2000 and we can see 3 miles. And then radio silence so waiting, waiting, wait. Longest 20 minutes of my life. The guy on the ground comes back on, I spot the first aircraft, I count 20 something yeah he counted how many sheets he sees. So it was like boom I was like whew I was relieved. Now you know that their jumping and that it was a success.⁴²

31 Mar AF/XOW defined the AFW requirements process in response to changes to the Chairman of Joint Chief of Staff Instruction (CJCSI) 3170. AFW requirements were divided into several distinct categories—near term operational requirements; requirements that generate capability development, modifications, to existing capabilities, AFW funding commitments, and/or manpower needs; and finally emerging contingency requirements generated by imminent or currently on-going operations. The first category was not affected by the new policy and would continue to be addressed by the appropriate OWS and/or AFWA as long as they can be met using existing capabilities. The other two would be addressed by the new process that generated an integrated priority listing (IPL). An AFW Requirements Oversight Council was established to recommend an IPL for AF/XOW's approval. The new process was used for the first time to baseline the FY04 AFW program.⁴³

1 Apr The New York Times published an article characterizing the meteorological support that led to the accurate prediction of a “potent” dust storm that affected operations 5 days into the start of OIF hostilities. 28th OWS provided 5 days of advanced notice to commanders who were able to adjust battle plans and take advantage of the blinding conditions.

3 Apr Elements of the 3rd Infantry Division (Mechanized) captured portions of the Saddam International Airport. SSgt Julie Moretto, a weather technician with the 15th ASOS while attached to the Tactical Assault Center, was the first conventional AFW person to arrive in Baghdad. She remarked, “That was the closest any of us had been to the frontline.... We were welcomed to the newly named Baghdad International Airport under



Figure 8-12: SSgt. Julie Moretto answers questions by members of Iraq's meteorological organization. (USAF photo by 2nd Lt. Rebecca R. Garland)

⁴² Interview, Roberts, John, Capt USAF, to AFWA/HO, 4 Feb2004. [Interview was about Capt Roberts involvement in 173rd Airborne Brigade airdrop operation.]

⁴³ Ltr., Black, Robert, Lt Col, USAF, AF/XOWX, *Air Force Requirements Process*, AF/XOW to MAJCOM/DOWs, 31 Mar 2003.

continuous fire.”⁴⁴ However, a day or so earlier, the first surface weather observation under KQTZ [the “KQ” identifier assigned to Baghdad Airport] was taken by SSgt Dave Mack, a special tactics weather person attached with Special Forces Operational Detachment—Alpha 583, from the south end of the runway.⁴⁵

23 Apr AFWA briefed the Product Tailoring Warfighter Applications (PTWA) Analysis of Alternatives (AoA) (Level III) to AF/XOW in order to update the Forecast System 21st Century (FS-21) Operational Requirements Document (ORD). The briefing addressed various alternative solutions, reviewed the pros and cons of each, assessed their risk, and concluded the combination of N-TFS and Horace [a UK Met Office developed weather application] would be a material solution that could meet AFW’s vision.

1 May Ramey Solar Observatory’s AN/FMQ-7 Solar Optical Telescope “terminated” operation at 1200Z/0800L. Capt Tersigni, the last Commander of Detachment (Det) 3, ordered the final “stowing” of the telescope’s objective lens. After nearly 37 years of conducting “solar patrol” as part of AFW’s Solar Optical Observing Network, AFWA was inactivating Det 3. Col Wendell T. Stapler, AFWA/XO, was the presiding officer for the ceremonies. Actual inactivation would not be complete until 1 October 2003.

5 May Harris Corporation of Melbourne, FL, provided AFW 100 First-In Weather Systems (FinWS) some of which were used during the initial hostilities of OIF. The system allowed combat weather airman to receive current weather data on laptops using digital radio antenna that weighed less than five pounds. Weather products were generated at AFWA and the 28th OWS and then transmitted to one of two commercial satellites that were part of the WorldSpace satellite radio network, covering Africa, Asia, the Middle East, and Europe for relay to a FinWS located within a given area of responsibility (AOR).

15 May HQ Air Force inserted AFWA’s new building project into the Future Year Defense Plan (FYDP) as a place holder for FY08.

6 Jun AFWA assisted the 447th Air Expeditionary Group with equipment and training plans so weather technicians could provide training to Iraqi Meteorological Organization (IMO) personnel. This training allowed the Iraqis to effectively operate and maintain the meteorological measuring equipment installed at Baghdad Airport during the war.

24 Jun AF Historical Research Agency published “Weather in Air Campaigns, 1990 – 2003.” The study concluded that AFW’s reengineering efforts in the late 1990s created a new structure that provided centralized weather data facilities at the strategic level, a set of operational weather squadrons as “hubs” at the operational level, and combat weather teams at the tactical level. This new structure proved to be more effective during OEF and OIF than AFW organizations in earlier operations.⁴⁶

⁴⁴ Art., Moretto, Julie, SSgt, 15th ASOS, 3rd Inf Div (M), 4th Brigade Aviation, *Army Aviation Weather*, Observer Magazine, June 2003, Special Edition, p. 17

⁴⁵ Interview with, Benson, Joseph T., Maj, USAF, SOCCENT/SWO, 8 Apr 2004, p. 5

⁴⁶ Study, Haulman, Daniel L., Dr., “Weather In Air Campaigns, 1990-2003,” AFHRA, 24 Jun 2003

30 Jun AFWA prepared and AF/XOWP approved the AFW Weather Station Certification and AN/FMQ-19 Automatic Meteorological Station (AMS) Commissioning Plan. Weather station certification was mandated by Federal Meteorological Handbook-1 (FMH-1) whenever there was a major change to station operations. For nearly 66 years⁴⁷, AFW personnel had been taking, recording, and disseminating surface weather observations manually at weather stations around the globe. With the fielding of the FMQ-19, that process would be automated, except for weather person augmentation/backup and quality control. The plan identified the essential elements of the certification process: proper site selection of equipment; certification of weather observers; existence of adequate operation, augmentation, and backup procedures; and establishment of an effective quality control program. AFWA and gaining units used the plan to certify AFW weather stations after the contractor installed an FMQ-19.



Figure-8-13: A C-17 Globemaster III touches down at McCord AFB, WA as the AN/FMQ-19 Automatic Meteorological Station creates an automated surface weather observation. Located near the touchdown point of the runway, primary sensors visible are, from left, precipitation, lightning detection, cloud height, combined visibility/present weather, and wind direction/speed [atop the 10 meter mast].

Sep AFWA's FY03 Capital Equipment Replacement Program (CERP) celebrated a 3-year lifecycle milestone with the replacement of its core server components. More than simply a one-for-one replacement, this year's effort consolidated services through a first-time use of Network Attached Storage (NAS) and a common high-speed tape backup device. The fully integrated enclave eliminated expensive, stand-alone storage arrays and drives and reduced the number of operating system and application licenses used to provide core administrative services to the agency. CERP also replaced 26 percent of the microcomputers and peripherals in AFWA. Peripheral components include scanners, printers, trackballs, and monitors. This year marked the third consecutive year that the program had met or exceeded its goal of replacing from between 25 to 33 percent of agency desktop components at a cost of \$493,000.00.

30 Sep A dedication and ribbon-cutting ceremony was held to inaugurate a data exchange between AFWA and the British Royal Navy's Fleet Weather and Oceanographic Center (FWOC). The new communications platform provided the FWOC meteorologists with up-to-the-minute Defense Meteorological Satellite Program (DMSP) data.

18 Oct DMSP launched F16 from Vandenberg, and AFWA performed early orbit support for 30 days. On 18 Nov, Col. Randy Odle, DMSP program director, transferred Satellite Control Authority (SCA) to Mr. Bruce Needham, Associate Director of



Figure-1-14: SSgt Jay Sablan, AFWA Communications Directorate, Network Systems Administrator, replaces a failed hard drive on an AFWA server.

⁴⁷ Note: 1 Jul 1937 to 1 Jul 2003 was used as a basis of approximation.

Operations, NPOESS IPO, and he delegated F16 command authority to Suitland National Environmental Satellite, Data, and Information Service Office of Satellite Operations (NESDIS/OSO)

27 Oct AFWA space weather operations center personnel classified a solar flare detected by the Solar X-ray Imager as the third largest solar event in recorded history. As an aside, the solar spot group was the largest recorded in the current solar cycle. The center had issued more than 300 warnings of possible problems to DoD officials since 19 Oct.

10 Nov AF/XOW published lessons learned for OIF. Gen Stickford stated, “Overall, I am very pleased with the success of our weather warriors during OIF. This report and the testimonials from field commanders confirm how well AFW performed its primary mission....” He provided his expectations to the AFW community that the report “be used actively as a guidebook to shape future policies and initiatives within the career field, not relegated to the history shelf.” The information was used to form the basis of the AFW “story” as it was rolled into the overall Air Force after action report on OIF.

13 Nov High Performance Computing Office (HPCMO) awarded AFWA and the Navy’s FNMOC, Monterey, CA, a grant to improve numerical weather prediction for DoD. The two agencies each received \$2.5M to purchase computer hardware and accomplish operational test and evaluation of the Weather Research and Forecasting (WRF) modeling framework.

2 Dec AFWA’s Circuit Management Office (CMO) worked closely with the United Kingdom Meteorological Office (UKMO), DISA-Europe, and the USAFE OWS to successfully move UKMO weather circuit connections from Bracknell, UK, to their new home in Exeter, UK. CMO’s analysis of the data flow on the connection between Exeter and the USAFE OWS resulted in the bandwidth requirement being reduced by 50% and a savings of \$8K per month.

13 Dec Combat weather forecasters from the 3rd Weather Squadron produced planning and mission execution forecasts⁴⁸ for Operation RED DAWN. The 4th Infantry Division’s 1st Brigade Combat Team and Task Force 121 conducted the joint operation, which led to successful capture of Saddam Hussein.⁴⁹



Figure-8-15: Samir, a 34-year-old Iraqi-American US Special Forces interpreter who helped find Saddam Hussein and pull him from his hideaway.

⁴⁸ Art., *3rd Weather Squadron*, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/3rd_Weather_Squadron, 17 Nov 2011.

⁴⁹ Art., *Operation RED DAWN*, Wikipedia, The Free Encyclopedia, downloaded from http://en.wikipedia.org/wiki/Operation_Red_Dawn, 17 Nov 2011.

2004

29 Jan AFWA conducted a Program Management Review of those projects assigned to AFWA for obligation of funds. After 1 year of operation of the Systems Engineering, Management, and Sustainment (SEMS) contract, AFWA had reduced costs of various strategic center operations and maintenance activities from \$16,497K in FY03 to \$15,927K in FY04. This was achieved through the consolidation of activities within the SEMS contract. Mr. Leute, AFWA/XPS-T, identified full funding needs for NPOESS as just over \$207M for the years FY05-11.

Feb AFCCC launched its new Spatial Climatology Initiative, the first step toward redefining map-based climatology as it applied to mission planners, warfighters, and weather forecasters. The new website opened the door to the most comprehensive library of climate information available on the web. It used Geographic Information System (GIS) technology for quick access to diverse information from engineering weather data to Operational Climatic Data Summaries (OCDS) to Advanced Climate Modeling Environmental Simulations (ACMES) images to collections of climatological atlases.

9 Mar AFWA/XP requested ESC/ACW identify a technical solution for the 104 sites still on the “unfunded list” for Observing System 21st Century (OS-21) Fixed Base. OS-21 was divided into various observing capabilities such as fixed base, tactical, remote-expendable, manual, and upper air. The AN/FMQ-19 was identified as the fixed base capability and the AN/TMQ-53 was the tactical solution. The FMQ-19 possessed more capability and was too expensive to field at all 213 locations identified in the OS-21 Operational Requirements Document. The AN/TMQ-53 was not designed for 24 hour, 365 day operations and therefore didn’t meet requirements at such locations as missile field launch control facilities, gunnery/bombing ranges, or small uncontrolled airfields.

17 Mar AFWA conducted a briefing for the AF/IL military construction (MILCON) Congressional Liaisons and ACC/CE Program Manager for MILCON in response to the acceleration of AFWA New Building MILCON funds from FY08 to FY06. The purpose of the visit was to determine whether the 55th Wing and AFWA could support the acceleration. AFWA and 55th Wing committed the resources necessary to complete a “Conceptual Design.” To manage the design effort AFWA prepared an initial Project Management Plan to manage AFWA’s responsibilities and activities in the “conceptual design” phase. This effort resulted in Congress’ appropriating the necessary funds for FY06.

Apr The 4th Expeditionary Air Support Operations Group, Weather Systems Support Cadre (WSSC) [refer to 10 Nov 1997 entry] personnel provided logistics and maintenance support of deployed weather systems across the OIF area of operations. The two person team of MSgt John Houghton and TSgt Steven Smathers assisted dispersed weather teams with trouble calls and troubleshooting failed systems via phone or e-mail. In addition they ordered parts, tracked them from the states and found a way to get them to the proper unit no matter where they were located. Their tireless efforts assured weather teams experienced the minimum of down time for inoperative equipment.⁵⁰

⁵⁰ Art., Beckham, Tim, A1C, USAF, 379th AEW/PA, *Fixing the Forecast, Keeping Weather Systems On-line, Observer*, Vol. 50, No. 2, Mar/Apr 2004, p. 8.

1 Apr The respective Operation Processing Center (OPC) leaders [AFWA, Col. Benson; FNMOC, Capt Gunderson, USN; NCEP, Dr. Uccellini] signed a National Concept of Operations Framework for the Operational Processing Centers. The concept would guide their operational implementation of WRF—the next-generation numerical weather prediction model. By this time NCEP and the Navy had already decided to not migrate to NCAR's WRF (ARW) core, but rather, chose to develop their own "flavor" of WRF. NRL and FNMOC agreed to rewrite COAMPS in the WRF framework, enabling interoperability at three levels: model output fields, model physics, and model dynamic core. NCEP continued with their version of WRF, but NRL abandoned the approach. AFWA learned from representative attendance at several WRF meetings that the Navy representatives first expressed concern that the task of rewriting COAMPS into the WRF framework was far more difficult than they first estimated. FNMOC eventually latched onto the information assurance mantra as their reason for halting work converting COAMPS to WRF. Essentially, the Navy did not trust "community" code that could have embedded viruses/Trojan horses, etc.⁵¹ AFWA proceeded along the agreed upon concept to implement WRF for AFW use in daily operations.

28 Apr AFWA software developers implemented the Feature Track Winds (FTW) software capability increasing satellite observation model inputs in Africa, Indian Ocean and Southwest Asia by up to 6000%. AFWA could now routinely process and exploit FTW in AFWA's mesoscale modeling capability, MM5.

3 May AFWA ceased processing of DMSP Special Sensor Microwave Temperature (T1 and T2) (SSMT) sounding data. AFCCC had terminated their use of the data in Atmospheric Slant Path Analysis Model (ASPAM) products.

9 Jul ESC/ACW awarded a "fly-off" contract to Raytheon and Northrop Grumman for the Joint Environmental Toolkit (JET). Each contractor would develop their own version of JET based on AF requirements and ESC would then select the best value solution. JET was the replacement for the N-TFS, the Joint Weather Impacts System (JWIS), the forecaster toolkit portion of the Integrated Meteorological System (IMETS), and the OPS II [Operational Weather Squadron processing system]. Once fielded, JET would be the third-generation interactive graphic meteorological processing system replacing the 1990's N-TFS. At the end of the "fly-off" period in Oct 2005, ESC selected Raytheon.



Figure-8-16: SrA Palmer working in the IMETS in Kuwait as the 3rd ID prepares for the push north to Bagdad.

13 Jul Air Force selected SSgt Terri Palmer as one of the outstanding airman of the year for 2004. Sergeant Palmer, a weather forecaster assigned to the 15th Air Support Operations Squadron, Pope AFB, NC, was selected as Air Combat Command's Airman of the Year. She was part of initial OIF deployment forces in support of the Army's 3rd Infantry Division, where she transmitted 260 tactical weather

⁵¹ E-mail, Surmeier, Mark, AFWA/A3, *FNMOC use of WRF*, 23 Jan 2012. [Note: e-mail trail is a discussion of about how the other two processing centers proceeded with implementing WRF. The concept document is on file at the AFWA/HO historical holding area.]

observations and 40 tactical weather warnings with a 99-percent error-free rate. Her support of 22,000 deployed soldiers was deemed critical to mission success and resulted in her earning the Army Commendation Medal. Sergeant Palmer volunteered off-duty at Ronald McDonald House, recruiting 10 other Airmen to assist in registering guests, cleaning guestrooms and office spaces, as well as cooking food. She also found time to organize 11 meals for hospice families and guests.⁵²

Aug AF/XOO-W, BGen Thomas Stickford, published the *Air Force Weather Strategic Plan and Vision, 2008-2032*. The plan and vision was intended to set AFW's course for transformation, starting with FY2008-2032 planning cycle. The plan described the pathway toward a future in which global intelligence, surveillance, and reconnaissance, transnational threats, full-spectrum military operations, and extraordinary advances in information technology and military hardware would shape the ways in which AFW would conduct its day-to-day operations.

14 Aug AF/XOW and the DoD Deputy Assistant Secretary of Defense (PA) for Internal Communications renewed the memorandum of understanding (MOU) for AFWA to provide support to American Forces Network (AFN). The MOU outlined the responsibilities and major actions required to provide weather information to DoD personnel overseas.

Sep AN/TMQ-54, Receiving Set Satellite (RSS). Initial operations began at Manas AB, Kyrgyzstan. The RSS was the deployable polar METSAT component of Joint METSAT Ingest, Software, and Terminals (JMIST) concept.

14 Sep AFWA determined NOAA's Global Forecast System (GFS) provided better forecasting accuracy than the Navy's Operational Global Atmospheric Prediction System (NOGAPS). The transition to GFS provided increased consistency between AFWA's mesoscale model, the large-scale model it uses, and the products AFWA provided its customers.

27 Sep The United States Army Corps of Engineers (USACE) and KHA conducted a kick-off meeting for the 30% design phase. USACE announced they were planning for a first quarter Fiscal Year (FY) 2006 contract award. USACE PM, Kevin Pace, introduced the potential need to reduce the Customer Concept Design validated 200,000 square feet need to ensure lowest bid stays within \$30M budget. Recent bid openings within ACC had exceeded budgets by 10 to 20 %. On 29 Oct, AFWA/CC and AF/XOO-W concurred with three New Building design changes: orientation of the building on the site [front facing north vice south]; reduce atrium [lobby] height from three stories to two; and reduce total square footage by 25,000 square feet.



Figure-8-17: Brig Gen Stickford, AF/XOO-W, congratulates Mr. Kirk Theophanous on his appointment to a 2-yr Legislative Fellowship position with the United States Congress. Mr. Theophanous was a program manager for comm. and computer systems in AFWA's Plans and Programs directorate.

⁵² Art. *Air Force Names 12 OAY*, AFPC, 13 Jul 2004 downloaded 14 Dec 2011 from <http://www.trackpads.com/forum/air-force/110603-afpc-news.html>

14 Oct AFWA formalized the Geospatial Information System (GIS) as a project. The GIS effort began with various entities within AFWA using Commercial/Joint Mapping Toolkit (C/JMTK) for exploration and development. Formation of the project provided a single point of contact to integrate GIS into the enterprise. On 1 December 2004, the National Geospatial-intelligence Agency (NGA) solicited AFWA's assistance to explore the possibility of a 12-month funded partnering agreement to provide geospatial weather (METOC) information in support of Homeland Defense.

31 Oct Using a Time Compliance Technical Change Order (TCTCO), ESC/ACW replaced over 400 AN/FMQ-13 wind sensors throughout the AF. AFW units had been estimating wind information for aircrews since early 2003 because of known inaccuracies of the sensor.

Nov AFWA/CCB approved the AFWA Consolidated Network (ACN) FY05 hardware acquisition purchases to replace end-of-life equipment and extend test bed functionality. This program began the effort to configure ACN to support the transition to the new building in FY08. It replaced unclassified network legacy equipment with standard systems and expanded the network test bed as a key element of the enterprise test bed. The program launched efforts to evaluate consolidating several enterprise functions to include reverse proxy, server load balancing, and Public Key Infrastructure (PKI) support

4 Nov The 5th Operational Weather Flight was activated, stationed at Shaw AFB, SC, and was associated with the 28th OWS. This moved AFW closer to realizing AF's goal of seamlessly integrating guard, reserve, active duty and civilian personnel toward accomplishing its Total Force concept. Another example of Total "Weather" Force occurred with the activation of the 12th Operational Weather Flight (OWF) associated with the 15th OWS, Scott AFB, IL. Alignment of these AFRC units with an OWS added depth and breadth to the AFW mission.⁵³

30 Nov The AN/TMQ-43, Small Tactical Terminal (STT) program was terminated and selected components would be reused in AN/UMQ-13 (Mark IVB) and AN/TMQ-54, Receiving Set Satellite (RSS).

2005

27 Jan AF/XOO-WP informed all MAJCOM DOWs of the Air Force policy for air traffic control and weather personnel to maintain the AN/FMQ-19 Operator Interface Display (OID) on the 2-minute average time sample period. The OID had a switch that allowed the FMQ-19 software to determine wind conditions using two different sample time periods, 5 seconds and 2 minutes. Justification for this policy was based on a paper by J. Wieringa, *Representativeness of Wind Observations at Airports*[©], presented to the World Meteorological Organization (WMO) Technical Conference on Aviation Meteorology (TECAM), 5-9 November 1979. The paper was subsequently published in Bulletin of the American Meteorological Society, Volume 61, Number 9, September 1980.

⁵³ Art. Edger, Lawrence, LtCol, USAF, *AFRC Weather Operation Adds Depth, Breadth to AFW Mission*, Observer, Vol. 51, No. 3, May/June 2005, p. 12

28 Jan AFOTEC's Detachment 4 published the final report for NPOESS Operational Assessment (OA) #1 that was conducted in two phases, October 2000 to April 2002 and from March 2003 to September 2004. The report provided decision-makers with an assessment of the NPOESS space and command, control, and communications (C3) segments prior to the delta preliminary design review.

Mar ESC Completed fielding of Continental United States (CONUS) AN/TMQ-53, Tactical Meteorological Observing System (TMOS) Iridium Upgrade Kits. The kits provided an improved satellite communications link for the transmission of weather observations when no local area network was available to connect to the internet.

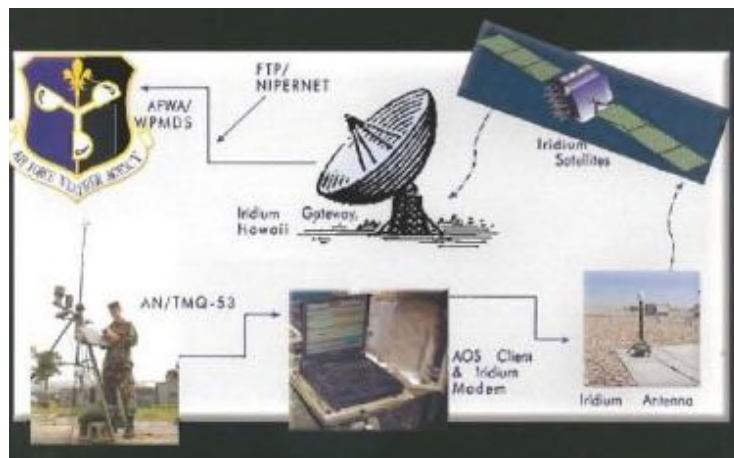


Figure 8-18: Diagram showing how weather observations flow from AN/TMQ-53 employed in a theater of operations to AFWA with the addition of the Iridium communication upgrade kit.

Mar SMC Det 11, Logistics Support Manager, declared the AN/FMQ-12, Digital Ionospheric Sounding System (DISS) unsupportable and proposed transferring DISS to AFWA to provide command logistics support.

3 Mar The Government accepted Weather Data Analysis (WDA) contract's increment 2 (AFCCC's Point Analysis Reengineering (PAR) application).

4 Mar U.S. Army DCS/G2/DAMI-POB submitted a Statement of Requirements to the Air Force for Weather Support to Army Modular Forces. They stated, "As the Army transforms, our objective is to integrate weather data, products, staff weather officer (SWO) advice, and weather impacts directly into net-centric operations at all echelons. The SWO and Battlefield Weather Team (BWT) will continue to be a vital part of weather support to the transformed Army." Earlier in January, U. S. Army DCS/G2/DAMI-POB, informed subordinate Army G-2s they should work with their USAF Staff Weather Officer (SWO) to ensure USAF Combat Weather Team understood the Brigade Combat Team (BCT) mission, develop adequate communications links, and provide mission-specific weather information to meet BCT requirements within their resources. The AF didn't know how it would expand manpower and/or use new techniques to meet the BCT weather support requirements. Providing a Weather Team at each BCT would create a potential worldwide shortfall of approximately 250 AFW personnel, a 50% increase in manpower authorizations.

19 Mar A Navy aviation weather team conducted a 30-day experiment at Rota, Spain and Sembach's OWS. The experiment was designed to evaluate possible operational implementation scenarios of operating a hub to perform all aviation weather support for all US Naval airfields in the European Theater.

May MSgt Robert Steenburgh, 3rd Weather Squadron Readiness Flight Chief, Fort Hood, TX, was the first enlisted weather professional selected to attend a master's program at Air Force Institute of Technology. Upon graduation from the Department of Engineering Physics his assignment was to the National Oceanic and Atmospheric Administration's Space Environment Center in Boulder, CO.⁵⁴

1 Jun After over five years of operational evaluation, the ten WC-130Js of the 53rd WRS (AF Reserve) were declared fully operational, replacing the WC-130H first fielded in 1973. Beginning with the 2005 hurricane season, the J-model flew all missions tasked by the National Hurricane Center in Miami.⁵⁵

30 Jun Under contract to AFWA, Science Applications International Corporation (SAIC) published a two-volume report AFWA/TN-05/001, *Value of Weather Services to the Combatant Commands*. The investigation focused on finding and developing credible evidence that would help convince AF and DoD decision-makers that investments in weather service enhancements could improve the combatant commanders' mission effectiveness and provide a positive return on investment. Using verification statistics produced by AFWA, the report contained hard numbers that could be used in the Air Force Capabilities Review and Risk Assessment (CRRA) process to more accurately evaluate the overall contribution of weather to the Air Force Concept of Operations. The report highlighted some dramatic examples of the value of weather to the combatant commanders and offered recommendations to enhance the use of weather.

4 Aug AF/XOO-W prepared an AF Enabling Concept for Weather Support to Army Modular Forces. This concept was prepared in support of Army's request, 4 March 2005, for "the AF [to] design a strategy and concept of operations for AFW support for the new conventional Modular Army force structure."

29 Jul AF/XOO-W requested AFWA provide periodic updates on efforts to explore high altitude balloon technology. These systems were emerging as long-term technology requirements. Initial update revealed there was little operational weather model information that covered possible effects. As an example, GFS data set could be extended to 130K feet while Navy's Operational Global Atmospheric Prediction System (NOGAPS)-Alpha data set would go up to 200k feet. However, neither data set accounts for the possible effects of space weather phenomena.

30 Aug 25 Sep The U. S. Gulf coast region was devastated by hurricanes Katrina and Rita.

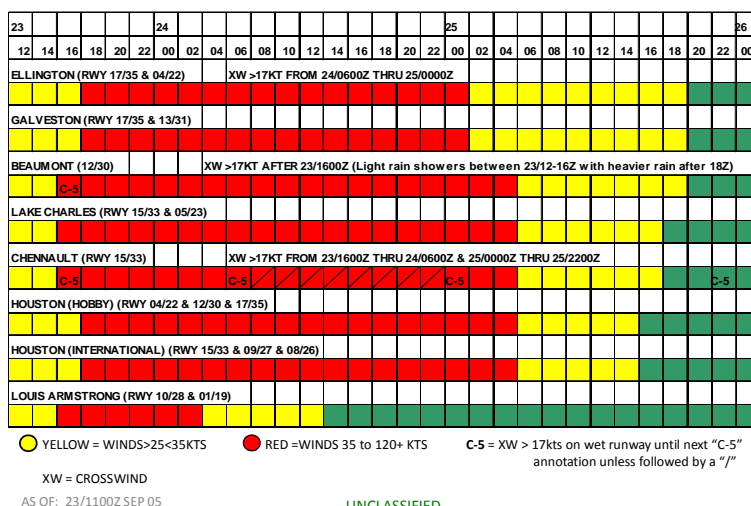
⁵⁴ Art., Brown, Miles, AFWA/PA, *AFIT Bound, Observer*, Vol. 51, No. 3, May/June 2005, pp. 7-8

⁵⁵ E-mail, Barris, Bernard C. Lt Col, USAF, Ret, AWRA/HO to Coleman, George N. III, CMSgt, USAF, Ret, Subj: *Re: Hurricane Reconnaissance Unit Entry*, 24 Feb 2012

21–23 Sep⁵⁶ Air Mobility Command (AMC) conducted the first pre-landfall hurricane aeromedical evacuation in history as hurricane Rita approached the Texas Gulf Coast. Aircrews flying various mobility airframes flew 43 missions comprising 141 sorties, moving 83 short tons of cargo and 1,068 passengers to rescue 1,170 litter patients. The Tanker Airlift Control Center (TACC) Weather Directorate (XOW) personnel warned the TACC/CC and Rita evacuation planners early in the planning process that pre-landfall crosswinds, not landfall itself, would be the primary timing threat to AMC C-5s, C-17s, and C-130s being considered for flow into Beaumont TX and Chennault LA to evacuate litter patients from hospitals and nursing homes at those locations. The concern was that though the initially proposed mission-execution timetable would get aircraft into the target airfields before projected landfall, the early onset of strong crosswinds ahead of Hurricane Rita would trap aircraft on the ground with their precious cargo. The last aircraft safely extracted the last litter patient minutes before airfield crosswinds went severely out of limits.⁵⁷

UNCLASSIFIED

RITA RELIEF



AS OF: 23/1100Z SEP 05

UNCLASSIFIED

Figure 8-19: Weather product prepared by TACC/XOW in support of Hurricane Rita. They updated this product every 12 hours during initial planning, every six hours inside 36 hours from execution, every 3 hours within 24 hours of execution, and then tracked real-time sustained and gust crosswind observations for all airfields between Hurricane Rita and the target airfields for the TACC Senior Controller to verify crosswind threat assessments were still on track.

1 Oct AFWA activated Det 3, AFWA at Wright Patterson AFB, OH, in response to the inactivation of 88th Weather Squadron. Det 3 continued the same Staff Meteorological support to Aeronautical Systems Center as was previously performed by the 88th. The legacy of this unit was tied to the AWS, 2nd WS “Staff Met” support to Air Force Systems Command prior to 1991.

⁵⁶ Art., Diamond, Mark, TSgt, *Hurricane Rita Evacuees*, Air Force News, 23 Sep 2005. Downloaded from <http://www.military.com/NewsContent/0,13319,77589,00.html?ESRC=airforcenews.RSS>

⁵⁷ E-mail, Roelle, Paul, Lt Col, USAF, A3O-WX, *Inputs*, 15 Jun 2012. [Note: refer to the attachment which contained an extracted “vignette” prepared in response to an Office of the Secretary of Defense request titled “A Day Without Weather” (DWOV)].

Nov The AF/XO signed Air Force Weather Operations Functional Concept. It charted a transformation course for weather operations supporting Air Force and Army operations. The document was in step with AF CONOPS and CRRA objectives.

8 Nov AF/XOO-W redesignated XOO-WX, Weather Plans Division, as Integration, Plans, and Requirements Division. Brig Gen. Stickford stressed, “Although there [was] no change in office symbol designations...there [was] a focus realignment.” XOO-WX would now (1) actively collect, manage, and track decision-maker requirements, (2) develop a plan to integrate and satisfy these requirements, and (3) work with MAJCOM staffs to execute that plan.”



4 Dec AFWA returned a crate of Iraqi meteorological records [40 years of upper-air data] to “a free Baghdad” and their grateful caretakers, the Iraqi Meteorological Office (IMO).

Figure 8-20: (left) Maj. Dave Runge and MSgt. Charles Monk return 40-years of upper-air data to the IMO. Mr. Muhanad Al Bermani, a five-year veteran forecaster with the Baghdad International Airport (BIAP) weather office, and Mrs. Israa Takarity, the BIAP forecast office supervisor eagerly receive the records. (Photo courtesy of OIF Joint METOC, Camp Victory, Iraq)

2006

Jan AF/XOO approved the AFW Enabling Concept that described how the Air Force would integrate environmental information into decision cycles at all levels by leveraging net-centric capabilities.

Jan The 53rd WRS last WC-130H departed Keesler AFB. This ended over 32 years of continuous service with active duty and reserve weather reconnaissance units – by far the longest of any individual aircraft.⁵⁸

1 Feb AF/XOO-W became AF/A30-W as CSAF realigned into an A-staff structure. This effort was part of the warfighting headquarters implementation and A-staff alignment started in 2005.



Figure 8-21: WC-130H

15 Feb United States Army Corps of Engineers (USACE) awarded a contract to Kiewit Building Group (KBG) to construct the HQ AFWA New Building in the amount of \$27,084,610. Col. Lanicci, AFWA/CC, presided over a ground breaking ceremony on 24 Mar.

⁵⁸ Barris, *Op. cit.*



Figure 8-22: HQ AFWA new building ground breaking participants—(left to right) representing Senator Hagel, CMSgt (ret) Glenn Freeman; BG William Holland, AF/A3O; Col Lanicci; AFWA/CC; Kenneth Hahn, Kenneth Hahn Architects, Inc.; Moe Lempka, Sr. VP Kiewit Building Group; Maj Joel Cross, USACE; A1C Stephen Castleberry, AFWA's most junior member

6 Apr WRF Joint Implementation Plan for North America, Including Alaska, Hawaii, and Puerto Rico, and Hurricane Windows was updated. This update modified earlier plans that enabled WRF to reach its current state of operations. Additional guidance was added to cover implementation of hurricane, short range ensemble forecast, and other similar activities.

10 Apr –28 Jun AFSPC [real property owner], PACAF, and AFWA conducted several meetings to chart a course of action to fund the repair of numerous infrastructure problems or relocate the Palehua, HI, Solar Observatory to another facility on the island of Oahu. A survey conducted on 5 May indicated it would cost \$1M to maintain the current state of the infrastructure for 5 years. On 28 Jun AFSPC/A7 sent a memo to AF/A7 requesting the transfer of the real property from AFSPC to PACAF.

12 Apr AFWA/CC approved AFWA's 2006 Strategic Plan. He noted that AFWA is a complex organization and continued to wrestle with how to mesh the two primary roles—lead command/career field support and production operations. This dichotomy continued to be an internal source of resource contention. He viewed both of these roles would evolve. In particular, the production center would become increasingly automated in line with the shift toward net-centric operations and machine-to-machine data transfers. However, there would still be a human role in defining user needs, developing the processes to meet those needs, ensuring data quality, and providing the necessary expertise at critical junctures in planning and executing air and space operations.

11 May HQ 1st WG was activated at Offutt AFB, NE and assigned to AFWA. The 9th, 15th, 25th, and 26th WXS were assigned to 1 WG.

11 May The Air Force Doctrine Center issued Air Force Doctrine Document 2-9.1, *Weather Operations*. This event marked the first appearance of a document of this type that examined this particular subject. The document concisely explained the organization and training of weather forces and the way they fit into the joint picture. It further examined the process that formed the basis of environmental prediction and the tailoring weather personnel performed for specific users addressing their particular needs—the employment and/or exploitation of the information.



Figure 8-23: Undisclosed location in Afghanistan - SSgt Mike Burton, member of a deployed SOWT, takes a weather observation.

13 May AFWA celebrated its 63rd Anniversary in conjunction with the Air Weather Association biennial reunion. Col. Lanicci was the “after dinner” speaker and the theme of his presentation was “History of Weather Operations at Offutt.” Col. Clark, AFWA/CV, offered the following additional information: “This event is a chance to mingle and hear from the warriors who have gone before you. In a large sense, these people paved the way for our military operations today and for AFWA specifically. While their main aim is having fun and catching up with “the old gang,” they are also very willing to share with you how things used to be in this Air Force. For our part, we’re also taking time to show them how we’ve [active duty people] taken the legacy they left and turned it into our Nation’s Defense today.”

2 Jun Memorandum of Agreement (MOA), NPOESS Integrated Program Office and AFWA for NPP/NPOESS Activities at the AFWA was signed. Its purpose was to facilitate cooperation, coordination, and use of the necessary resources to effectively and efficiently operate the NPOESS Program, to include the NPP effort, at AFWA.

5 Jun Mr. Kenneth Krieg, Under Secretary of Defense, Acquisition, Technology and Logistics, issued an Acquisition Decision Memorandum (ADM) delineating the restructure of the NPOESS program. The restructure included revised number of satellites and sensors. It also directed the AF to fully fund the DoD portion of the certified NPOESS program to the Cost Analysis Improvement Group cost estimate. Total program cost to DoD and DOC now estimated at: RDT&E, \$7,985.1M and Procurement, \$3481.6M.

9 Jun Col. Patrick M. Condray assumed command of AFWA from Col John M. Lanicci.

Jul – Aug AF/A30-W, AFSOC, and AFWA initiated dialogue concerning the transfer of the Special Operations Forces Weather Operations Center (SOFWOC) mission from AFWA to AFSOC. AFSOC had been extremely pleased with SOFWOC’s work and wanted them to also serve as the training hub for 3-level Special Operations Weathermen and also to fully integrate in the regional desks at the War Fighting Headquarters.

Jul SOFWOC was the initial Joint METOC Forecast Unit for the Lebanon Noncombatant Evacuation Order (NEO) during the opening stages which aided in the removal of 21 American citizens from the US Embassy. In addition AFWA provided new capabilities in the form of earth locatable satellite imagery to support the Pentagon weather team and expanded the classified MM5 window to support DoD operations.

31 Jul AFWA's Configuration Control Board approved an engineering strategy to transition AFWA's computers from their current home in the Martin Bomber Building to the new headquarters building over a 4-year period beginning in 2008. The time-phased approach relied on the extension of AFWA's internal communications network, ACN, to the new building and then purchasing new computers on an annual basis. This enabled people and their individual workstations to move to the new building while the heart of the weather operations (computer processing) would initially remain in its current location. In addition, computer replacement occurred on the planned scheduled and within the programmed budget.

30 Sep AFWA terminated the Global Weather Intercept Program (GWIP) after more than 30 years of operation.

Oct All Naval European aviation weather and resource protection requirements were transferred from the local Navy detachments to the 21st OWS, Sembach AB, DE. [refer to 19 Mar 2005 entry] The combined AF and Navy team began providing 24 hour resource protection and Terminal aerodrome Forecasts for four Navy sites (Rota, Naples, Sigonella, and Souda Bay) remotely from Sembach. Coordination between both AF and Navy operation directors provided a more cohesive joint service perspective of European theater operations.⁵⁹

4 Oct A ceremony was held in the new National Weather Center building in Norman, OK, to mark a major milestone in the Nation's NEXRAD Doppler weather radar program--the completion of a major system upgrade Open Radar Data Acquisition (ORDA). This project replaced 1980s, proprietary electronics and software with modern, scalable, commercial components at 158 NWS, FAA, and USAF radar sites. The ORDA project was recognized as another example of successful transition of research to operations that has marked the NEXRAD program.

19 Oct AFCCC was redesignated as the 14th Weather Squadron (14th WS), assigned to 2nd WG, and remained at Ashville, NC.

4 Nov DMSP flight 17 (F-17) was launched and checked out successfully. The program office conducted Satellite Control Authority (SCA) transfer on 12 December. The operational line scan system, the primary sensor system, worked properly. The new microwave and space sensors would have a 1-2 year calibration/validation period before operational use would occur.

6-7 & 14 Dec AFWA space weather operations noted two significant solar events. On 6-7 December, space weather operators noted two M flares and an X6.5 X-Ray flare. The X6.5 flare produced significant radio bursts, a proton event, and a geomagnetic storm. Five moderate to severe unclassified impacts to communications were reported and one impact was reported to an unclassified radar site. In addition, research scientists, in a 2008 report of the 6 Dec event,

⁵⁹ Art., *Navy, AF Weather in Europe Combine Operations*, Observer, Vol. 52, No. 4, Jul/Aug 2006, pp.13-14.

concluded: Global Positioning Receivers (GPS) experienced difficulty tracking satellites and also incurred ranging errors of up to 20/60 meters in horizontal/vertical directions. They further surmised that loss of GPS operations during solar maximum could be more common than previously anticipated.⁶⁰ On 14 December, an X1 X-Ray flare caused significant radio bursts and a proton event. Severe unclassified impacts to communications were reported.

⁶⁰ PPT, Carrano, Charles, Dr., et.al., *Impacts of the Dec 2006 Solar Radio Bursts on GPS Operations*, AMS, Fifth Symposium on Space Weather, New Orleans, LA, 20-21 Jan 2008

CHAPTER 9—CHRONOLOGY 2007-2012

2007

9-10 Jan The NEXRAD Radar Operations Center (OL-K, AFWA) participated in a Department of Homeland Security JASON Study Group meeting. The JASON was an independent scientific advisory group that provided consulting services to the U.S. Government on matters of defense science and technology. The key questions the group asked were how the radar community was planning to mitigate wind farm impacts on radars, what the fixes were, and how the fixes would be tested. The study results were published in Jan 2008 and contained five recommendations for the Government to consider.¹

Feb AFWA completed distribution of 40 additional AN/TMQ-53, Tactical Meteorological Observing Systems (TMOS).

Feb The budget for the FY07 AF Weather program was estimated to be \$223,521,000. This was a \$43 million increase from the FY00 actual value of \$179,935,000. [Note: Refer to June 2001 entry.] Most of the increase was to cover costs of implementing NPOESS capability into AFWA's production environment.



Figure 9-1: TSgt. Andrea Patterson, assigned to Forward Operating Base Kalsu south of Baghdad, Iraq, cleans debris from the lens cover on the cloud height detector of the AN/TMQ-53.

11 Feb AFWA/A8TP developed the Dust Transport Algorithm (DTA) in conjunction with Johns Hopkins University Applied Physics Laboratory to determine dust transport and concentration. Dust events in Iraq and Saudi Arabia allowed AFWA to test DTA-visibility products directly with an A8TP deployed resource, SMSgt Love. He sent observations, personal notes on the event, and the following kudos: "All of my guys are very impressed with the DTA model!!!! Although you might consider the model still in its Beta version I think it would be more beneficial for all of the AOR warfighters to exploit this powerful tool. Hats off to you, gentlemen!"

21 Feb Maj. Joseph T. Benson, USAF, a weather officer with extensive contingency deployment history and recognized expert in Special Operations weather support, revisited the events surrounding Operation EAGLE CLAW [reference 24 April 1980 and 5 April 2002 entries]. He reviewed the planning events surrounding the operation with an emphasis on weather operations. He concluded that "Accurate and time-sensitive knowledge of environmental conditions could have prevented the tragedy and, possibly, assisted in the continuation of the mission or could have prompted the decision to launch on another night." The use of Special Operations Forces weathermen in a forward observing role could have "provided accurate and timely data 12 to 24 hours before the rescue mission launched."

¹ Rpt., Brenner, Michael et al., *Wind Farms and Radar*, JSR-08-126, JASON Program Office, MITRE Corp., Jan 2008. Downloaded 17 Jan 2012 from <http://www.fas.org/irp/agency/dod/jason/wind.pdf>

28 Feb The new building transition project manager presented a briefing to AFWA/CC on the feasibility of accelerating AFWA system moves from the planned 4-year strategy to an 18-month approach in order to support full funding of required operation & maintenance (O&M) appropriation—analysis showed acceleration was not feasible. CC sent e-mail to A3O-WR stating, “AFWA does not recommend attempting to accelerate the move....[AFWA prefers to stick to] the existing baseline COA [course of action] of 31 Dec 11.”

28 Feb The 2nd Weather Group (2WG) was activated at Offutt AFB, NE, and assigned to AFWA. The group’s mission was to deliver timely, relevant and specialized terrestrial, space and climatological global environmental intelligence to Joint warfighters, DoD decision-makers, national agencies, and allied nations for the planning and execution of missions across the complete spectrum of military operations through the operation, sustainment and maintenance of AFW’s \$277M strategic center computer complex, production network, and applications. The 2nd WG was initially comprised of the 2nd Systems Operations Squadron (2nd SOS) and 2nd WS, at Offutt Air Force Base, NE, and the 14th WS in Asheville, N.C. It also included five solar observatories aligned with the 2nd WS: Det. 1, Learmonth, Australia; Det. 2, Sagamore Hill, Mass.; Det. 4, Holloman AFB, N.M.; Det. 5, Palehua, Hawaii, and the contractor operated observatory at San Vito, Italy.

28 Mar AFWA reorganized and separated the Headquarters function (A-Staff) from the operations function. The focus was a separation of operations from the "lead command management" activities. The 2nd WG assumed responsibility for day-to-day weather and computer operations while the rest of the HQ aligned with Headquarters Air Force "A-staff" with XO becoming A3/5, SC becoming A6, XP becoming A8, DN eliminated with the functions moving to A8 and A3/5, Personnel became A1, and Special Staff became DS. AFWA Programming Plan 07-01, AFWA Organization Change Request was prepared to manage and guide the completion of various activities required to implement the reorganization.

May AFWA/A8TM submitted to A3O-WX a plan detailing Joint Ensemble Forecast System (JEFS) prototype support to JEFX08. JEFS was a multi-year pilot project designed to determine the suitability, utility, and effectiveness of Ensemble Forecasting (EF) to enhance DoD operations.

Jun AFWA was named Lead Command and Project Manager for the Tropospheric Airborne Meteorological Data Reporting (TAMDAR). A8 initiated effort to expend \$723K in 3600 RDT&E funds earmarked by Congress. This effort would improve battlespace awareness through increased use of Unmanned Aerial Systems (UAS) as weather observing platforms. As developer of TAMDAR equipment, AirDat, LLC was the main benefactor of congressional earmark.

30 Jun AFWA/A8J sponsored a video teleconference with Air Staff, 1st WXG and HQ AFWA to discuss recent developments in the Next Generation (NextGen) Air Traffic Control System. The teleconference brought together AFWA and Air Staff NextGen participants and provided them a common understanding of current NextGen status. As of Jun 07, AFWA’s principal player in NextGen was through the Joint METOC Board Data Management Working Group. All other aspects of the interactions with NWS and the FAA were being handled by Air Staff personnel, specifically Col Babcock (DEPFOR Federal Programs) and Lt Col Hardwick (A3O-WX).

Jul – Dec The Portable Doppler Radar (PDR) was envisioned as a deployable Doppler weather radar that would replace the conventional TMS-1, EWR and the TWR. In August the program’s budget was approved at the AFW Program Requirements Review and ESC was assigned as the procuring agency. In September ESC conducted an initial acquisition strategy conference. HQ USAF approved the TWR ORD as an acceptable requirements document in October. In November ESC posted a sources sought notice and based on replies, ESC established there was sufficient competition to issue a competitive bid. In December, ESC established a baselined acquisition schedule.

Jul Software Programmer Manpower Cuts. Program Budget Decision 720 and “balance-the-book” cuts eliminated software programmer enlisted manpower authorizations in 2SOS/SYS. The 2nd SOS consisted of more than 160 active duty, civilian and contract personnel. The squadron operated the \$277M computing complex consisting of numerous hardware and operating system platforms running terrestrial and space information exploitation and environmental characterization software. SYS was responsible for maintenance and update of the characterization software. AFWA management and AF A3O-W staff initiated efforts to restore positions. Permanent Change of Station (PCS) freeze codes (code 51) were placed on 50 personnel to ensure personnel relocations do not occur before authorizations could be restored. If authorizations were not restored SYS could not perform its mission in the long term.

Oct Dr. Fred P. Lewis, Senior Executive Service (SES), returned as the leader of the Air Force weather function. Col. Mary Lockhart had been the acting director since May when BGen. Stutzriem moved on to serve as Director, Chief of Staff of the Air Force Studies Group – CHECKMATE.

Oct AN/FMQ-19, Automatic Meteorological Station (AMS). Final System (Number 110) was installed.

25 Oct AFWA/A8 prepared a Development Plan for the AFWA Land Information System (LIS). LIS software would replace the current AFWA Land Data Assimilation System (LDAS) package commonly known as the Agricultural Meteorology (AGRMET) Model. AFWA had used AGRMET, a software package developed at AFGWC, operationally for the past 20 years to supply surface moisture, temperature, and precipitation for United States Department of Agriculture (USDA) global crop production estimates, US Army tactical decision aid systems, other National Programs, the National Centers for Environmental Prediction (NCEP), the Air Force Technical Applications Center, US government, and other DoD organizations. The LIS is a National Aeronautics Space Administration (NASA) developed LDAS targeted as the next generation operational software infrastructure at AFWA. The LIS provides surface layer characterization of soil temperature and moisture profiles, and energy fluxes at varying resolution both regionally and globally.

Nov AFWA expanded the 5km Weather Research and Forecasting (WRF) model window to cover a larger geographical area over Afghanistan. The expanded coverage would help pinpoint areas of heavy snow, icing, turbulence, etc., and would the output would also be available to precision airdrop, TAWS, and field artillery operators.

30 Nov Environmental Scenario Generator (ESG). 14th WXS/CC [previously known as AFCCC] declared ESG operational. ESG was developed to support the DoD in training, acquisition, testing, planning, and experimentation activities employing models and simulations.

7 Dec The Network Enabled Command and Control (NECC) Meteorological and Oceanographic (METOC) Capability Module (CM) systems project office selected the Air Forces' Joint Environmental Toolkit (JET) program as the CM provider for METOC information and awarded a \$274K work package contract to the JET program to help get the NECC program to a milestone "C" decision (production and fielding) in 3FY08. The NECC capability was planned to replace all versions of the Global Command and Control System (GCCS) by 2009 and the program is already fully funded for the first two increments of development. Following the milestone "C" decision, the NECC SPO had already stated intentions of awarding a second work package contract to the JET program for the purposes of developing the balance of the needed METOC capabilities. This had major economic and political implications to the joint METOC community. First, since JET Increment 1 was expected to meet only about sixty percent of the NECC stated METOC needs, this second work package could be very large in scope and value and would almost certainly involve capability development work in the other major elements of the METOC community, such as the oceanographic and space weather segments. Second, since the METOC CM award to the Air Force supplants the Navy's current METOC lead role in the GCCS community, it was now much more likely a partnership or a convergence between the JET and the Naval Integrated Tactical Environmental System (NITES)-Next programs would happen in the near future.

21 Dec AFWA's new headquarters building reached beneficial occupancy. USACE turned over, to the 55th CES and AFWA, 16 rooms [computer rooms, communications room and communication closets on each floor]. This permitted AFWA, 55 CS, and ADT [automatic entry control contractor] to begin the installation of data network, VoIP [voice over internet protocol] telephone solution, and automatic entry control system to meet the new move in date of 29 April 2008.

2008

Jan Operating Location P, 2nd Weather Squadron, developed world's first and only Proton Event Simulator for AFW, AF Institute of Technology, and USAFA students. New simulator allows students to accurately train using simulated space weather scenarios.

18 Jan The American Forces Network Weather Center initiated web-based broadcasting thus enhancing the viewing opportunities of service members, their families and other DoD personnel stationed overseas. Atlantic, Pacific, Europe and Southwest Asia Regional forecasts which included an "Extended" and "Morning" video link were prepared and placed on the AFW Web site.



Figure 9-2: The Stepped-Frequency Microwave Radiometer installed under the starboard wing of a 53rd WRS WC-130J. (Photo Courtesy of Lockheed Martin)

15 Feb Final WC-130J aircraft equipped with the Stepped-Frequency Microwave Radiometer (SFMR) was delivered to the 53rd Weather Reconnaissance Squadron.² The SFMR continuously measures the winds at the ocean's surface as the aircraft flies through a storm providing 3600 surface wind observations every hour. Previously Aerial Reconnaissance Weather Officers (ARWOs) would estimate about 10 observations per hour.³

26 Mar Col John D. Murphy assumed command of AFWA from outgoing commander, Col Patrick Condray who moved to a new position in the Office of Secretary of Defense.

11 Apr AF/A5R, Maj. Gen. Marshall K. Sabol, approved the Capability Development Document (CDD) for the JET Increments 2 through 4. The document replaced the weather toolkit portion of the Forecast System 21st Century and the IMETS Operation Requirement Documents. The JET program was initiated in 2004 using an evolutionary acquisition approach (refer to 9 Jul 2004 entry). Increment 1 became the third generation micro-processor based integrated processing, analysis, and display capability, replacing N-TFS which replaced AWDS. This CDD provided the requirements for capabilities planned for fielding in fiscal years 2010 through 2013.

Jun AF/A3O-W directed AFWA take advantage of the offer made by the Naval Oceanographic Office Major Shared Resource Center for "free" High Performance Computing (HPC) computer hardware called Romulus. The scope of this project enabled AFWA to transfer the HPC environment Global Theater Weather Analysis and Prediction System (GTWAPS), unclassified and secret production, test, and development systems, from Building 301 D to Building 185 without interrupting day-to-day weather model processing.



Figure 9-3: Airmen from the 93rd Air Ground Operations Wing look out the side door of a UH-60 Black Hawk helicopter before executing their High Altitude, Low Opening jump over Luzon Drop Zone at Fort Bragg. In the background is a second Black Hawk with additional Airman from the 93rd AGOW. (USAF Photo by 2nd Lt. Chris Hoyler)

13 Jun The inactivation of the 11th Operational Weather Squadron (OWS) marked the completion of the merger of the 11th OWS and 17th OWS, at Hickam AFB, Hawaii. The 17th OWS was now the only operational weather squadron in the Pacific, providing U.S. Pacific Command with "one theater, one forecast."

16 Jul 18th WS personnel led the first combined airborne operation of the newly formed 93rd AGOW. Lt Col Steven Dickerson served as the airborne mission commander while SSgt Troy Misiak was the primary jumpmaster as the combined force jumped into the Luzon Drop Zone on Fort Bragg. Units of the 93rd AGOW that participated included jump qualified members from 18th Air Support Operations Group, 17th Air Support Operations Squadron from Fort Benning, GA, and

² Fact Sheet, *Stepped-Frequency Microwave Radiometer*, 403rd Wing, Kessler AFB, MS (Downloaded from <http://www.403wg.afrc.af.mil/library/factsheets/factsheet.asp?fsID=8314> 3 May 2011)

³ Art., Rouhton, Randy, *Early Season Hurricane Hunting: 53rd Weather Reconnaissance Squadron Crews Get a Jump on the Worst Storms*, Airman Magazine, Sep-Oct 2010, www.AIRMANonline.af.mil, pp38-40, (Downloaded 4 Jun 2011)

the 820th security forces Group from Moody. In addition members of AFSOC's Detachment 5, 10th Combat Weather Squadron also participated.⁴

21-31 Jul Air Force weather teams were used to provide weather support operations for both the Army and Air Force on land or in the air during Joint Task Force Exercise (JTFEX) 08-4 Operation BRIMSTONE. However, this time AFW personnel also went to sea. The Joint METOC Coordination Cell (JMCC) was located off-shore aboard the multipurpose amphibious assault ship USS Bataan.

14 Aug Alternative fuels, energy conservation and environmental compliance issues were just a few of the topics covered during "The Air Force Goes Green and Clean" environmental symposium held at AFWA. Air Force senior environmental leaders, academic professionals, architects, business leaders and members of the U.S. Green Building Council gave presentations, participated in a round table discussion and highlighted environmental issues currently being faced by both business and government agencies around the country. As AF's latest and one of Air Combat Command's first Leadership in Energy and Environmental Design Gold rated facility designated by the U.S. Green Building Council, AFWA's new headquarters was a logical place to hold such a conference.



Figure 9-4: Navy Petty Officer 1st Class Timothy Manning demonstrates how to manipulate satellite pictures on the SMQ-11 satellite receiver to TSgt Mohr, weather forecaster in support of JTFEX 08-4. (USAF photo/Capt. Nicholas J. Sabula)

22 Aug AFWA dedicated their new \$30-million headquarters building to Lt. Gen. Thomas S. Moorman. He served 20 of his 37-year military career in weather operations and was the Air Weather Service commander from 1954 to 1958.

16 Sep AFA30-W gave the go ahead for AFWA to pursue incorporating the European Centre for Medium-Range Weather Forecasts (ECMWF) into its daily production routine. AFWA needed this additional weather model to assist in the ensemble modeling efforts to initialize the WRF model.

1 Oct AFW ceased maintenance, logistics, and sustainment support for the seven legacy systems replaced by the AN/FMQ-19, AMS. Developed in the 1980s, the AF could no



Figure 9-5: AFWA's new \$30 million headquarters, Building 185, Offutt AFB, NE.

⁴ Art., Hoyer, Chris, 2nd Lt, USAF, 43rd AW/PA, *18Weather Squadron Leads Historic Airborne Operation*, Pope Life, Fayetteville Observer, 1 Aug 2008, downloaded from [http://www.popelife.com/notes/18th Weather Squadron leads historic airborne operation](http://www.popelife.com/notes/18th_Weather_Squadron_leads_historic_airborne_operation), 20 Nov 2011.

longer continue to support these systems due to lack of parts, loss of repair capability, and reduced funding. Weather units were to turn in the AN/FMQ-8, Temperature Humidity Measuring Set; AN/FMQ-13, Wind Measuring Set; AN/GMQ-34, Laser Beam Ceilometer and Indicator; visibility measuring equipment (AN/GMQ-32, AN/FMN-1, RVR-400); and ML-658, Digital Barometer Altimeter Setting Indicator.

1 Oct The AFWA Special Support Operations Flight was redesignated as Detachment 1, 623d Air and Space Operations Center, Air Force Special Operations Command (AFSOC), during a small ceremony at HQ AFWA. This was the first step in the transition of the function to Hurlburt Field, FL.

3 Oct AF/A3O-W announced the availability of prototype ensemble forecast products and training through the Joint Ensemble Forecast System (JEFS) project. JEFS was a joint experiment between the Air Force and Navy designed to test the utility of ensembles and stochastic weather information to DoD operations.

6 Oct Special Operations weathermen received a new AF specialty code (AFSC), 1W0X2, they could call their own. The new AFSC provided special operations weathermen the right technical, physical, and tactical training from day one. This enhanced their battlefield observing, environmental reconnaissance and forecasting missions.

5 Nov International Civil Aviation Organization (ICAO) implemented new 30-hour terminal aerodrome forecast (TAF) format and many countries began issuing 30-hour TAFs. AFW transitioned to the new format but continued with the 24-hour duration.

2009

5 Jan AF/A3O-W directed the elimination of Satellite Imagery Display and Analysis (SIDAS) from the AFWA production baseline. Mark IV-B Client and Leading Environmental Analysis & Display System (LEADS[®]), already part of the Operational Weather Squadron baseline and soon the JET baseline, was the logical standard imagery display toolset to converge toward.

15 Jan Kirtland AFB, NM was identified as the first site to receive the Improved Solar-Optical Observing Network (ISOON) telescope. It would serve as a test bed facility and provide data to AFWA for operational use as other sites were being fielded. Modification of the FMQ-7 would allow for the remote monitoring of solar telescopes from AFWA.

5 Feb AFWA prepared a modification proposal for the AN/FRR-95 Radio Solar Telescope to achieve remote capability. FRR-95 pedestal replacement made such a modification possible. Automating both the radio and optical solar telescopes would eventually eliminate the need for on-site solar analyst. Maintenance and facility support would still be required.

12 Feb Two inactive Weather Squadrons, the 19th and 22nd, were redesignated as Expeditionary Weather Squadrons and converted to provisional status. Air Combat command could activate or inactivate at any time on or after 12 Feb 2009. Both were eventually activated and the

22nd supported OIF operations in Iraq and the 19th supported OEF weather operations in Afghanistan.⁵

19 Feb AFWA requested AFMC provide engineering analysis and cost estimates for weather data from existing Unmanned Air Systems (UAS) and a stand-alone weather UAS.

24 Feb AFWA achieved initial operational capability of the combined NASA-AFWA project to create a Land Information System to replace Agriculture Meteorology (AGRMET) model capabilities.⁶

9 Apr Air Force Combat Weather Center was assigned to 2nd Weather Group (AFWA) and remained stationed at Hurlburt Field, Fl.

30 May AF awarded AFWA the Air force Organizational Excellence Award for the period 1 Apr 2007 to 30 May 2009. AFWA distinguished itself by exceptionally meritorious service during this period. AFWA personnel provided superior environmental situational awareness for warfighter planning and execution in Operations ENDURING FREEDOM and IRAQI FREEDOM. The AFWA's dedicated professionals skillfully instituted the first ever DoD Joint Environmental Toolkit which significantly accelerated the weather alert process and helped safeguard more than \$44 billion in military assets. Additionally, they led the revolution to electronic records as they developed, tested, and implemented electronic training records for more than 2,500 weather specialist across every major command.

3 Jun 23rd Weather Squadron was reconstituted and redesignated on this date. On 3 July, AFSOC activated the squadron and assigned it to 23rd AF at Hurlburt Field, FL⁷ to support the growing needs of the special operations community. The 23rd was AFSOC's reachback weather squadron, providing 24/7 global coverage for Joint, Army and Air Force Special Operations Forces missions. The squadron became a key enabler of the Special Operations Weather Team (SOWT) training pipeline.

6 Aug The first-ever class of battlefield weather Airmen graduated from the 93rd Air Ground Operations Wing's (AOWG) "Cyclogenesis" course. The 93rd AOWG created a memorandum of agreement with Florida's Army and Air National Guard that consolidated training previously conducted at numerous Army posts into one condensed course conducted at Camp Blanding, FL. The course is designed to teach battlefield weathermen the 32 Warrior Tasks and 12 Battle Drills that every Army soldier receives during their basic training. These skills "mold competent battlefield weathermen who are prepared to step in and become a part of an Army unit." In addition, AF Combat Weather Center personnel provided Airmen a more in depth look at tactical meteorological gear that they may need to work on while deployed. Previously—since 2005—pre-deployment training was conducted in periodic 10-day exercises called "HOOK ECHO."

⁵ Rpt., 19th Expeditionary Weather Squadron (ACC), AFHRA, 9 Mar 2009; Rpt., 22nd Expeditionary Weather Squadron (ACC), AFHRA, 9 Mar 2009.

⁶ PP, Eylander, John, 2WG, *The AFWA Initial Operational Configuration for the NASA Land Information System*, Presentation at the JCSDA Workshop, 13 May 2009

⁷ Fact Sheet, 23 Weather Squadron, AFHRA, 17 Jul 2009.

5 Sep Service members assigned to Combined Joint Task Force-Horn of Africa (CJTF-HOA) installed a high-frequency, line-of-sight antenna at the Ambouli International Airport, Djibouti, to facilitate meteorological information sharing between Camp Lemonier and Djiboutian weather forecasters. The antenna enabled a steady stream of surface weather information to flow from CJTF-HOA's AN/TMQ-53 Tactical Meteorological Observing System (TMOS) to the Djiboutian weather facility. AF TSgt. David Giddens, a member of the Washington Air National Guard, currently attached to CJTF-HOA's METOC department, said, "We wanted the Djiboutians to have the ability to see the data that we are ingesting in order to better facilitate their ability to forecast weather for this area." In addition, sharing TMOS data with Djiboutian weather forecasters would improve safety at the airport by generating a more comprehensive surface weather observation for the international airport by providing data not previously available to the Djiboutians, e.g., lightning strikes, laser determined cloud heights, visibility measurement.⁸

15 Sep The Joint Chiefs' of Staff Joint Capabilities Board (JCB) approved the Meteorological and Oceanographic (METOC) Environment Initial Capabilities Document (ICD) with Joint Potential Designator of "JCB Interest." The US Air Force, US Navy, US Army and US Marine Corps [were to] collaborate in all follow-on efforts to the METOC ICD. This was the culmination of an effort that began in Dec 2008 to create a joint document that would serve all services in the development and acquisition of future METOC systems.

18 Nov 16th Weather Squadron was activated, assigned to 2nd Weather Group (AFWA), and stationed at Offutt AFB, NE. The 16th became the center of excellence for development, implementation, and visualization of terrestrial, atmospheric and space weather models, displaying observational and model data, and identifying environmental impacts on future weapons systems. The squadron's mission was to exploit cutting-edge technologies, science, and innovations to provide responsive, accurate, and relevant weather information to the warfighter, the intelligence community and other national agencies. The squadron also included the operation of Det. 3, located at Wright-Patterson AFB, OH, comprised of staff meteorologists delivering meteorological expertise to the AF's research and development and acquisition communities.

2010

5 Jan National Weather Service changed the minimum size criterion for hail stone severe weather statements from $\frac{3}{4}$ inch to 1 inch diameter or larger. However, AFW did not follow the NWS lead. Weather units continued to use $\frac{1}{2}$ inch to $<\frac{3}{4}$ inch and $\geq\frac{3}{4}$ inch thus minimizing the impact to AFW's metrics/warning verification processes.

6 Jan AF and Army released a revised "Weather Support for the U.S. Army" publication (Army Regulation 115-10/AF Instruction 15-157 (Inter-service Publication). Significant changes included direct support to Army Brigade Combat Teams and incorporation of changes to weather support operations as described in AF Doctrine Document (AFDD) 3-59, Weather Operations.⁹ [Prior to 17 Sep 2010 it was numbered as AFDD 2-9.1]

⁸ Art., *U.S. Meteorologists Share Technology With Djibouti*, Africa Science News Service, 11 Sep 2009.

⁹ Reg. Army Reg. 115010/AFI 15-157 (IP), *Weather Support for the U.S. Army*, 6 Jan 2010

12 Jan DoD initiated Operation UNIFIED RESPONSE in response to a 7.0 Richter Scale earthquake that devastated Haiti killing 230,000 people while leaving 1,000,000 homeless. 26th Operational Weather Squadron (OWS) issued first DD Form 175-1, Flight Weather Briefing on 12 January at 1300Z followed by a total of 194 additional briefings during a 30-day period ending in February. AFSOC deployed SOWT personnel to conduct on-site weather operations to deployed forces. The first SOWT person arrived on the second 1st Special Operations Wing (SOW) aircraft and began taking and transmitting weather observations vital to safe flight operations. In addition the 1st SOW weather person was designated the Joint METOC Officer (JMO) and coordinated TAF and weather warning and advisory support with the 612th SOUTHCOM METOC cell. The 612th SPTS/OWF was tasked to provide a Joint Operational Area Forecast (JOAF) for the Joint Operating Area.¹⁰

1 Feb The Executive Office of the President (EOP) directed the restructuring of the NPOESS program. DOC would populate the afternoon orbit through the Joint Polar Satellite System (JPSS) and DoD would populate the early morning orbit. The DoD program was designated as Defense Weather Satellite System (DWSS) and would provide a capability that met or exceeded DMSP legacy performance for launch in 2018. The DMSP would continue to provide key terrestrial and space environmental sensing using the remaining two satellites, Flight 19 and 20, until DWSS was fully operational. Both JPSS and DWSS would share a common ground system based on the NPOESS design.¹¹ This restructure assured AFW operators would have access to polar orbiting weather satellite imagery well into the third decade of the 21st century.



Figure 9-6: PORT-AU-PRINCE, Haiti, 17 Jan 2010: SSgt. Nick Jones, an SOWT weatherman from the 10th CWS attached to a Special Tactics Team (STT) from the 23rd Special Tactics Sq., maintains communication with headquarters while en route to a possible trapped Haitian. (USAF photo by TSgt. James L. Harper Jr.)

2 Feb Air Force Combat Weather Center of the 2nd WG was redesignated as 2nd Combat Weather Systems Squadron (2nd CWSS) and remained stationed at Hurlburt Field, FL.

12 Mar AF/A3O-W assured National Science Foundation the planned DMSP data capture capability at McMurdo Station, Antarctica, would operate in a manner compliant with the Antarctic Treaty – real time mission data broadcast unencrypted over Antarctica and stored data down-linked to McMurdo was made available to any and all users via the National Geophysical Data Center website.

25 Mar The first class of eight Iraqi air force meteorology officers graduated from a formal technical training course in Baghdad taught by U.S. Air Force weather forecasters. The Iraqi

¹⁰ Santiago, Daniel, Capt, USAF, 1st SOSS/OSW, 20100113 *SOUTHCOM UNIFIED RESPONSE Joint Special Operations Aviation Component-Haiti (JSOC-H)*, USAF/A3O-W, Day Without Weather; additional information is available in ACC-2 – (BP) 612 SPTS OWF Haiti Vignette.

¹¹ Statement, Klinger, Gil, Dir., Space & Intelligence, OUSD AT&L, Setting New Courses for Polar Weather Satellites and Earth Observations, 29 Jun 2010. Note: the statement was presented before the House Committee on Science and Technology Subcommittee on Investigations & Oversight.

Training and Advisory Mission-Air Force had AFW personnel assigned to “advise and assist” Iraqi personnel in their creation of a self-sufficient and sustaining military weather function. These AFW “advisors” were assigned to the 321st Air Expeditionary Advisory group Air Operations Center Military Training Team. They prepared a 52-day course and instructed the students on everything from basic weather observations to advanced weather forecast models. The thrust of the instruction was modeled similar to aviation weather systems used by the U.S. National Weather Service, United Kingdom’s Meteorology Organization, and most of the member nations of the World Meteorology Organization. All eight students had degrees such as meteorology or physics, but they had never received any type of formal aviation or military weather forecasting training. From information received in this inaugural class, the eight Iraqi weather officers were now able to produce surface weather observations, terminal airdrome forecasts, daily weather briefings, and issue safety-related weather watches, warnings, and advisories. The graduates were sent to different locations throughout Iraq for continued on-the-job training. Upon completion, some of the new weather officers became instructors while others began their weather mission for the Iraqi military.¹²

1 Apr 2nd WG changed the production run-time for the 06Z and 18 Z relocatable 4km WRF model domain over the US to run before the coarser 45km windows. This enabled 1st WXG to position the results over the highest weather threat areas for improved characterization of severe weather forecasts for the 400 plus installations supported by 1st WXG’s three operational weather squadrons.

20 Apr Col Robert L. Russell, Jr. assumed command of AFWA from Col John D. Murphy who moved to US Strategic Command as the military political advisor to the combatant commander.

20 Apr An explosion on the Deepwater Horizon oil rig in the Gulf of Mexico created a massive oil spill and the resultant cleanup taxed Air Force resources. From April to June 26 OWS personnel prepared 260 weather briefings for a mixture of manned and unmanned aircraft conducting surveillance and supply flights. The majority of these flights were out of Gulf coast area Air Force Bases supported by the 26th OWS.

¹² Art., Chavana, Jarrod, SrA, USAF, AFCENT, Baghdad Media Outreach Team, *First Iraqi Weather Officer’s Graduate*, 30 Mar 2010. [Note: At this time, Maj Barry Hunte from Keesler AFB, MS, was the senior weather advisor. One of the NCO weather advisors was MSgt Mario Viary from Nellis AFB, NV.]

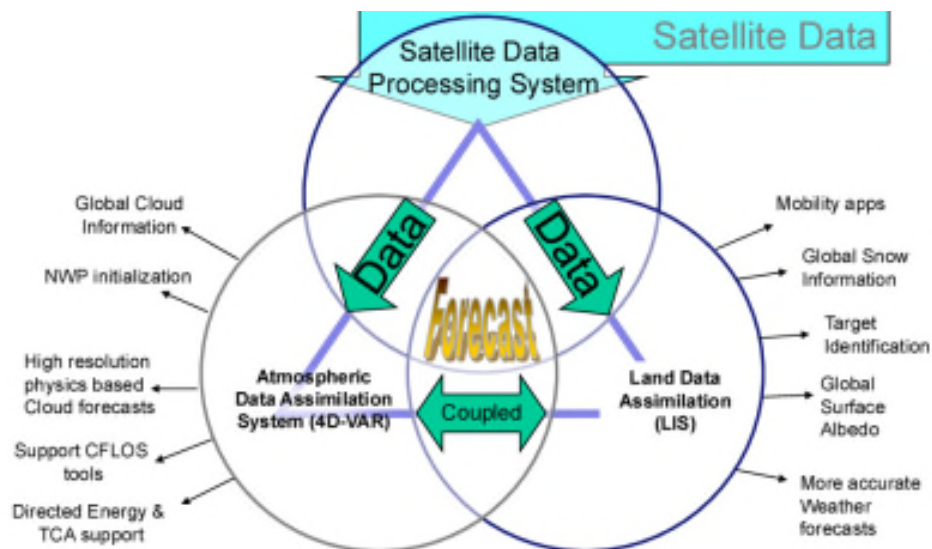


Figure 9-7: Future Conceptual Design, Unified Analysis and Prediction System (Circa 2020)

4 May Dr. John Zapotocny, AFWA Chief Scientist, briefed attendees of the Joint Center for Satellite Data Assimilation (JCSDA) 8th Workshop on AFWA’s Satellite Data Assimilation. The purpose of the workshop was to review ongoing and planned scientific development sponsored by the Center and to plan and coordinate future efforts. Dr. Zapotocny focused his presentation on AFWA’s existing satellite data assimilation and product generation capabilities. In addition he highlighted capability shortfalls, listed on-going JCSDA Projects and their relevance to DoD operations, and proposed a future (circa 2020) high-level data flow as envisioned in the Unified Analysis and Prediction System.¹³

6 May The Air Force Research Laboratory (AFRL) developed Scintillation Data (SCINDA) ground base sensor began operating from Al Udeid Air Base, Qatar. The space forecasting section of 2nd WG’s (AFWA) 2nd WS now had access to a 4-sensor network that provided real-time data on changes in the earth’s ionosphere. Results would yield scintillation forecasts and the effects on satellite communications, especially in the Central Command’s area of responsibility.

10 Jun AF/A3OW transferred two WSR-88D radars to the NWS. Maintenance training assets located at Keesler AFB, MS were declared excess to AF needs as maintenance training for WSR-88D would be accomplished at the NWS school house beginning in FY2011.

12 Jun On this date, the 455th Expeditionary Operations Group commander, Col Scott C. Long gave the go-ahead to “press” with the installation of an AN/FMQ-24 system at Bagram AB, Afghanistan. Capt A. Breen Williams, Bagram weather flight commander, had submitted a statement of requirement for an AN/FMQ-19 AMS to satisfy the 455th’s need for a more permanent solution for “fixed meteorological instrumentation.” In deliberation with AFWA, AFCENT/A3W, Lt Col Ron Comoglio, recommended the FMQ-24 as a more viable technical solution. The FMQ-19 was

¹³ Web, JCSDA: 8th Workshop on Satellite Data Assimilation, 4-5 May 2010, http://www.jcsda.noaa.gov/meetings_Wkshp2010.php, downloaded 9 Aug 2011

“yesterday’s technology that carried a significant maintenance tail. The FMQ-24 was in the contracting phase and would provide a more up-to-date solution that would provide today’s technology and a more agile maintenance tale. However, the capability would not be available until summer of 2011.¹⁴

15 Jun A 22nd Expeditionary Weather Squadron (EWXS) seven-member team of weather warriors led by Capt Erica Haas “operationalized” weather – mitigated the impact of weather on operations – for Task Force Wings. Operating out of Contingency Operating Base Speicher, Iraq, Capt Haas, Staff Weather Officer (SWO) to the 25th Combat Aviation Brigade, and her team provided round-the-clock operations in order to meet TF Wings’ operational needs. Her team took data and transformed it into useable information so that the Brigade Commander could accomplish his mission. Integrated into tactical aviation operations, they were able to add the most value to the task force. They knew how weather affected operations. As a result, they assisted those who made operational decisions mitigate those effects reducing the frequency that pilots flew into dangerous weather conditions. In other words they, provided an awareness that enabled missions to be conducted more safely and effectively. The weather team accomplished their mission by relying on field observations, and by using computer generated models and satellite images. In addition, they employed a variety of tactical weather equipment. Haas' weather team also conducted Forward Area Limited Observer Program (FALOP) training. FALOP training uses Airmen to teach U.S. Soldiers [and Iraqi forces] how to take weather observations and relay pertinent data to the SWO from strategic locations in northern Iraq. According to Haas, having qualified [Iraqi] weather observers in strategic locations was paramount as U.S. forces withdrew and reduced their numbers throughout Iraq.¹⁵

22 Jun AFWA conducted a review of severe weather warning verification data to determine if there was a statistical difference between warnings issued by weather flights (prior to 1997) and those issued by OWS’. Results showed an increase in false alarm rate, reliability decreased, while capability showed a long-term improving trend. However, AFWA believed there had been too many changes over the past 10 years to make any “before” and “after” comparisons. Examples of changes included hours of weather station operations, automated observation augmentation policy, inclusion of non-collocated locations, and number of points warned.

25 Jun AF/A3O-W signed a memorandum of agreement that committed AFWA to participate in a collaboration of an Earth System Prediction Capability with other federal agencies. The effort included the development and operational implementation of high-resolution, coupled ocean, land, ice, and space modeling to produce tactical, strategic and decadal predictions.

¹⁴ E-mail, Long, Scott C., Col, USAF, 455th EOG/CC, *Re: Decision FW: FMQ-19 Signed*, 12 Jun 2010. [Note: reference e-mail is the second e-mail in a string of e-mails that describe the evolution of the statement of requirement and shift to the FMQ-24.]

¹⁵ Art., Alberts, Mike, SSgt, USA, 25th CVB/PA, *SOW ‘Operationalizes’ Weather for TF Wings’ Aviation Mission in Northern Iraq*, My.Army.mil, downloaded from <http://www.army.mil/article/40888/swo-operationalizes-weather-for-tf-wings-aviation-mission-in-northern-iraq>, 17 Aug 2011. [Note: the article did not explicitly state that the team used FALOP to train Iraqi forces in taking weather observations. As the complier, George Coleman, inserted [and Iraqi forces] to coincide with the next statement. The only way there could be weather observations after U.S. force drawdown was if trained Iraqi forces took them.]

8 Jul 14th WS implemented second generation operational climatic data summaries for nearly 1,000 stations world-wide. Instead of using a station's entire period of record these summaries only included the most recent 10 years of data. The entire period of record was still used to provide extreme values.

10 Jul AFWA/CC requested 24thAF/A3 assistance in ensuring AF network control authorities avoided pushing standard computer system updates to AF operational systems like AFW's JET and OPS-II. Recent unauthorized pushes to weather flights and operational weather squadrons had created 23,700 hours of trouble tickets. It took an expenditure of \$108K to restore their systems' baselines to fully mission capable status.

Aug The 19th EWS provided a 2-person weather team as part of Task Force Raptor (OEF) – an effort to provide humanitarian assistance to Pakistan. Heavy monsoon rains in the Khyber, Pakhtunkhwa, Sindh, Punjab and Balochistan regions of Pakistan affected the Indus River basin. Approximately one-fifth of Pakistan's total land area was underwater. The team deployed with the initial force of four Chinooks and 2 UH-60 of the USA's 3rd Combat Aviation Brigade to Tarbela, Pakistan (Ganzi Army Airfield) with personnel and equipment to take and disseminate reliable weather observations from Ganzi and provide weather services to the Task Force. The team was integral to the decision making process. They used Iridium phones to communicate with the 19th EWS Battlefield Weather Overwatch Team which served as a reachback forecasting services hub.¹⁶

13 Aug DoD acquisition chief signed the Acquisition Decision Memorandum (ADM) directing the AF to move forward with a new \$5 billion DWSS.¹⁷

17 Aug The 609th Air and Space Operations Center (AOC) at al-Udeid, Qatar, gained temporary access to the 28thOWS JET system prior to fielding JET at the AOC. This early connection enabled the AOC to populate the AOC's Joint Automated Deep Operations Coordination System (JADOCS) sooner with time-sensitive weather information across the AOR.

1 Sep Operation IRAQI FREEDOM renamed as Operation NEW DAWN. This ended "formal combat operations" for US forces as they assumed an "advise-and-assist" role. AFW operational forces remained aligned as-is with the established Air Force Expeditionary Force structure.¹⁸

1 Oct AFWA consolidated several "support center" functions into a robust "AFWA Operations Center. Global Duty Officer and Fielded Systems Support Center along with Heads-Up Display functions were consolidated with operational control aligned with AFWA/A3O. This led to a single secure environment housing all traditional "help desk type functions" in one physical

¹⁶ Roelle, Paul, Lt Col, USAF, 19EWS/CC, *201008XX-Operation ENDURING FREEDOM/Pakistan Humanitarian Assistance*, Weather Support to Pakistan Humanitarian Relief Operations Vignette, USAF/A3O-W Day Without Weather, Aug 2010

¹⁷ Art., Brinton, Turner, *Pentagon Acquisition Chief OKs Weather Satellite Plan*, Space News, Imaginova, Corp, Stamford, CT, 24 Aug 2010

¹⁸ Art., *It's a New Dawn*, Air Force-Magazine.com, Daily eNewsletter, 1 Sep 2010,

location to deliver faster and more relevant operational support to field units and operators worldwide.

8 Oct The United Kingdom Meteorological Office installed their Unified Model on AFWA's high performance Linux cluster "Prod 8." This addition enhanced AFWA's ensemble modeling capability.

22 Oct Contractors began installation of high density moveable storage shelves in the AFWA/HO office area in preparation for the move of the AFW Technical Library from Ashville to Offutt. The transfer of material occurred a few weeks later. One manpower position for a librarian was transferred also but remained unfilled by years end.



Figure 9-8: Eruption of Mount Merapi sent plume of gas and ash billowing upward impacting aircraft operations in and around Indonesia. (CLARA PRIMA/AFP/Getty Images)

25 Oct Mount Merapi, a volcano in Indonesia, erupted spewing hot gases and ash as far as 16,000 feet into the atmosphere.¹⁹ Global Weather Operations division, 618th AOC (TACC), aided in the mitigation of 12 AF missions around the eruption and provided leaders of TRANSCOM, AMC, and 18th AF, 25 volcanic ash hazard updates.²⁰ In addition, 2nd WS, 17th OWS, and Presidential Weather Support Unit teamed to monitor activity and prepare unique ash cloud dispersion products using the PUFF model for an Air Force 1 planned flight. 2nd WS personnel also coordinated ash cloud dispersion forecasts with the Darwin, AU, Volcanic Ash Advisory Center.

19 Nov The combined weather operations of multiple AFW units' resulted in the safe, effective execution of 28, UH-60, CH-47, C-130, C-17, and C-23 search and rescue/recovery sorties. On 16 Nov a Joint Base Elmendorf-Richardson assigned F-22 Raptor crashed in the Alaska wilderness approximately 100 miles north of Anchorage. The 1st Weather Squadron (1 WS) tasked its Detachment 3, (1WS/Det3) to deploy two forecasters to the primary airfield forward operating location (FOL) near Cantwell, AK. The 17th Operational Weather Squadron (17 OWS) was tasked to provide a site forecast and weather watch, warning, and advisory (WWA) support for the FOL. Within five hours, 17 OWS built a tailored web page for the operation and began issuing the site forecasts and WWAs. In addition, the 611th Air and Space Operations Center Weather Specialty Team, 3rd Operations Support Squadron and 354th Operations Support Squadron Weather Flights,

¹⁹ Art., *Mount Merapi's Eruptions*, The Big Picture, The Boston Globe 8 Nov 2010, downloaded 4 Jul 2011 from http://www.boston.com/bigpicture/2010/11/mount_merapis_eruptions.html

²⁰ Doc., *Weather Support*, AFD-110127-018, AMC Shared Media, Oct-Dec 2010, downloaded from <http://www.618tacc.amc.af.mil/shared/media/document/AFD-110127-018.pdf>, 26 May 2011

and 1WS/Det3 weather personnel provided weather briefs to locally supported operators and situational awareness briefs to respective command elements with assets involved in the operation.²¹

5-9 Dec A major snow storm moved across the western border of Afghanistan and Iran. As a U.S. Army helicopter was accomplishing a routine flight through the passes of central Afghanistan it was fired upon by insurgents. After receiving damage, the helicopter crew was forced to perform a hard landing in a valley in the Bamian Province west of Bagram Air Base, resulting in injuries. Two F-16 fighters were scrambled to provide armed overwatch for the downed chopper as three UH-60 MEDEVAC helicopters prepared to take off. Before the mission began, the United States Central Command (USCENTCOM) staff had been briefed on the pending snow storm headed towards the area and used that, among other factors, to plan the mission. Occurrence of the December snow storm was forecast with 3-days lead time by forecasters at the 28th Operational Weather Squadron (28 OWS), Shaw AFB, SC. The forecast was briefed, well in advance, to the USCENTCOM and Combined Air Operations Center (CAOC) staffs by their supporting weather teams. The three MEDVAC helicopters successfully extracted the wounded and made it safely back to Bagram AB as the storm moved into the area.²²

2011

13 Jan 2nd Weather Squadron (AFWA) terminated its use of Mesoscale Model 5 (MM5). They converted the Dust Transport Application to use the WRF model. This implementation culminated a 2 1/2 year long transition that began on 15 May 2008 with the conversion of SW Asia from MM5 to WRF. AFWA had used MM5 since 1997.²³

18 Jan The Iraqi Air Force weather function took one more step toward self-sufficiency as IPS MeteoStar installed a European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) receiver and processing system at the Iraqi Air Operations Center in Baghdad Iraq. In addition, 22nd EWS weather advisors to the Iraqi air force provided advice, assistance, and training so Iraqi air force weather personnel could produce all the weather products needed to meet their mission needs. The purchasing effort began in October 2010



Figure 9-9: TSgt Stephen Hale, 22nd Expeditionary Weather Squadron advisor and trainer for Iraqi air operators, trains Iraqi airmen to systems check a TMQ-53 TMOS at the Iraqi Air Operations Center, Baghdad. Recent upgrades and training to the weather systems at the IAOC were part of an ongoing process to get the Iraq Air Force to a self-sufficient state. (USAF photo by SSgt Levi Riendeau)

²¹ Mercer, Jason, Lt Col, USAF, 20101119-ALCOM-AK Air National Guard/Joint Base Elmendorf-Richardson Search and Rescue / Recovery Operations for Downed F-22, Military Utility of METOC input to Ops Vignette, USAF/A3O-W, Day Without Weather, 19 Nov 2010.

²² Bethea, Andrew, SSgt, USAF, *Downing of UH-60 and the Rescue of Soldiers Using Exploitation of Air Assets to Overcome the Effects of a Major Snow Storm*, Snow Storm with a Sentry Savior Vignette, USAF/A3O-W, Day Without Weather, 5 Dec 2010

²³ E-mail, AFWA/CC to AF/A3O-W, *AFWA Task – Implement WRF*

as part of the ongoing plan to provide the Iraqi air force with the tools and skills to run their own weather forecast center.²⁴

2 Mar As the US drew down its presence in Iraqi, members of the 22nd EWS installed an Ellason Weather Radar Model 600 and AN/TMQ-53 TMOS for the Iraqi AF at Qayyarah West Airfield, Iraq. This effort expanded the scope of mission critical weather data available to the Iraqi Air Operations Center.²⁵

11 Mar Japan was struck with an 8.9 magnitude earthquake and subsequent tsunami²⁶. US forces mobilized to provide assistance. Dubbed Operation TOMODACHI, AFW personnel supported such missions as the 55th Wing's deployment of a WC-135 – Constant Phoenix to collect air samples in international airspace over the Pacific. During the 6-week deployment the aircraft flew more than 51,000 miles.

AFWA's 14th WS (2nd WG) provided many operational climatology products for use by various DoD and National agencies. As an example: enhanced quality controlled surface and upper air data for AF Technical Applications Center; uniform resource locators (URL) for web-based climatology information to 1st Marine Expeditionary Force; hourly wind statistics and wind rose visualization for areas near Fukushima Nuclear Power Plant to augment National Climatic Data Center's package sent to National Security Council for President of the US support for fallout modeling and evacuation planning; and created 1 and 4 degree spatial climatological flight-level winds (1000-10mb) statistics in addition to 90-day forecasts for U.S. Forces Japan.²⁷



Figure 9-10: 3 Apr 2011 – TSgt Matthew Ordorff, 100th Air Refueling Wing weather technician, deployed from RAF Mildenhall, GB, checks TMOS wire connection in the rain, in support of Operation Unified Protector. (USAF photo/SrA Ethan Morgan)

In addition AFW SOWT personnel from the 320th STS at Kadena AB, Japan, deployed and performed airfield assessments and relayed weather observations near Fukushima Nuclear Facility and others in the region.²⁸

²⁴ Art., Riendeau, Levi, SSgt, USAF, 321st AEW/PA, *Outlook Sunny on Iraqi Weather.*, AF Print News Today, 18 Jan 2011. Downloaded 18 Aug 2011 from <http://www.afweather.af.mil/news/story.asp?id=123238645>

²⁵ Art., Riendeau, Levi, SSgt, *Airmen Deliver Weather Gear to Iraqi Air Force*, 321st Air Expeditionary Wing Public Affairs, AF News, 7 Mar 2011

²⁶ Art., Pellerin, Cheryl, *Military Gears Up to Help Japan*, American Forces Press Service, Press Release, 11 Mar 2011 downloaded from <http://www.defense.gov/utility/printitem.aspx?print=http://www.defense.gov/news/newsarticle.aspx?id=63119>, 26 May 2011

²⁷ Rpt., Kotz, Thomas E., Civ, *14th WS Semi-Annual Historical Activity Report, 1 Jan to 30 Jun 2011*, 14th WS, 24 Aug 2011, TAB C.

²⁸ CRM, e-mail, Roelle, Paul, Lt Col, USAF, A3O-WX, *Inputs*, 15 Jun 2012. [CRM is attached, see comment #31.]

19 Mar The US led NATO forces established a no fly zone over Libya. Called Operation ODDESSY DAWN²⁹, This US led portion ended on 31 Mar as NATO took control. 21st Operational Weather Squadron (21 OWS) personnel augmented 617th Air Operations Center (617 AOC) weather personnel to provide weather support to 3,132 USAF deployed personnel, 153 deployed aircraft, 2,132 sorties totaling 13,930 flight hours, 141 NATO coalition aircraft that employed 291 weapons, 311 air refueling missions responsible for off-loading 17.3M lbs of fuel, 151 airlift missions responsible for transporting 3,177 passengers and carrying 2,371 Short-Tons of cargo.³⁰

23 Mar The NATO led Operation UNIFIED PROTECTOR began with the task of protecting Libyan civilians and civilian-populated areas under threat of attack. AFW Airmen were deployed to undisclosed locations to support air and ground operations. 618th AOC/XOW (TACC) led multi-agency coordination efforts to provide direct weather support to bomber missions over Libya during the opening hours – generated more than 300 weather packages.³¹

27 Mar 28th OSS Weather Flight at Ellsworth AFB, SD provided mission focused weather information to the first ever B-1B combat sortie (a flight of four) launched from the continental US to strike targets overseas. Extremely low ceilings and visibility in freezing fog and light freezing drizzle hampered all aspects of pre-flight operations. Lt Steven Ruple wrote, “We were involved in the total force operation from the beginning. Our integration was pivotal to the success of the mission. Prioritization of runway clearing and deicing, weapon construction and staging, preflight engine runs, and launch window were all weather driven. Through it all we were coordinating with [618th AOC] TACC and sending them our CMEF [control mission execution forecast] to ensure the tankers were receiving the same forecast. Weather Airman from the 28th Bomb Wing enabled a remarkable mission that no other nation [could] match in terms of distance, responsiveness, and volume by working through environmental conditions which would have halted most adversaries’ attempts.”³²



Figure 9-11: A B-1B Lancer takes off in support of Operation ODYSSEY DAWN from Ellsworth AFB, S.D. (USAF Photo by SSgt Marc I. Lane)

²⁹ Web, *Operation ODDESSY DAWN*, Wikipedia, The Free Encyclopedia, downloaded from http://en.wikipedia.org/wiki/Operation_Odyssey_Dawn, 11 Aug 2011

³⁰ Gaston, Maj, USAF, *Libyan No Fly Zone (NFZ) and Non-Combatant Evacuation Operations (NEO)*, 20110319-AFRICOM/Operation ODYSSEY-DAWN, USAF/A3O-W, Day Without Weather Vignette, 19 Mar 2011.

³¹ Web, *Operation Unified Protector*, Wikipedia, The Free Encyclopedia, downloaded from http://en.wikipedia.org/wiki/Operation_Unified_Protector, 6 Jul 2011; Web Page, 618th AOC (TACC) Contributions to the Fight, Jan – Mar, 2011, p. 2.

³² E-mail, Ruple, Steven R. 1Lt, USAF, 28OSS/OWS to May, Donald, J., Civ, AFWA/HO, , *ODESSEY DAWN*, 1 Jun 2011; also see *First-Ever B-1B Lancer Global Strike Mission*, ACC-22 (GPA) Op ODYSSEY DAWN B-1B Strike 28 OSS/OSW, USAF/A3O-W, Day Without Weather

31 Mar AFWA announced the attainment of initial operating capability for the Air Force Weather-Web Services (AFW-WEBS). This capability provided warfighters access to classified and unclassified weather information. With AFW-WEBS, users could overlay NEXRAD radar, worldwide lightning including United Kingdom Meteorology Office's Sferics network, METSAT, observations (surface, upper air, PIREPs), and numerical model parameters. In addition, simple mouse-clicks allowed operators to dynamically create meteograms (time phased representation of meteorological parameters for a specific location), request observations and terminal aerodrome forecasts, and generate model-based alphanumeric products. All of the content can be exported to Google Earth formats.

At full operating capability, AFW-WEBS will eventually combine JAAWIN, 14th Weather Squadron (Climatology), and all Operational Weather Squadrons (OWS) web holdings into a common web portal, to include the seamless integration of the 2nd Weather Squadron and OWS forecaster-in-the-loop (FITL) products. AFW's heritage web pages (JAAWIN, OWS, and 14 WS climatology) will eventually be turned off as capability stands up on AFW-WEBS. Rather than users/operators going to each OWS and 14 WS web site, the OWS and climatology products will be seamlessly integrated into AFW-WEBS. Web masters located at the OWSs and 14 WS will continue to create tailored mission-specific pages that will be accessible inside AFW-WEBS. AFW envisioned AFW-WEBS would eventually eliminate the need for weather-unique hardware/software at the lowest weather operation level base fixed and deployed weather flights.³³

2 Apr Detachment 5, 2ndWS began operation of the Kaena Point solar observatory. Operations had ended at Palehua, HI, on 25 Feb, and Space and Missile Systems Center (SMC) began moving solar telescope equipment to Kaena Point, HI. AFWA, SMC, and 50th Space Wing (real property owner) personnel accepted the site on 31 Mar. Mr. Tony Leute, AFWA Deputy Director of AFWA/A5/8, representing AFWA/CC, presided at a ribbon cutting ceremony commemorating the occasion. The relocation of the solar observing site resolved the long standing issue of Det 5 operating a water storage reservoir for nearby civilian housing community.



Figure 9-12: Solar Radio Spectrometer (SRS) dipole antenna at Sagamore Hill Solar Radio Observatory, MA. The SRS is a key component of the Solar Electro-Optical Observing Network (SEON)

20 Apr – 4 Jun Offutt AFB, NE., 55th Operational Support Squadron, Weather Flight supported National Aeronautics and Space Administration's (NASA) ER-2 research aircraft. The mission documented and monitored, in 3 dimensions, precipitation, clouds, winds, and moisture to

³³ E-mail, Surmeier, Mark, GS-15, DAF, AFWA/A3 *Notice to the Field: Announcing the new Air Force Weather Web Services (AFW-WEBS)*, 31 Mar 2011

provide a holistic view of convective clouds, their environment, and associated feedbacks over Oklahoma. Data collected was used to improve algorithms used by future weather satellites.³⁴

27 Apr Kabul International Airport, Afghanistan, Capt Nathan J. Nylander became the first AFW casualty of the war in Afghanistan. Assigned to the 25th OWS, Capt Nylander was on a yearlong deployment with the 438th Air Expeditionary Advisory Group, NATO Air Training Command.³⁵ Capt Nylander posthumously received the Silver Star medal for his valor. AF Chief of Staff Gen. Norton Schwartz presented the Silver Star to Nylander's widow and three children during a Sept 24 ceremony at Davis-Monthan AFB, Ariz. "Our nation was blessed with such a brave and generous airman," said Schwartz. He told the children: "You need to know how proud we are of your father...." Nylander evacuated a group of airmen and Afghan personnel from the conference room he was in when the Afghan officer began his shooting attack. Nylander then went into a hallway and helped engage and wound the Afghan. Nylander began assisting the wounded, believing that the Afghan officer was incapacitated, but he was fatally wounded when the Afghan resumed the attack. A total of eight airmen and one US contractor died in the shooting.³⁶



Figure 9-13: Capt Nathan J. Nylander (Family Photo)

May The Iraqi air force entered a new chapter of self-sufficiency as Iraqi weather forecasters began teaching 18 new cadets at the Iraqi air force's weather center in Baghdad. For the past 3 years, AFW advisors had been building up the initial cadre of Iraqi air force weather forecasters. Following in the footsteps of previous advisors, Capt Debbie Swetland, deployed from Fort Leavenworth, KS, and SSgt Dan Alexander, a weather instructor deployed from the Air Force weather initial skills course at Keesler AFB, MS, advised and assisted the Iraqis complete the curriculum for Iraq's schoolhouse. The cadets learned how to exploit the weather by tailoring forecasts based on specific mission needs. The six-month course covered weather observation and forecast techniques, satellite systems, atmospheric dynamics, regime-based forecasting, and basic equipment set-up, tear-down and maintenance. This was the first Iraqi-led military weather school since the fall of Saddam. The Iraqis did not have an active weather program since 1991.³⁷

1-2 May US special operations forces successfully conducted Operation NEPTUNE SPEAR by killing Osama bin Laden. Osama bin Laden was the founder of al-Qaeda organization responsible

³⁴ Art., Grannan, Danielle, SrA, *NASA to Join Team Offutt*, AF Print News Today, 55th Wing Public Affairs, 14 Apr 2011, downloaded 30 Apr 2011 from http://www.offutt.af.mil/news/story_print.asp?id=123251657

³⁵ Wise, *Op. cit.*

³⁶ E-mail, *Slain Airman Awarded Silver Star*, Daily Report, Air Force Association, 27 Sep 2011.

³⁷ Art., Lake, Jason, TSgt, USAF, 321st AEW/PA, *U.S. Advisors Help Iraqis Kick Off Inaugural Weather Forecaster Program*, AF Print News Today, 18 Jun 2011. Downloaded from http://www.centaf.af.mil/news/story_print.asp?id=123260609, 10 Jun 2012

for the September 11, 2001 attacks on New York's twin tower World Trade Center. Originally planned to start on 30 Apr, cloudy weather delayed the operation for 24 hours.³⁸

13 May AFWA published a revised Solar Electro-optical Observing Network (SEON) concept of operations that explained how AFW would deploy and employ the upgraded AN/FMQ-7, Solar Optical Telescope; AN/FRR-95, Solar Radio Telescope; and Space Radio Spectrograph (SRS). Key improved capability would be remote operation of equipment from 2nd Weather Squadron's space operation section at Offutt AFB, NE, thus eliminating the need for an on-site solar analyst. The 2nd WS solar analysts would fuse sensed and modeled solar data to characterize the solar impacted natural environment and provide space situational awareness information via the Global Information Grid to the combatant commands. Optical and radio equipment would be located at Learmonth, Australia, San Vito, Italy, and Kaena Point HI; optical equipment would also be located at Kirtland AFB, NM; and radio equipment would also be located at Sagamore Hill, MA. AFWA envisioned the SEON upgrade would be complete by 2017.³⁹



Figure 9-14: SSgt Matthew Money, a forecaster with the 2nd WS space weather flight, monitors the near earth space environment at the squadron's space weather operations center located inside AFWA (USAF Photo by Josh Plueger)

21 Jun Air Force weather career field leaders met at the Joint Training Center in Camp Blanding, FL to view firsthand the Battlefield Weather Mission Qualification Training course. The 30-day course provided Airmen, who deployed with Army units, 5 days of tactical meteorology training and 3 weeks of intensive tactical training taught by army infantry instructors. Airmen were familiarized with tactical driving, weapons systems and tactical movement. Dr. Lewis, AF/A3O-W, remarked, "The training is focused on what we need. We need combat skills and we need to practice our weather skills at the same time. That's what we do. We provide weather support on the battlefield for the Army and Air Force."⁴⁰

³⁸ Web, *Death of Osama bin Laden*, Wikipedia the free encyclopedia, down loaded 6 Feb 2012 from http://en.wikipedia.org/wiki/Death_of_Osama_bin_Laden. Also refer to Art., Banusiewicz, John D., *U.S. Kills bin Laden in Intelligence-driven Operation*, American Forces Press Service, downloaded 2 May 2011, from <http://www.defense.gov/utility/printitem.aspx?print=http://www.defense.gov/News/NewsArticle.aspx?ID=63764>

³⁹ Doc., Kobberdahl, Tricia H., Maj, USAF, AFWA/A5R, *AFW Concept of Operations for the Solar Electro-Optical Observing Network*, AFWA/HO, 13 May 2011

⁴⁰ Art., Heusdens, Blair, SFC, USA, FL Nat. Guard, PA, *Air Force Weather Leaders Meet to Appraise Career Field*, Air Force Print News Today, 5 Jul 2011, downloaded from <http://www.af.mil/news/story.asp?id=123262624>, 6 Jul 2011

27 Jul – 9 Aug Two Special Operations Weather Team (SOWT) operators were instrumental to the success of a U.S. supported Government of Afghanistan (GOA) initiative to deliver 200 tons of humanitarian aid to remote stretches of Kunar and Nuristan Provinces to demonstrate GOA access and influence in regions claimed by insurgents. The operators supported a battalion-sized conventional U.S. Army unit forward deployed along the Pech River and Korengal Valleys with U.S. Army and Afghan National Army elements positioned in adjacent valleys and on remote ridgelines to provide security for a 100+ vehicle convoy. Forward weather observations combined with reachback weather forecasting support from the 23rd Weather Squadron (23 WS) and the 28th Operational Weather Squadron (28 OWS) were key to providing all assets involved in the operation real-time, critical weather data. Further, a partnership between the Combined Joint Forces Special Operations Task Force-Afghanistan (CJSOTF-A) SOWT and the 19th Expeditionary Weather Squadron ensured the flow of horizontally-consistent weather data to all assets participating in the operation. Hundreds of air missions were critical to sustaining the operation by delivering supplies and providing medical evacuation, close combat attack, and close-air support.⁴¹



Figure 9-15: SOWT personnel in training

29 Jun-25 Jul SSgt Venessa Kramer deployed from the 52 OSS Weather Flight to Campia Turzii Air Base, Romania to support ten 81st Fighter Squadron A-10Cs during Exercise DACIAN THUNDER 2011. SSgt Kramer ‘operationalized’ the weather information to meet mission objectives for the 210 close air support, combat search and rescue, and air-to-air refueling sorties flown during the 3-week exercise. She coordinated with the 21st OWS, Sembach AB, DE, as they prepared and delivered daily mission operations area forecast, five-day outlooks, and severe weather watches/warning/advisories.⁴²

Jul-Aug Scientists of 16th WS, 2nd WG (AFWA) teamed with the National Weather Service’s Aviation Weather Center to participate in an ensemble modeling experiment. Initially, the group discovered how important perturbations of cloud condensation nuclei and cloud droplet concentration are to the ensemble suite when predicting rainfall rate/propagation/intensity.

8-21 Jul: Space Transfer System (STS) – 135, “the final mission.” The Space Shuttle Atlantis lifted off from Cape Canaveral, FL, on its last space flight, a round-trip mission to the International space Station. The 45th WS provided mission execution observations and forecasts for launch and transoceanic abort landing locations, such as Istres, FR, Zaragoza, or Moron, ES. One of the mission

⁴¹ *SOWT Remote Observations Decisive to Humanitarian Assistance Success*, Special Operations Weather (SOWT): Environmental Reconnaissance Support to Air-Intensive Ground Operations, Vignette, USAF/A3O-W, Day Without Weather, 27 Jul-9 Aug 2011

⁴² E-mail. Wacker, Robert S., Lt Col, USAF, 21st OWS/DO, *FW: Spangdahlem weather flight deployed*, 7 Sep 2011 and Art., Hunter, Stephanie, 2nd Lt, USAF, 52nd Fighter Wing PA, *Joint training builds NATO partnership*, Air Force Magazine.com., 4 Aug 2011, downloaded from <http://www.airforce-magazine.com/DRArchive/Pages/2011/August%202011/August%2004%202011/DacianThunderStrengthensUS-RomaniaPartnership.aspx> 17 Nov 2011.

objectives included the launch a DoD Space Test Program managed “Pico-satellite Solar Cell Testbed.” The satellite housed a Compact Total Electron Content Sensor (CTECS), to demonstrate a CubeSat form factor space weather sensor with the capability to detect ionospheric density. It used a modified commercial global positioning system (GPS) receiver to detect differences in radio signals generated by occulting GPS satellites.⁴³

Atlantis landed back at Kennedy Space Center at 0600, 21 Jul, thus ending 30 years of US manned space flight. Through the years many AFW personnel provided support to this monumental program. The 45th WS [and its predecessors] at Patrick provided launch support; space weather operations personnel would observe and forecast space weather effects that threatened manned space tasks. On those occasions when a shuttle didn’t land at Kennedy Space Center, a modified 747 aircraft would ferry the shuttle back to Cape Canaveral. The shuttle would sit “piggy back” on top of the 747 and would fly at 10,000 feet. Selected weather units along the route of flight would be involved in enhanced monitoring of weather to identify the occurrence of those effects that could harm these shuttle ferry missions.

25 Aug Raytheon's Joint Polar Satellite System (JPSS) common ground system successfully completed an NPOESS Preparatory Project (NPP) satellite compatibility test, marking the end of comprehensive testing. The testing included 288 hours of continuous mission-like operations through which data flowed from Svalbard, Norway, through Raytheon's command, control, and communications segment to the NOAA, and AFWA’s data processing segments.⁴⁴

26 Sep SSgt Thomas Jenkins, the noncommissioned officer in charge of weather systems with the 47th Operations Support Squadron's weather flight at Laughlin AFB, TX, developed a mathematical formula that significantly improved the AF's ability to predict dust storms. During a deployment to Iraq at Forward Operating Base Kalsu, Jenkins spent five months researching a way to improve the dismal 10 percent to 15 percent accuracy rate to an unprecedented rate of 80 percent. This procedure will be vital in many aspects of mission operations in forward operating areas where dust impairs mission completion.⁴⁵



Figure 9-16: US Army's Persistent threat Detection System (PTSD)

Oct AFWA’s Weather Data Analysis model production system began producing operational 1.67 km products over the Afghanistan area of operations. Delivered via the Common Data Communications capability, battle field directors now had routine access to tailored operational risk management weather information for use in

⁴³ Press Kit, *STS-135: The Final Mission*, NASA Public Affairs, http://www.nasa.gov/pdf/566071main_135_press_kit2.pdf, 8 Jul 2011, p. 46, 100, and 101; e-mail, AFA to George N. Coleman III, CMSgt, USAF, Ret., *Final Space Shuttle Mission*, Daily Report, 11 Jul 2011

⁴⁴ E-mail, AFA, *Ground System Passes Launch Test*, Daily Report, Air Force Association, 26 Aug 2011.

⁴⁵ Art., Saldukas, Scott, SrA, USAF, 47th FTW/PA, *Laughlin sergeant finds way to increase dust storm prediction Accuracy*, AF Print News Today, 26 Sep 2011, Downloaded 28 Sep 2011 from <http://www.laughlin.af.mil/news/story.asp?id=123273560>

operating Persistent Surveillance Systems (PSS). This operational capability was in response to Central Command's 2010 Joint Urgency Operational Need (JUON) CC-0432. The JUON identified a need to improve weather support to tethered aerostats, a subsystem of PSS. Two types of PSS, Persistent Threat Detection System (PTDS) and Persistent Ground Surveillance System (PGSS) were deployed in support of Operation NEW DAWN (OND) and Operation ENDURING FREEDOM (OEF). PSS systems operated between one and four thousand feet above ground level providing Command, Control, Communications, and Computers Intelligence, Surveillance, and Reconnaissance (C4ISR) to over 50 locations, mostly in support of OEF. These systems suffered significant losses due to weather, primarily from strong winds, wind shear, lightning, icing, turbulence, and dust devils. AFWA was tasked to assist with transmission of surface observations from remote locations to the 28th Operational Weather Squadron (28 OWS) at Shaw AFB, SC and to enhance modeling by increasing the resolution of the United Kingdom Meteorological Office (UKMO) Unified Model (UM) and running 1.67km WRF model domains over Iraq and Afghanistan. Observations from aerostat sites flowed from weather sensors at the site, through VSAT, Iridium, or direct internet connection to AFWA where it was stored, formatted and shipped to the 28 OWS which packaged the data in an email and forwarded to a Secret Internet Router Protocol Network (SIPRNET)-to-Combined enterprise Regional Information Exchange System (CENTRIXS) email guard for dissemination and display on the Afghan Mission Network (AMN). Final forecast model resolutions, specifically to support the JUON included: 20km global UM to 384 hours and 5km Southwest Asia (SWA) to 144 hours on NIPRNET, 1.67km OND and OEF domains to 30 hours on SIPRNET. At a cost of \$11.3 million and within 9 months, AFWA had developed and provided a high performance computing infrastructure with improved science for high resolution weather models in support of warfighting operations. This capability could now migrate to other model domains such as Korea or South America.⁴⁶



Figure 9-17: SSgt. Glenn Harrison (Front) and SrA Scott Tyler(Back), 3rd Air Support Operations Squadron, Eielson AFB, AK, setup a TVSAT dish which received via satellite weather model information. (USAF Photo by A1C Jonathan Snyder) (Released)

7 Oct AF/A3O-W directed AFWA to develop a plan to achieve a standardized 24 month training cycle for use by operational weather squadrons (OWS) receiving initial skills course (ISC) graduates from Keesler AFB, MS. This training plan would be the standard across the 1W0X1 career field and would incorporate some level of worldwide theater specific training. The intent was to standardize 1W0X1 training at the four CONUS OWS to support the entire career field. At the end of the 24-month period, an Airman would be a “5-level” skilled weather person ready for their next assignment.⁴⁷

⁴⁶ Hist, AFWA A5/8 *Semi-Annual History Report*, pp 82-83, Jul-Dec 2011.

⁴⁷ E-mail, AF/A3O-W to AFWA/CC, *AFWA develop standardized 24 month training plan*, 7 Oct 2011

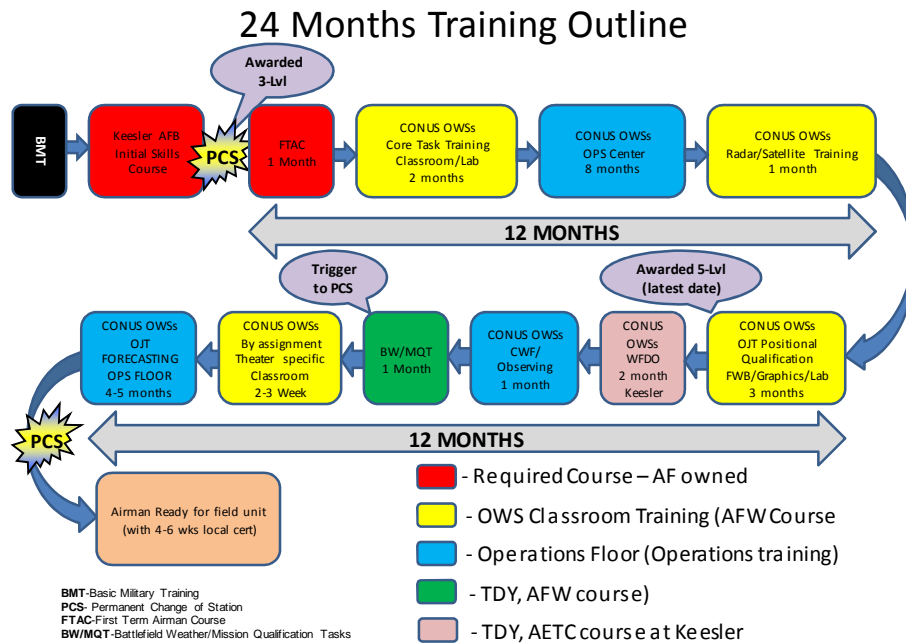


Figure 9-18: 24-Month training framework to standardize weather (1W0X1) training⁴⁸

25-26 Oct Weather flight personnel of the 90th OSS averted the stranding of a scheduled nuclear convoy operation to a remote missile alert facility (MAF) of the 90th Missile Wing (MW), F.E. Warren AFB, WY. Working in coordination with the 25th OWS and AFGSC/A3BW, 90th OSS personnel used a mixture of both reachback and distributed operation procedures to generate timely, relevant planning and mission execution weather information that was melded into the decision-making processes at 90th MW, 20th AF, and AFGSC. The coordinated effort provided 4-days lead time of a winter storm that would impacted wing operations. Wing leadership rescheduled the convoy based on the strength of the forecast. Snow began to fall (at times heavy—1-2 inch/hour snowfall rates and visibilities near zero) on the evening of 25 Oct and lasted for nearly 24 hours. A total of 11 inches of snow was reported at F.E. Warren airfield, with similar amounts at MAFs located in the surrounding Wyoming, Colorado and Nebraska area.⁴⁹

⁴⁸ *Ibid.*, PP Attachment, 24 Months Training Outline

⁴⁹ Sanger, Neil T., Lt Col, USAF, 20111025-NORTCOM/Homeland Defense-90th Missile Wing, AFGSC-1 (NDO) Vignette #1 Nuclear Convoy, USAF/A3O-W Day Without Weather, 25 Oct 2011

28 Oct Airmen of the 30th Space Wing and their industry partners successfully launched NASA's NPOESS Preparatory Project (NPP) weather satellite into space from Vandenberg AFB, CA. At first conceived to validate technology that would go on subsequent NPOESS spacecraft, NPP also took on an operational gap-filler role for climate monitoring and weather observation from its polar orbit until the NASA-National Oceanic and Atmospheric Administration next-generation JPSS is available. After checkout and calibration, AFWA would begin receiving data from the on-site Interface Data Processing Segment (IDPS).⁵⁰



Figure 9-19: MARK IV-B installation and direct readout imagery of SWA at Ali Al Salem AB, Kuwait

11 Nov Lockheed Martin, Inc. completed installation of MARK IV-B [AN/UMQ-13] direct readout terminal at Ali Al Salem AB, Kuwait. AFW forces, worldwide, now have access to South West Asia theater of operations direct readout polar and geosynchronous orbiting weather satellite information.⁵¹



Figure 9-20: SMSgt. Paul Walker, left, a squadron superintendent, and SrA Erik Dowling, a weather specialist, both assigned to the 19th Expeditionary Weather Squadron, set up a TMOS at the north side of Salang Pass.

17 Nov AFW technicians of the 19th EWS, in support of the 10th Sustainment Brigade, 10th Mountain Division (LI) installed an A/N TMQ-53 TMOS on the north side of the Salang Pass, Afghanistan. The TMOS assisted U.S. and coalition forces, as well as the local population, to determine when conditions at the pass might make it impassable. The Afghan Air Force collected the data and passed it to the president of the Afghan Meteorological authority for sharing with the International Security Assistance Force. In addition local Afghans could now call the meteorological authorities in Kabul, get a weather update and decide whether they wanted to travel that day.⁵²

21 Nov The Congressional Joint Select Committee on Deficit Reduction failed to come up with a bipartisan plan to cut the Nation's deficit. This failure would trigger in FY2013 cutting up to a half trillion dollars from the defense budget over the next 10 years. Defense Secretary Leon Panetta said these additional cuts would "tear a seam in the nation's defense" and lead to a hollow force

⁵⁰ Art., 30th SW/PA, *Team Vandenberg Launches Delta II Rocket*, AF Print News Today, 28 Oct 2011

⁵¹ E-mail, Haines, Philip, Civ, AFWA/A5C, to Coleman, *Ali Al Salem Install*, 16 Nov 2011

⁵² Art., Saavedra, Luis, SFC, USA, *Weather Station Provides Afghans Predictability*, 17 Nov 2011. Downloaded from Downloaded 19 November 2011 from http://www.army.mil/article/69497/Weather_station_provides_Afghans_predictability/

incapable of sustaining the missions it is assigned.” AFW braced for significant impact to its ability to provide weather operations and organize, train, and equip the weather forces.⁵³

6 Dec Detachment 2, 7thWS, Grafenwoehr AIN, Germany, conducted a week-long Exercise CADRE FOCUS for Polish weather forecasters in the Polish Army Hydro-meteorological Service. CADRE FOCUS, conducted twice a year at the Joint Multinational Training Command (JMTC) Grafenwoehr facility, prepared USAFE weather forecasters and their multinational partners for downrange deployments in support of USA, USAF, and joint multinational operations. In 2011 alone, the Det 2, 7thWS had trained with over 15 multinational militaries.⁵⁴



Figure 9-21: An AFW NCO guides Polish Air Force Capt. Sebastian Bernatowicz in the operation of the AN/TMQ-53 during CADRE FOCUS winter exercise. (U.S. Army photo by Michael Beaton)

14 Dec TSgt Carrie Volpe deployed from the 17th OWS, Joint Base Pearl Harbor-Hickam, HI, in support of U.S. Joint Special Operations Task Force – Philippines (JSOTF-P) located at Zamboanga, Mindanao Island, Philippines. JSOTF-P’s mission was focused on providing advice to the Philippine military and assisting them in their fight against terrorism. TSgt Volpe conducted weather operations in support of the Joint Special Operations Air Detachment (JSOAD) who flew a small fleet of fixed wing PC-12s and C-12s and Bell 214 helicopters. Missions were flown into jungle areas where U.S. and Philippine forces were collocated. As a guest of a host-nation, with limited meteorological equipment and separate operating schedule, her task to provide timely and accurate weather information was challenged. To overcome the lack of timely weather observations she convinced her boss, Lt Col Doug Carroll, JSOAD commander, they needed an A/N TMQ-53 TMOS. Lt Col Carroll, deployed from Kadena AB, Japan, knew his home unit, 353rd Special Operations Support Squadron, had the equipment. Upon approval from Special Operations Command Pacific, the 353rd rapidly deployed the system to the Philippines. MSgt Scott Williams, 353rd weather flight’s NCOIC escorted the system

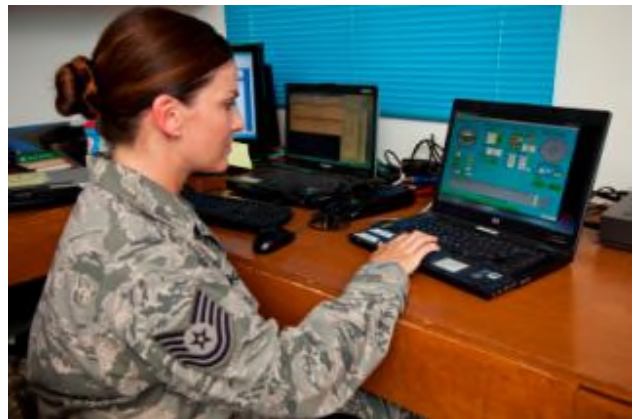


Figure 9-22: TSgt Carrie Volpe checking surface weather data received from TMSO installed to support JSOAD aircraft missions operating from Edwin Andrews Air Base owned by the Philippine Air Force.

⁵³ E-mail, AFA, *Super Committee Stumbles*, Daily Report, Air Force Association, 22 Nov 2011.

⁵⁴ Art., Beaton, Michael, JMTC, *U.S., Polish Weathermen Synch Forecasting Skills*, Air Force Print News Today, 10 Jan 2012, downloaded 18 Jan 2012, from http://www.afweather.af.mil/news/story_print.asp?id=12328576

and soon after his arrival, MSgt Williams and TSgt Volpe had the TMQ-53 installed and providing a steady stream of surface weather observational data not only to local JSOTF-P forces but also to the restricted access, world-wide AFW distribution network.⁵⁵

15 Dec Operation NEW DAWN and the US military mission in Iraq ended this date. Defense Secretary Leon Panetta in his address at US Forces-Iraq headquarters said, “On this very historic occasion for both the Iraqi people and the American people, no words, no ceremony can provide full tribute to the sacrifices that have brought this day to pass.” Nearly 4500 US military personnel were killed in OIF and OND and more that 32000 were wounded.⁵⁶

Lt Col Steven Vilpors, last commander of the inactivated 22nd Expeditionary Weather Squadron, and TSgt Nicole Beye, 2nd Weather Squadron, were aboard the last flight that departed Imam Ali [aka Tallil] Air Base, Iraq carrying 62 US Airman to Kuwait.⁵⁷



Figure 9-23: SSgt Mark L. Bryson (L) and SSgt Stephen Doiron prepare to board a 1-229th Aviation Regiment UH-60 “Black Hawk” shortly before midnight on the evening of 17 Dec 2011. (Photo courtesy of TSgt Mark L. Bryson)

17 Dec SSgt Mark L. Bryson records “LAST” AFW surface weather observation from Imam Ali Air Base at 1555 UTC⁵⁸. He and SSgt Stephen Doiron were part of a weather team supporting Army aviation operations at Tallil, Iraq (COB Adder). The two of them departed Iraq on a UH-60 shortly before midnight on the evening of Dec 17th. SSgt Bryson reported, “Those last few days were very quiet and surreal. The unit we supported was really a skeleton crew waiting for everyone else to our north to pass by before we took off. It was a tremendous honor to witness the historic moment.”⁵⁹

⁵⁵ Art., Lee, Darrick B., Capt, USAF, JSOTF-P/PA, *Airman Supports Special Forces in Philippines*, AF Print News Today, 14 Dec 2011. Downloaded from Facebook, Air Weather Association page, <http://www.facebook.com/airweaassn>, 29 Dec 2011

⁵⁶ E-mail, AFA, *It's Officially Over*, Daily Report, Air Force Association, 16 Dec 2011.

⁵⁷ E-mail, Mr. Sjostedt, Dave, AFWA Deployment Mgr to Mr. May, Donald, AFWA/HO, *FW AF Print News story: Out of Iraq*, 25 Jan 2012. [Reference to AFCENT A3/A3W is in the second e-mail in the trail of several e-mails.] In addition, Lt Col Vilpors is mentioned in an article by Hodge, Nathan, Wall Street Journal, 19 Dec 2011, that described the last flight to leave Iraq.

⁵⁸ AF Form 3803, *Surface Weather Observation (METAR/SPECI)*, 1-17 Dec 2011

⁵⁹ E-mail, Bryson, Mark L., SSgt, USAF, *RE: Corrections to Air Force Weather History/Heritage Document (UNCLASSIFIED)*, 22 Jan 2014

2012

5 Jan Defense Secretary Leon Panetta released new strategic guidance for DoD “...to articulate priorities for a 21st century defense that sustains U.S. global leadership.” The guidance preserved DoD’s ability to conduct missions important to protecting core national interests: defeating al-Qa’ida and its affiliates and succeeding in current conflicts; defeating aggression by adversaries; countering weapons of mass destruction; effectively operation in cyberspace, space, and across all domains; maintaining a safe and effective nuclear deterrent; and protecting the homeland. This guidance document would serve AFW as the top level planning document to shape the future of Air Force Weather as the Nation wrestled with putting its “fiscal house in order” over the coming decade.⁶⁰ Faced with significant cuts mandated by the Budget Control Act of 2011, DoD had to significantly reduce defense spending. AFW used the document to formulate its 2012 planning and programming activities to ensure the Air Force’s planned weather program was aligned properly so the Joint Force would have timely, accurate, and relevant weather information to meet future threats.

6 Jan Air Mobility Command published a summary of cargo delivered via airdrop operations in Afghanistan. During 2011, AFCENT’s AOC in Southwest Asia recorded a new annual record of 75,956,235 pounds of cargo delivered. Mobility Airmen completed the airdrops in various forms – from the use of the traditional Container Delivery System (CDS) bundles to the Joint Precision Airdrop System (JPADS).⁶¹



Figure 9-24: JPADS Mission Planning system

JPADS, consisted of self-guided cargo parachute systems (Army lead), and a common laptop mission planning (MP) and weather system (USAF lead) with numerous additional partners.

The JPADS-MP and weather system was a snap-on/snap-off kit for use in C-130s, C-17s, and other aircraft to determine optimum Computed Aerial Release Points (CARPs). MP collected and assimilated weather and programmed JPADS cargo systems wirelessly in the aircraft just prior to exit. The MP produced Launch Acceptability Regions (LARs) within which the systems could be dropped to get to their planned Point of Impact (PI) and also wirelessly updated JPADS Airborne Guidance Units (AGUs) with new PIs (if desired) just prior to aircraft exit.

The MP software, running on a laptop computer, provided the basis to calculate and upload JPADS mission files (pre-mission planning while on the ground and en route on the aircraft to the AGU. Aircrew members input mission parameters, including forecasted meteorological data from AFWA, the type of aircraft, the location of the payload on the aircraft, the payload

⁶⁰ Doc., *Sustaining U.S. global Leadership: Priorities for 21st Century Defense*, DoD, Jan 2012, p. 3-5.

⁶¹ Art., Sturkol, Scott T., MSgt, USAF, AMC/PA, *Afghanistan Airdrops Surpass Record Levels in 2011*, AF Print News, 6 Jan 2012.

characteristics, and the planned PI, to derive a CARP. The system also had a hand-held dropsonde that an aircrew member could deploy from an aircraft prior to an airdrop to collect and transmit aloft wind data back to the JPADS-MP to update the CARP. The system accomplished in-flight updates to the AGU via an UHF radio link back to the aircraft and the MP. The MP used the system's PADS Interface Processor (PIP) and UHF combiner installed on the aircraft for the JPADS laptop computer to receive data from the dropsonde(s).⁶²

Two retired AFW members were instrumental in the development of JPADS weather component; Cols Robert (Bob) P. Wright, former 1st WW and 2nd WW commander, and Col Joseph (Joe) D. Dushan, former AFGWC and AWS commander.

12 Jan Congress terminated funding for the Defense Weather Satellite System (DWSS) in the recently enacted 2012 defense appropriations legislation. The AF must devise a new strategy for future space-based weather monitoring. DWSS, borne out of the cancelled tri-agency NPOESS weather satellite program, was the planned successor to the legacy Defense Meteorological Satellite Program. But, lawmakers last year voiced concern over DWSS' costs and fielding schedule and instead favored continued weather sensor development and requirements definition that would lead to a new satellite that would be openly competed. As a result, Congress eliminated all but \$43 million of the service's \$445 million request for DWSS development in FY 2012. They stipulated that the Air Force use the \$43 million to cover its DWSS termination liability. They also added \$125 million in a separate funding line for "weather satellite follow-on activities." AFSPC must now determine an appropriate future path. The immediate result would be the extension of DMSP operations by launching the remaining two satellites in the series, DMSP F-19 and DMSP F-20, to provide environmental data into the mid-2020s.⁶³

9 Mar Col Louis V. Zuccarello assumed command of AFWA from Col Robert L. Russell.

18 Mar AFW will soon have access to precipitation and velocity data from non-weather, Doppler, air surveillance radars located in tactical operational areas. On this date, Members of the 727th Expeditionary Air Control Squadron installed an A/N- TPS-75 air surveillance radar at an undisclosed air base in Southwest Asia to improve long-range, real-time coverage of Arabian Gulf airspace. The air base is the operating location of the 380th Air Expeditionary Wing. The TPS-75 gives radar operators of the squadron a larger and a more detailed picture as they monitor all air activity in the area. AFWA planned to test, in July, a capability that would capture the weather



Figure 9–25: Members of 72th EACS installed A/N-75 Air Surveillance Radar at an undisclosed SWA location; source of non-traditional weather data. (USAF photo by 1Lt Victoria Porto)

⁶² Art., Benny, Richard, et. al., *DoD JPADS Programs Overview & NATO Activities*, Presented at the AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar, 21-24 May 2007, Williamsburg, VA, p. 1-4.

⁶³ Art., Schanz, Marc V., *Weather Satellite Reboot*, [Air Force Magazine](http://www.airforce-magazine.com/DRArchive/Pages/2012/January%202012/January%2012%202012/WeatherSatelliteReboot.aspx), Jan 2012, downloaded 26 Jan 2012 from <http://www.airforce-magazine.com/DRArchive/Pages/2012/January%202012/January%2012%202012/WeatherSatelliteReboot.aspx>

reflectivity and velocity data that is not used for aircraft surveillance, process the data, and send it to the 28th OWS for distribution to various end-users via world-wide network communication capabilities. This is one example of AFW taking advantage of non-traditional sensing capabilities to obtain weather related data and turn it into meaningful decision assistance products.⁶⁴



Figure 9-26: WRTC change to the 131st TRF marked by traditional flag ceremony. FL ANG Command CMSgt. Robert Lee (left) and Senior Master Sgt. Cory Brown (right) unveil the new official colors for the 131st Training Flight. Commander of the FL ANG, BGen Joseph Balskus (second from left) and 131st Commander Maj. John Waltbillig also participated. (Photo by Debra Cox)

12 Apr The Florida Air National Guard inactivated the Weather Readiness Training Center (WRTC) at Camp Blanding Joint Training Center and activated the 131st Training Flight (TRF). The WRTC was federally recognized in December 1992, and in 2000 converted from an "as needed" weather course to a continuous 17-week formal school. The unit's mission was to train Air Force and Air National Guard weather personnel in combat meteorological tasks. The 131st TRF would continue to provide the same support, but the designation as a numbered unit would increase its effectiveness in the ANG and help it better equip and train weather Airmen to go into combat zones.⁶⁵

14 Apr Sixteen KC-135 tankers evacuated from McConnell AFB, KS, hours before severe weather in the form of tornadoes and large hail struck the base. Based on relevant and timely weather information prepared by the weather flight of the 22nd Operational Support Squadron, on the evening of 13 Apr and updated the morning of the 14th, the 22nd Air Refueling Wing leadership issued the evacuation order. The move avoided a potential of more than a half billion dollars in aircraft damage. Later in the day McConnell AFB was struck with one of the 100 tornadoes reported

⁶⁴ E-Mail, AFA, *Daily Report*, 27 Mar 2012 and e-mail, Mr. Keil, Ricky, AFWA/A5/8, *Daily Report*, 27 Mar 2012

⁶⁵ Art., Kielbasa, Thomas, MSgt, *New Designation Means New Future for Guard Training Unit*, AF Print News Today, 15 Apr 2012.

across the Midwest this date. The active duty side of McConnell AFB received minor damage while the Kansas Air National Guard facilities received severe damage.⁶⁶

14 Jun The Air Force Association selected SrA Matthew Butler, a weather technician with the 15th OWS, as one of the 12 Outstanding Airmen of the Year for 2012. He was chosen based on his superior leadership, job performance, community involvement and personal achievements. Some of SrA Butler's accomplishments included securing humanitarian and combat operation missions within his career field. While deployed to Iraq, he prepared 400 forecasts, enabling 5,500 flight hours and 40 combat convoys in support of Operation NEW DAWN.⁶⁷



Figure 9-27: SrA Matthew Butler, 15th OWS, Scott AFB, IL, was selected as one of 12 Air Force Outstanding Airmen of the Year for 2012.

1 Jul Air Force Weather's 75th Anniversary.



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⁶⁶ Art., Courtney Witt, Amn, 22nd ARW/PA, *McConnell Takes Tornado Precautions*, AF Print News Today, 19 Apr 2012; E-mail, *Tankers Avoid Storm Damage*, Daily Report, AFA, 19 Apr 2012; and Jose L. Leon, A1C, *Clearing the Flightline*, AF Print News Today, 17 Apr 2012.

⁶⁷ Art., Haynes, Tabitha N., A1C, AFDW/PA, *AFDW Airman Among Air Force's 12 Outstanding airmen of the Year*, Air Force Print News Today, 14 Jun 2012. [Downloaded from <http://www.afdw.af.mil/news/story.asp?id=123305871>, 16 Jun 2012

CHAPTER 10—LEADERSHIP AND STAFFS

AIR FORCE DIRECTORATE OF WEATHER LEADERSHIP

RANDOLPH P. “PINKIE” WILLIAMS
Colonel, United States Army Air Corps
“Founder of the Army Air Corps Weather Service”

Randolph P. Williams was born on 31 October 1898 in Baltimore, Maryland. He married Elizabeth Conroy of Belleville, Illinois.

Williams attended West Point from 15 July 1916 until 31 October 1918. He was commissioned as a second lieutenant 1 November 1918 and as a first lieutenant 2 August 1920. He received a succession of assignments with the engineers until he transferred to Scott Field, Illinois, in September 1925 to attend the Air Corps Balloon and Airship School.

As a first lieutenant, Pinkie (as he was called by his friends and close associates because of his thinning, light-red hair) Williams enrolled as a student in aerology at the Naval Academy’s postgraduate school on 9 July 1928, and began postgraduate work in meteorology at the Massachusetts Institute of Technology in September 1929 under Carl-Gustav Rossby.

Williams spent more than 14 years as a first lieutenant, typical of promotions in the Regular Army between wars. During that period, he furnished the behind-the-scenes ground support for the Explorer II stratospheric balloon flight from Rapid City, South Dakota, on 11 November 1935. The world’s largest balloon, Explorer II, reached an altitude of 72,385 feet.

Between July 1935 and December 1936, many proposals were studied but a memorandum Williams drafted on behalf of the Air Corps became the plan that eventually encompassed the Army Air Corps Weather Service. Colonel Williams’ dreams materialized on 1 July 1937 when the War Department transferred the Signal Corps Meteorological Service to the Air Corps. Upon Colonel Williams’ recommendation to Brigadier General Henry H. (Hap) Arnold, First Lieutenant Robert M. Losey, on 1 July 1937, was appointed the first chief of the Weather Section, Training and Operations Division, Headquarters Army Air Corps (AAC), with the responsibility of managing the Army Air Corps Weather Service.

In September 1938 Major Williams became an instructor at the famed Air Corps Tactical School at Maxwell Field, where most air doctrine studies originated at that time. Williams was promoted to colonel in February 1942 and became the Commander, 84th Fighter Wing in France in February 1944. Two months later he was reassigned as Chief of Staff of the Ninth Air Force’s XIX Tactical Air Command. On 5 September 1944 Colonel Williams was killed in action while on a photo reconnaissance mission over France.



ROBERT M. LOSEY
Captain, United States Army Air Corps
Chief of Weather Section
1 July 1937 - 17 January 1940

Robert M. Losey was born 27 May 1908 in Andrew, Iowa. He married Kathryn Banta. He was appointed to West Point in 1925 and, upon graduation, was commissioned as a second lieutenant on 12 June 1929. He completed pilot training at Brooks and Kelly Fields, Texas, and meteorological training at the California Institute of Technology.

On 1 July 1937 Robert M. Losey, then a first lieutenant, was named the first Chief, Weather Section, Training, and Operations Division, Headquarters Army Air Corps (the forerunner of the Air Weather Service) at age 28.

After Russia invaded Finland in late 1939, the chief of the Army Air Corps, Brigadier General Henry H. (Hap) Arnold, approved Captain Losey's request to go to Finland as a military observer. On 21 April 1940, while detailed to escort the United States Minister to Norway, Mrs. Florence Jaffray Harriman, safely out of the country, Captain Losey was killed during a German air raid. He was the first American officer to die from hostile action while in the service of the United States during World War II.

Losey Street (formerly 9th Street) at Scott Air Force Base, Illinois (former home of Headquarters AWS), was dedicated in his honor on 28 June 1979. The forerunner of today's American Institute of Aeronautics and Astronautics honored him by inaugurating the Losey Award given in recognition of outstanding contributions to the science of meteorology as applied to aeronautics. Winners of this award have included Francis W. Reichelderfer, Joseph J. George, Harry Wexler, Carl-Gustav Rossby, Vincent J. Schaefer, Arthur F. Merewether, Robert C. Miller, and Robert D. Fletcher.

Significant events during Captain Losey's tenure as Chief of Weather Section include commanding 40 weather stations, five of which were in Hawaii, Panama, and the Philippines; reestablishing the enlisted forecaster school at Patterson Field, Ohio; and opening the observer school at Scott AFB, Illinois, in 1939.



ARTHUR F. MEREWETHER
Colonel, United States Army Air Forces
Chief of Weather Section
18 January 1940 - 7 January 1942

Arthur F. Merewether was born in Providence, Rhode Island, on 7 July 1902. He graduated from Brown University with a degree in chemistry in 1922. An avid sportsman, he excelled in football, hockey, and baseball. He even played for the Pittsburgh Pirates for part of a season. On 7 July 1937 he married Genevieve Evans and they raised two sons and two daughters.



In 1925 he entered the Massachusetts Institute of Technology, earned a masters degree in chemistry, and spent two years teaching at Phillips Academy. He then worked as a chemist with the Squibb Pharmaceutical Firm in Brooklyn, New York, before entering the Air Corps. He completed basic flight school the year the stock market crashed, 1929, and after finishing advanced flight school at Kelly Field, Texas, the following year, he was appointed second lieutenant in the Regular Army Corps (AAC).

In 1933 Lieutenant Merewether again enrolled at the Massachusetts Institute of Technology and completed its meteorology course in June 1935 under Carl-Gustab Rossby. Promoted to first lieutenant on 1 August 1935, he was detailed to create a weather station and forecasting service at Barksdale Field, Louisiana. Captain Merewether became Chief, Weather Section, Headquarters, Army Air Corps (later to become the Directorate of Weather) on 18 January 1940, and was promoted to major on 21 March 1941. A lieutenant colonel as of 5 January 1942, he became the regional control officer and Commander, 8th Weather Region at Presque Isle, Maine (later relocated to Grenier Field, New Hampshire) in late September 1942.

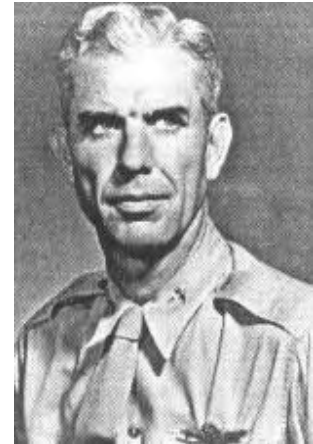
He was promoted to colonel 1 March 1942 and became Commander, 8th Weather Group, on 1 January 1946. He retired from the Army Air Forces in that position in August 1946.

Significant events during Colonel Merewether's tenure as Chief of the Weather Section include establishment of the Air Corps Weather School at Chanute Field, Illinois, on 11 April 1940; initiation of the first meteorological cadet (three-month) course in June 1940; and the Army Air Corps' first attempt at official long-range (30-day) forecast and verification on 20 October 1941.

DON Z. ZIMMERMAN
Brigadier General, United States Army Air Forces
Director of Weather
8 January 1942 - October 1942

Don Z. Zimmerman was born in Eugene, Oregon, on 25 November 1903. He obtained a bachelors degree in geology at the University of Oregon in 1924. Enrolled in the Reserve Officers Training Corps, he was commissioned in the Army (infantry) reserve. Zimmerman married Marion Doherty and they raised two children.

In 1925 he left a graduate teaching post in geology and relinquished his reserve commission to accept an appointment to West Point. He enjoyed baseball and basketball, and was captain of both teams during his studies there. He was described in his year book as being “the most popular man of his class,” which included Robert M. Losey and Harold H. Bassett. As a 25-year-old graduate in 1929, he was sixth in his class (of 299) and one of the few cadets to have been elected class president every year during his tenure at the academy.



Receiving his pilot wings and an assignment to March Field in 1930, he entered the California Institute of Technology and obtained his masters in meteorology under Dr. Irving P. Krick in 1936. While a weather instructor at Randolph Field in 1939, he discarded the standard curriculum and co-authored with First Lieutenant Thomas S. Moorman a *Weather Manual for Pilots* based on the new meteorological theories and his own observations from hundreds of flights through thunderstorms and unstable fronts in an open-cockpit biplane. The work incorporated the latest polar air-mass theories from the Bergen School and long remained an important educational tool. He also wrote many technical papers. One on the geology of atolls proved an accepted theory of Charles Darwin wrong and helped the Marines find safe landings on Kwajelein and Eniwetok atolls during World War II.

On 8 January 1942 Colonel Zimmerman assumed command of the Weather Directorate and in early 1943 entered the Command and General Staff School. On 19 April 1943 he took command of the 21st Bombardment Group at MacDill Field, Florida, and on 6 June 1943 he was reassigned to the 5th Amphibious Force. In 1947, then-Army Chief of Staff Dwight D. Eisenhower picked him to form an Advanced Study Group, an advisory body of three senior officers who were chosen on the basis of their records as independent thinkers. It determined how the Weather Bureau and the Army's and Navy's weather services should coordinate mobilization of the nation's meteorological resources.

During the Korean War, Colonel Zimmerman was assigned to the Far East Air Forces as Director of Plans, and later as Chief of Intelligence. He returned to Washington, DC, with a promotion to brigadier general. When the Air Force established its own academy in 1955, Zimmerman's academic background made him an ideal choice to set up the curriculum. That year he was appointed as Dean of Faculty.

He retired in 1958 when the Boeing Company hired him as a consultant. Brigadier General Zimmerman died 11 May 1983 and was buried with full military honors at the U.S. Air Force Academy.

Significant events during General Zimmerman's tenure as Director of Weather include the designation of the of the “Army Air Forces Weather Service” in Army Regulation 95-150, 24 July

1942; activation of the first weather reconnaissance squadron at Patterson Field, Ohio, on 21 August 1942; and the installation of the first radiosondes at weather units.

HAROLD H. BASSETT
Major General, United States Air Force
Director of Weather – 9 December 1942 - June 1943
Air Weather Officer - July 1943 - August 1943;
Chief of Weather Division - September 1943 - December 1944; &
Seventh Commander Air Weather Service - 13 November 1958 - 31 October 1959

Harold H. Bassett was born in Albion, Illinois, on 1 April 1907. After completing high school in Albion and two years of study at St. John's Military Academy, Delafield, Wisconsin, he entered West Point in 1925. The year book described him as the "big, strong, silent type." As a first classman, he was a cadet lieutenant and a good student, graduated 12th in his class of 299. He married Anita Horner of Honolulu and they had one daughter.



He was commissioned as a second lieutenant in the Corps of Engineers upon graduation on 13 June 1929 when he went directly into flight training. He transferred to the Air Corps after earning his pilot wings in 1930.

After approximately five years of various squadron officer duties in Hawaii and Randolph Field, Texas, First Lieutenant Bassett entered the California Institute of Technology to study under Dr. Irving P. Krick. He received a masters of science degree in meteorology in 1936.

In July 1937, when the weather service was first organized under the Air Corps, Lieutenant Bassett commanded the First Weather Squadron at March Field, California, one of the three original Army Air Corps Weather Service weather squadrons. He was promoted to captain on 13 June 1939. Leaving the weather service in 1940, he was again assigned to Hawaii where he performed staff duties at the Seventh Air Force. He was promoted to lieutenant colonel on 1 March 1942 and in July of that year he became a student at the Naval War College. Upon graduation he returned to the weather service where he served until shortly after the end of World War II.

Colonel Bassett was appointed acting Director of Weather on 9 December 1942, and Director of Weather on 9 March 1943. He served overseas as Director of Weather for the U.S. Strategic Air Forces in Europe and with the U.S. Air Forces in Europe from 1945 to 1947, and graduated from the National War College in 1948. He spent the following three years as Assistant Director of Intelligence on the Joint Staff.

In 1951 he became deputy commander of the newly organized U.S. Air Force Security Service. Following his promotion to brigadier general in September 1952, he became its commander in 1953. Promoted to major general on 27 October 1954, Bassett served as the commander of the Security Service until he was reassigned to the Far East in February 1957 as Deputy Commander, Taiwan Defense Command.

On 13 November 1958 he became the Air Weather Service Commander. General Bassett retired from active duty in October 1959.

Significant events during General Bassett's tenure as the Director of Weather included guiding the weather function through the 1943 reorganization of the Army Air Forces which included the formation of the Headquarters Flight Control Command. In addition the establishment of a short-range forecast verification program (24-, 36-, and 48-hour), April 1943. As the seventh Air Weather Service commander he inaugurated the U.S. Air Force Strategic Facsimile Network which connected Global Weather Central, Offutt AFB, Nebraska, with five other U.S. weather centers on 15 February 1959; initiated the operational numerical (computer) flight plan system on 15 May 1959; and activated the first two weather squadrons (7th at Heidelberg, Germany, and the 16th at Fort Monroe, Virginia) for exclusive support of the U.S. Army on 8 July 1959.

DONALD N. YATES
Lieutenant General, United States Air Force
Chief of Weather Division -January 1945 -June 1945
Staff Weather Officer - July 1945- June 1946
Third Commander of Air Weather Service
10 January 1945 - 31 July 1950

Donald N. Yates was born in Bangor, Maine, on 25 November 1909. He graduated from Bangor High School in 1927 and, at age 17, entered West Point. He enjoyed sports and lettered in soccer and gymnastics. He was elected captain of the gymnastics team in his last year at West Point and was a member of the undefeated 1928 Army soccer team. The team was selected for the U.S. Olympic team but the academy superintendent did not permit it to participate. Graduating in 1931, he was commissioned as a second lieutenant in the Cavalry. In 1932 he married Gertrude I. Hansen of San Antonio and they raised a daughter and son.



While attending Primary Flying School at Randolph Field, his instructor slow-rolled him out of a PT-3 when his seat belt was not fastened. As a result, he was accepted into the Caterpillar Club (anyone whose life was saved by using a parachute received a gold caterpillar). He pinned on his pilot wings in 1932 and in December was assigned to Luke Field, Hawaii, with the 23d Bomb Squadron. He was transferred from the Cavalry to the Army Air Corps on 25 January 1933.

In November 1935 First Lieutenant Yates was assigned to Brooks Field, Texas. After studying under Dr. Irving P. Krick at the California Institute of Technology, he earned a masters of science degree in meteorology in 1938. He was then assigned to the Third Weather Squadron at Barksdale Field, Louisiana. Captain Yates became executive officer of the Sixth Air Base Group at Barksdale in March 1941, and served subsequently as Group Command and Post Operations Officer. In December 1941 he became Assistant Chief of the Weather Section, Operations Division, Headquarters, Army Air Corps. He was promoted to lieutenant colonel on 23 January 1942, and in March became Deputy Director of Weather and was placed in charge of the Army's section of the Joint Weather Central.

He was promoted to colonel on 2 November 1942. From May to December 1942 Colonel Yates was in the U.S.S.R. as a member of a military mission coordinating weather matters. In February 1944 he became Director of Weather Service for the U.S. Strategic Air Forces in Europe,

in addition to serving on General Dwight D. Eisenhower's staff. For his participation in the selection of 6 June D-Day for the Normandy Invasion, he was decorated by the United States, Great Britain and France.

In January 1945 Colonel Yates was made Chief, Weather Division, which later merged with the AAF Weather Wing to form the Air Weather Service. Commander of Air Weather Service at Andrews AFB, Maryland, until 1950, he was promoted to brigadier general on 5 February 1947. He flew the first scheduled weather reconnaissance mission over the North Pole on 17 March 1947.

In July 1950 Brigadier General Yates was appointed Assistant Deputy Chief of Staff for Development at Headquarters, U.S. Air Force, and the following April he became Director of Research and Development. He was promoted to the rank of major general on 2 February 1952 and became Commander, Air Force Missile Test Center, Patrick AFB, Florida, on 31 July 1954. Promoted to lieutenant general on 4 May 1960, he retired from the Air Force on 3 March 1961.

Significant events during General Yates' tenure as AWS Commander include the selection of 6 August 1945 for the atomic bomb drop on Hiroshima, Japan; the redesignation of weather service to its official name of "Air Weather Service," and assignment of it to the Air Transport Command on 13 March 1946; installation of the first fixed-beam ceilometer at Langley Field, Virginia; initiation of the UHF pilot-to-forecaster service in 1947; issuance of the first tornado forecast at Tinker AFB, Oklahoma, on 2 March 1948; organization of Global Weather Central at Offutt AFB, Nebraska, on 15 March 1949, to support SAC; establishment of a weather detachment at Taegu, Korea, within 48 hours after the Korean War began in June 1950; and discovery of an ice island in the Arctic Ocean by Lieutenant Colonel J.O. Fletcher.

THOMAS S. MOORMAN

Lieutenant General, United States Air Force

Air Weather Officer - August 1945 - July 1946

Fifth Commander of Air Weather Service - 23 April 1954 - 27 March 1958

Thomas S. Moorman was born at the Presidio of Monterey, California, 11 June 1910. He attended John J. Phillips High School in Birmingham, Alabama, and graduated from West Point in 1933 with a commission as a second lieutenant. He then entered the Air Corps Flying Training School at Randolph Field, Texas. In October 1934 he earned his pilot wings and was assigned to the 4th Observation Squadron, 5th Composite Group at Luke Field, Hawaii. In October 1936 he married Miss Atha Grace Gullion, the daughter of an Army Judge Advocate who was chief prosecutor in the court martial of Major General Billy Mitchell. The Moormans raised four children.



In 1936 Second Lieutenant Moorman was promoted to first lieutenant and assigned to the 97th Reconnaissance Squadron at Mitchell Field, New York. In 1937 he entered California Institute of Technology where he obtained a masters in meteorology. In 1938 he was assigned as assistant station weather officer at Randolph Field under Captain Don Z. Zimmerman. He also served as assistant instructor for meteorology at the flight school there. In 1940 First Lieutenant Moorman teamed with Captain Zimmerman to write the first Army-published *Weather Manual for Pilots*. He was promoted to captain on 5 October 1940 and major on 22 July 1941. Moorman was part of a six-man team that formed a Weather Research Center at Bolling Field which became a weather central

for long-range forecasting. In July 1941 Major Moorman was assigned to Air Corps Headquarters where he served as Chief Climatologist, Assistant Director of the Air Corps Research Center, and liaison officer to the U.S. Weather Bureau. A joint Army/Navy/Weather Bureau Central was formed in February 1942, based on a recommendation by Moorman, and it later became the Joint Weather Central. He was promoted to lieutenant colonel on 23 January 1942.

On 1 May 1943 the 21st Weather Squadron, the first fully-mobile squadron trained exclusively for combat, was activated at Bradley Field, Connecticut, and Lieutenant Colonel Moorman became its regional control officer. He was promoted to colonel in August 1943 and assumed command of the 21st on 1 September 1943, then located in England. On 16 October 1943 Colonel Moorman became staff weather officer to, and later director of, weather support to the Ninth Air Force. In 1944 Moorman functioned as the liaison officer for the American First Army commanded by Lieutenant General Omar N. Bradley.

In 1945 he returned to the U.S. as Deputy Chief of Staff, Air Weather Service under Colonel Don Yates. A year later he became the air weather officer at Headquarters Army Air Corps and remained in that position until he entered Air War College in 1947.

In January 1949 Colonel Moorman was sent to Tokyo as Commander of the 2143d Air Weather Wing and he also served indirectly as staff weather officer to General of the Army Douglas M. MacArthur. In August 1951 he became Deputy Commander of Air Weather Service and received his first star in September 1952. On 23 April 1954 he was appointed Commander of Air Weather Service and in October 1956 he received his second star. In April 1958 Moorman assumed command of the Thirteenth Air Force at Clark Air Base, Philippines, and on 28 July 1961 he became Vice Commander in Chief, Headquarters, Pacific Air Forces, Hickam AFB, Hawaii. That same year he was promoted to lieutenant general. On 1 July 1965 he became superintendent of the Air Force Academy at Colorado Springs, Colorado and in August 1970 he retired with 37 years service to his country.

Significant events during General Moorman's tenure as AWS Commander include installation, on 20 June 1954 at Maxwell AFB, Alabama, of the first radar specifically designed for meteorological use; activation of the Joint Numerical Weather Prediction Unit at Suitland, Maryland, in August 1954; sanction of Project 433L, a weather observing and forecasting system, in August 1954; operation of the first transmissometer on 26 August 1954 at Andrews AFB, Maryland; installation of the first surface wind set in October 1954 at Eielson AFB, Alaska; and the expansion of Global Weather Central, Offutt AFB, Nebraska, following the closure of the USAF Weather Central in 1957.

NORMAN C. SPENCER, JUNIOR
Brigadier General United States Air Force
Air Weather Officer - July 1947 - 1950
[No photograph available]

Norman C. Spencer Jr., was born in Boston, Mass., in 1913. Seven years later the family moved to Concord, Mass., where he graduated from high school in 1931. He enlisted in Co. H, 182nd Infantry (Massachusetts National Guard) on his 18th birthday, and the following year successfully competed for a National Guard appointment to the U.S. Military Academy. Upon his graduation in 1936 he was commissioned as a second lieutenant of Field Artillery with duty assignment as a student officer at Randolph Field, TX. He transferred to the Air Corps in October of 1937 upon completion of flying training at Kelly Field.

His first assignment was to the 22nd Observation Squadron at Brooks Field, Texas. In 1940-41 he attended the California Institute of Technology where he was awarded a master of science degree in meteorology. He was next assigned to the Cold Weather Experimental Station at Ladd Field, Alaska. Soon after Pearl Harbor he joined the newly formed Eleventh Air Force and remained with it as assistant A-3 [Operations] until the end of the Aleutian Campaign. He was next assigned to air staff SHAEF [Supreme Headquarters Allied Forces Europe] in London where he participated in the Normandy invasion planning, and he remained with that headquarters in Europe until V-E Day.

Returning to the United States, he commanded the 101st Weather Group until late 1946 when he was assigned to the first class of the Air Command and staff school at the newly formed Air University, Maxwell Field, AL. Upon graduation he was assigned to the Air Staff.

From 1947 to 1950 he was the Air Weather Officer in the Directorate of Plans and Operations at Air Force headquarters. As the Army Air Forces became the United States Air Force, Colonel Spencer guided the plans and policy development of the Air Force's weather function. Additional actions included the training and integration of reserve force personnel into Air Force Weather. The first Joint Army Regulation 115-10/Air Force Regulation 105-3 was published.

He was then assigned to the Office of the Inspector General. He attended the Industrial College of the Armed Forces at Fort Leslie J. McNair, Washington, D.C., in 1953-54 and then went to Greenland to command the Sondrestrom Air Base. He returned to Robins Air Force Base, Ga., as base commander and, in 1957 was appointed deputy commander of the Warner Robins Air Materiel Area. In the same year he attended the Advanced Management Program at Harvard University.

In 1960 he was assigned to headquarters, AFLC, at Wright-Patterson Air Force Base, Ohio, as deputy director of Personnel. A year later he was appointed AFLC chief of staff. He was promoted to brigadier general in January 1961.

He assumed duties as deputy chief of staff for Materiel at Headquarters U.S. Air Forces in Europe, Wiesbaden, Germany, on July 15, 1963.

There was no Air Staff weather office 1950-1958. The AWS commander served as the meteorological advisor to the Chief of Staff of the Air Force. This arrangement worked well until 1958 when the AWS headquarters was moved to Scott AFB, IL.

ASSISTANTS FOR WEATHER

**Col Richard M. Gill
May 1958 - June 1960**



**Col James T. Seaver, Jr.
July 1960 - August 1962**



**Lt Col (later Col) Douglas C. Purdy
September 1962 - January 1963**



**Col Nicholas H. Chavasse
February 1963 - October 1967**



**Col Louis A. Gazzaniga
November 1967 - November 1972**



**Col Mortimer F. Bennet
December 1972 - July 1975**



**Col William E. Cummins II
August 1975 - 1 July 1978**



Between 1978 and 1991 the HQ USAF weather officer was a member of the Headquarters, United States Air Force, Deputy Chief of Staff for Plans and Operations staff [initially AF/XOOTF and then AF/XOORF]. This position was held by several weather officers during that period: Lt Cols Floyd Herndon, Gary Zeigler, Gene Pfeffer, Kelly Klein, George Frederick, Bill Johnson, Don Pittman, Gerald Riley, Tom Walters, and Frank Misciasci. They served as advocates for Air Weather Service and the world-wide mission of organizing, training, and equipping weather forces for Air Force and Army operations. During this period they strengthened the relationship between Air Weather Service, Military Airlift Command, and the Air Staff. They focused their advocacy efforts on the delivery of operationally relevant weather services and weather's effects on war fighting weapon systems. The proof of their efforts resulted in a "modernized" Air Weather Service with Automated Weather Distribution System, Advance Weather Radar (WSR-88D or NEXRAD), mission planning/target-specific forecasting, advanced environmental weather models and computing, and improved weather satellite data handling capabilities.¹

DIRECTORS OF WEATHER

JOHN J. KELLY, JR.
Brigadier General, United States Air Force
April 1991 - April 1994

&

Seventeenth Commander Air Weather Service - 1 July 1988 - 20 March 1991

John J. Kelly, Jr. was born in 1940, in Paterson, N.J., where he graduated from Paterson Central High School in 1958. He earned a Bachelor of Science degree from Seton Hall University in 1962, did graduate work in meteorology at Pennsylvania State University, and earned a master of public administration degree from Auburn University in 1976. The general completed Squadron Officer School as a distinguished graduate in 1966, Air Command and Staff College as a distinguished graduate in 1976, and the Industrial College of the Armed Forces in 1982.



After receiving his commission through Officer Training School in August 1963, General Kelly attended weather officer training at New York University. In July 1964 he was assigned as a weather officer at Cigli Air Base, Turkey. From January 1966 to August 1968 he was a current operations officer, Headquarters 7th Weather Wing, Scott Air Force Base, Ill. He then attended Pennsylvania State University.

In December 1969 the general was assigned to McGuire Air Force Base, N.J., where he served as a technical sciences officer with the 15th Weather Squadron. In July 1972 he transferred to Detachment 1, 10th Weather Squadron, Tan Son Nhut Air Base, as the command weather briefer, Military Assistance Command Vietnam.

¹ Hist, Fuller, John, *AWS History, 1978*, Vol I, AWS/HO, pp. 22-29; In addition, e-mail, Misciasci, Frank, Col, USAF Ret., *Re: PRW to XOORF*, 19 May 2012

He returned to the United States in April 1973 and was assigned to Headquarters 5th Weather Wing, Langley Air Force Base, VA, where he served first as the Headquarters Tactical Air Command weather briefer and, later, as a current operations officer. After graduating from Air Command and Staff College in July 1976, he returned to Scott Air Force Base as an action officer at Headquarters Military Airlift Command, Office of the Deputy Chief of Staff for Plans, Directorate of Programming and Policy, and as director, special projects, Headquarters Air Weather Service. In June 1980 he returned to McGuire Air Force Base as commander, 15th Weather Squadron.

General Kelly graduated from the Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C., in July 1982. He next was assigned to Air Force headquarters as deputy chief, Policy and Procedures Group, Directorate of Computer Resources, Comptroller of the Air Force, and then served as deputy director for plans and programs, Office of the Assistant Chief of Staff for Information Systems. From March 1984 to June 1985 he was vice commander, 7th Weather Wing headquarters. The general then assumed command of the 5th Weather Wing, Langley Air Force Base. He was assigned to Air Weather Service headquarters as vice commander in August 1987, and became commander in July 1988. He was promoted to brigadier general 1 August 1989. In April 1991, General Kelly was assigned to the Pentagon when the Air Force established the Office of the Director of Weather in the Office of the Deputy Chief of Staff for Plans & Operations. He served in that position until his retirement 1 June 1994.

Significant during General Kelly's tenure as both Commander, Air Weather Service and then as Director of Weather, was the fall of the Berlin Wall and the end of the Cold War. As the Air Force transitioned from a nuclear state of readiness to new and more conventional challenges, he ensured the weather forces were prepared for the future. His efforts proved crucial in August 1990 as Air Force Weather was challenged to provide nearly 500 weather warriors for DESERT SHIELD/DESERT STORM. As the war came to an end he immediately guided Air Force Weather through realignment of the weather forces from a centralized force provider to a more decentralized embedded structure. By the end of his tenure, Air Weather Service was a Field Operating Agency and base weather station personnel became part of the host unit's operations support squadrons.

THOMAS J. LENNON
Brigadier General, United States Air Force
May 1994 - June 1996

Thomas J. Lennon was born in Honolulu. He entered the Air Force in 1966 as a distinguished graduate of the Virginia Military Institute Reserve Officer Training Corps program. He commanded air wings and also served in a number of staff positions. Prior to his assignment as the Director of Weather, he was the deputy director, military-to-military contact program. A command pilot, having flown more than 3,000 hours, principally in fighter aircraft, the general served three combat tours; two in Southeast Asia and one in Southwest Asia, flying a total of 410 combat missions.

During General's tenure he emphasized weather awareness in Air Force operations. He led the charge to educate senior AF leadership on the effects of weather and the impact to mission success. Operations in South America (Joint Task Force Safe Border) and the



Balkans (Operation JOINT ENDEAVOR) provided opportunity for Air Force Weather to demonstrate their contribution to the fight. The Combat Weather Facility was established and it received Secretary of the Air Force designation as a reinvention laboratory. AFW now had a unit focused on improving techniques, tactics, and procedures for combat weather operations. The General obtained Chief of Staff of the Air Force approval to initiate "Weather Horizons;" an initiative to improve standardization throughout Air Force Weather, improve technical leadership in the weather function, and obtain global communications for weather operations. In addition, there was a renewed emphasis in enlisted leadership and advisory role to commanders at every level. The General's end-of-tour report served as the impetus for future AFW reengineering efforts.

EDUCATION:

1965 Bachelor of Science degree in biology, Virginia Military Institute, Va.

1972 Squadron Officer School, Maxwell Air Force Base, Ala.

1978 Master of science degree in public administration, Golden Gate University, Calif.

1983 National War College, Fort Lesley J. McNair, Washington, D.C.

1993 National and International Security Program, Harvard University, Mass.

ASSIGNMENTS:

1. October 1966 - January 1968, student, undergraduate pilot training, Moody Air Force Base, Ga.

2. January 1968 - September 1968, student, F-4C Pilot Training Course, MacDill Air Force Base, Fla.

3. September 1968 - September 1969, pilot, 435th Tactical Fighter Squadron, Ubon Royal Thai Air Base, Thailand

4. September 1969 - September 1970, F-4 pilot, 431st Tactical Fighter Squadron, George Air Force Base, Calif.

5. September 1970 - September 1971, F-4 aircraft commander and instructor pilot, 469th Tactical Fighter Squadron, Korat Royal Thai Air Force Base, Thailand

6. September 1971 - May 1974, F-4 instructor pilot and wing operations scheduling officer, 35th Tactical Fighter Wing, George Air Force Base, Calif.

7. May 1974 - February 1976, F-15 project officer, director of fighter requirements, Headquarters Tactical Air Command, Langley Air Force Base, Va.

8. February 1976 - April 1976, student, USAF F-15 Conversion Training Course, Luke Air Force Base, Ariz.

9. April 1976 - July 1978, chief, current operations branch, 1st Tactical Fighter Wing and assistant operations officer, 94th Tactical Fighter Squadron, Langley Air Force Base, Va.

10. July 1978 - August 1982, planning and programming officer and operations officer, directorate of plans, Headquarters U.S. Air Force, Washington, D.C.

11. August 1982 - July 1983, student, National War College, Fort Lesley J. McNair, Washington, D.C.

12. July 1983 - April 1984, special assistant for standardization and evaluation, Headquarters U.S. Air Forces in Europe, Ramstein Air Base, West Germany

13. April 1984 - July 1985, assistant deputy commander for operations, 401st Tactical Fighter Wing, Torrejon Air Base, Spain

14. July 1985 - January 1987, deputy commander for operations, 86th Tactical Fighter Wing, Ramstein Air Base, West Germany

15. January 1987 - February 1988, director, Joint General Officer Warfighting Course, Maxwell Air Force Base, Ala.
16. February 1988 - April 1989, commander, 39th Tactical Group, Incirlik Air Base, Turkey
17. April 1989 - August 1990, commander, 48th Tactical Fighter Wing, Royal Air Force Lakenheath, England
18. August 1990 - March 1991, commander, 48th Tactical Fighter Wing (Provisional), Taif, Saudi Arabia
19. March 1991 - July 1991, commander, 48th Tactical Fighter Wing, Royal Air Force Lakenheath, England
20. July 1991 - August 1992, executive officer to the deputy commander in chief, Headquarters U.S. European Command, Stuttgart, Germany
21. August 1992 - May 1994, deputy director, military to military contact program, Headquarters U.S. European Command, Stuttgart, Germany
22. May 1994 - present, director of weather, deputy chief of staff, plans and operations, Headquarters U.S. Air Force, Washington, D.C.

FLIGHT INFORMATION

Rating: Command pilot

Flight hours: 3,000

Aircraft flown: T-37, T-33, T-38, F-4, F-15, F-16 and F-111

MAJOR AWARDS AND DECORATIONS

Defense Superior Service Medal

Legion of Merit with two oak leaf clusters

Distinguished Flying Cross with four oak leaf clusters

Meritorious Service Medal with four oak leaf clusters

Air Medal with 25 oak leaf clusters

Aerial Achievement Medal

Air Force Commendation Medal

Combat Readiness Medal

National Defense Service Medal with bronze star

Vietnam Service Medal with eight bronze stars

Southwest Asia Service Medal with two bronze stars

Republic of Vietnam Gallantry Cross with Palm

Republic of Vietnam Campaign Medal

Kuwait Liberation Medal

Estonian White Cross

EFFECTIVE DATES OF PROMOTION

Second Lieutenant Jun 12, 1965

First Lieutenant Oct 16, 1967

Captain Apr 16, 1969

Major Oct 1, 1977

Lieutenant Colonel Oct 1, 1980

Colonel Nov 1, 1984

Brigadier General Jul 1, 1992

FRED P. LEWIS
Brigadier General, United States Air Force
July 1996 - June 2000

Fred P. Lewis was born in Cottonwood, AZ. He entered the Air Force through the ROTC program at the University of Arizona in 1972. While on active duty, he commanded a weather squadron, a computer systems group, and served in many weather and joint staff officer assignments. In December 1985 he became the first Air Force weather officer selected for space shuttle duty, but never flew due to the Challenger disaster. He served on the U.S. Transportation Command Staff, including two years spent as Director of the Joint Transportation Corporate Information Management Center. His unit was responsible for improving the effectiveness and efficiency of the defense transportation system by using process improvement techniques and enhancing automated system capabilities.



During the general's tenure as the Director of Weather, he led efforts to implement a total force transformation of the Air Force's weather functional area to significantly improve weather support for operators worldwide. Base weather station and deployed weather operators focused on mission execution and regional forecast units, called operational weather squadrons, prepared the necessary planning information such as terminal aerodrome forecasts, point weather warnings, and flight hazard information. He retired from the Air Force in 2000 in the rank of brigadier general.

EDUCATION:

1972 Bachelor of Science degree in physics, University of Arizona
1973 Basic Meteorology Program, University of Utah
1979 Doctor of Philosophy in meteorology, University of Utah
1980 Distinguished graduate, Squadron Officer School, Maxwell AFB, AL.
1984 Armed Forces Staff College, Norfolk, VA.
1990 Air War College, Maxwell AFB, AL.
1996 Air Force Senior Leader Orientation Course, Crystal City, VA.
1998 Capstone General and Flag Officer Course, Fort Lesley J. McNair, Washington, D.C.

CAREER CHRONOLOGY:

1. September 1972 - June 1973, student, Basic Meteorology Program, University of Utah
2. June 1973 - June 1976, automated program designer, Air Force Global Weather Central, Offutt AFB, NE.
3. June 1976 - July 1979, doctoral student, Meteorology Program, University of Utah
4. July 1979 - January 1981, assistant chief, Numerical Forecast Section, Air Force Global Weather Central, Offutt AFB, NE.
5. January 1981 - December 1982, officer in charge, Weather Forecast Models Unit, Air Force Global Weather Central, Offutt AFB, NE.
6. January 1983 - January 1984, officer in charge, Operating Location B, Detachment 15, 30th Weather Squadron, Suwon Air Base, South Korea
7. January 1984 - July 1984, student, Armed Forces Staff College, Norfolk, VA.

8. August 1984 - May 1986, assistant chief, Environmental Services Branch, Headquarters Military Airlift Command, Scott AFB, IL.
9. May 1986 - July 1987, Vice Commander, U.S. Air Force Environmental Technical Applications Center, Scott AFB, IL.
10. July 1987 - August 1989, Commander, 26th Weather Squadron, Barksdale AFB, LA.
11. August 1989 - June 1990, student, Air War College, Maxwell AFB, AL.
12. June 1990 - October 1990, Deputy Chief of Staff, Automation Support, Airlift Communications Division, Headquarters Military Airlift Command, Scott AFB, IL.
13. October 1990 - August 1992, Commander, 1500th Computer Systems Group, Scott AFB, IL.
14. August 1992 - February 1994, Chief, Weather Division, U.S. Transportation Command, Scott AFB, IL.
15. March 1994 - July 1996, Director, Joint Transportation Corporate Information Management Center, U.S. Transportation Command, Scott AFB, IL.
16. July 1996 - June 2000, Director of Weather, Deputy Chief of Staff for Air and Space Operations, Headquarters U.S. Air Force, Washington, D.C.

AWARDS AND HONORS:

Distinguished Service Medal
Defense Superior Service Medal
Legion of Merit
Meritorious Service Medal with four oak leaf clusters
Air Force Commendation Medal

OTHER ACHIEVEMENTS:

1998 Federal 100 Award, Federal Computer Week magazine, acknowledging the year's top 100 Information Technology professionals

EFFECTIVE DATES OF PROMOTION:

Second Lieutenant Jan. 26, 1972
First Lieutenant July 26, 1974
Captain July 26, 1976
Major Oct. 1, 1983
Lieutenant Colonel March 1, 1986
Colonel Oct. 1, 1989
Brigadier General Sept. 1, 1996

DAVID L. JOHNSON
Brigadier General, United States Air Force
July 2000 - June 2003

David L. Johnson was commissioned a distinguished graduate of the ROTC program in 1973. He was a command pilot with more than 3,800 flying hours, primarily in the A/C/MC-130E/H/P, C-21, C-20 and C-9 transport aircraft. He also flew the T-38, T-39, T-43, MH-60G, MH-53J, F-15 and F-16. His command positions included aircraft commander; squadron commander; operations group commander; airlift wing commander; and major command vice commander. General Johnson commanded airdrop and airland operations in Bosnia-Herzegovina for two years, from 1994 to 1995, before Implementation Force operations began. The general served as Deputy Commander of the Joint Task Force Operation SUPPORT HOPE in Rwanda in 1995, and provided forces for and participated in Operation SOUTHERN WATCH in 1998-1999.



During the general's tenure as Director of Weather he continued the wall-to-wall, total force re-engineering of Air Force Weather (AFW) of which the standup of an AFW specific "standardization and evaluation" program was key, with an emphasis on "standardization." He guided AFW through a DoD Inspector General review of the Defense Weather Programs, the eighth such review in 5 years. He directed the organizing and equipping of weather forces in response to the 11 Sep 2001 terrorist attack on the U.S. His oversight of materiel solutions for AFW led to an improved weather distribution system focused on common-user communication networks and the evolving global communication networks. His direction of research and development activities for target acquisition software culminated in the delivery of operational software routines in time for the opening stages of Operation Iraqi Freedom as U.S. forces made their push towards Baghdad.

Following his retirement from active duty, he continued serving his country as the Director of the National Weather Service.

EDUCATION:

1972 Honor graduate, Bachelor of Arts degree in geography, University of Kansas.

1978 Master of Arts degree in human relations, Webster University

1981 Distinguished graduate, Squadron Officer School, Maxwell Air Force Base, AL.

1983 Distinguished graduate, Air Command and Staff College, Maxwell AFB, AL.

1986 Air War College, by seminar

1990 National War College, Fort Lesley J. McNair, Washington, D.C.

1997 Maxwell School of Citizenship and Public Affairs, Syracuse University, Syracuse, NY.

1998 National Security Leadership Course, Paul H. Nitze School of Advanced International Studies, Johns Hopkins University, Baltimore, MD.

ASSIGNMENTS:

1. May 1973 - October 1974, pilot training, Williams AFB, AZ.
2. October 1974 - September 1978, C-130E co-pilot, aircraft commander and advanced flying training instructor pilot, Little Rock AFB, AR.
3. September 1978 - October 1979, Air Staff Training Program officer, Headquarters U.S. Air Force, Washington, D.C.
4. October 1979 - August 1982, action officer, later, Chief, Plans, Programs and Budgeting Systems Division, Headquarters Military Airlift Command, Scott AFB, IL.
5. August 1982 - June 1983, student, Air Command and Staff College, Maxwell AFB, AL.
6. June 1983 - July 1986, international politico-military affairs officer, Strategy Division, U.S. European Command, Stuttgart-Vaihingen, West Germany
7. July 1986 - August 1989, assistant operations officer, 61st Tactical Airlift Squadron, later, operations officer, 62nd Tactical Airlift Squadron, later, Commander, 34th Tactical Training Squadron, Little Rock AFB, AR.
8. August 1989 - June 1990, student, National War College, Fort Lesley J. McNair, Washington, D.C.
9. June 1990 - August 1993, Chief, NATO Policy Division, later, Chief, Asia Branch, Joint Chiefs of Staff, Washington, D.C.
10. August 1993 - June 1994, Commander, 435th Operations Group, Rhein-Main Air Base, Germany
11. June 1994 - May 1995, Commander, 86th Operations Group, Ramstein AB, Germany
12. May 1995 - February 1996, Vice Commander, 23rd Wing, Pope AFB, NC.
13. February 1996 - April 1997, Assistant Director of Operations, Headquarters Air Combat Command, Langley AFB, VA.
14. April 1997 - July 1999, Commander, 43rd Airlift Wing, Pope AFB, NC.
15. July 1999 - July 2000, Vice Commander, Air Force Special Operations Command, Hurlburt Field, FL.
16. July 2000 - 2003, Director of Weather, Deputy Chief of Staff for Air and Space Operations, Headquarters U.S. Air Force, Washington, D.C.

FLIGHT INFORMATION:

Rating: Command pilot

Flight hours: More than 3,800, including 78 combat sorties

Aircraft flown: A/C/MC-130E/H/P, C-9, C-20, C-21, T-38, T-39, T-43, MH-60G, F-15, F-16 and MH-53J

MAJOR AWARDS AND DECORATIONS:

Distinguished Service Medal

Defense Superior Service Medal

Legion of Merit with oak leaf cluster

Defense Meritorious Service Medal with two oak leaf clusters

Meritorious Service Medal with two oak leaf clusters

Air Medal with two oak leaf clusters

Air Force Commendation Medal with two oak leaf clusters

Joint Service Achievement Medal

Humanitarian Service Medal

EFFECTIVE DATES OF PROMOTION:

Second Lieutenant Jun 6, 1973
First Lieutenant Jun 24, 1975
Captain Jun 24, 1977
Major Nov 1, 1982
Lieutenant Colonel Mar 6, 1986
Colonel Apr 1, 1991
Brigadier General Sep 1, 1998

THOMAS E. STICKFORD
Brigadier General, United States Air Force
July 2003 - November 2005

Thomas E. Stickford was commissioned in 1976 as a distinguished graduate of the University of Colorado's ROTC program. A command pilot with more than 5,300 flying hours, he commanded at the squadron (KC-10), group (KC-135) and wing (C-9, C-21) levels. On Sept. 11, 2001, he deployed to 1st Air Force at Tyndall AFB, FL, as the Director of Mobility Forces to set up tanker and airlift operations for the defense of the United States. For Operation Allied Force, he deployed to the Combined Air Operations Center at Vicenza, Italy, as the theater Tanker Director, responsible to the Combined Forces Air Component Commander for all tanker operations, which included more than 200 NATO tankers at 13 bases in 11 countries. He has also commanded expeditionary units at Moron, Spain; Cairo, Egypt; and Riyadh, Saudi Arabia for various real-world operations.



His staff experience included positions as KC-135/KC-10 program element monitor and programmer, Headquarters U.S. Air Force; Deputy Chief, Strategic Planning Team, Legislative Affairs Officer and Deputy Chief, Commander's Action Group, Headquarters U.S. Transportation Command; and Chief, Global Mobility Division, and Global Mobility Panel Chair, Headquarters U.S. Air Force. He also served as Air Mobility Command's Inspector General.

During his tenure as the Director of Weather, Deputy Chief of Staff for Air and Space Operations, Headquarters U.S. Air Force, General Stickford directed the collection and publication of lessons learned for the initial stages of Operation Iraqi Freedom (OIF) which became the basis of the AFW "story" as it was rolled into the overall Air Force after action report on OIF. In response to the larger AF transformational efforts, General Stickford directed the preparation and publication of the *Air Force Weather Strategic Plan and Vision, 2008-2032*. The plan described the pathway toward a future in which global intelligence, surveillance, and reconnaissance, transnational threats, full-spectrum military operations, and extraordinary advances in information technology and military hardware would shape the ways in which AFW would conduct its day-to-day operations. Accompanying the plan was an *Air Force Weather Operations Functional Concept*. It charted a transformation course for weather operations supporting Air Force and Army operations.

As the Director of Weather, General Stickford also served as U.S. Air Force Deputy to National Oceanic and Atmospheric Administration, Washington, D.C. After leaving AFW, he went on to serve as Vice Commander, 18th Air Force, Scott Air Force Base, IL.

EDUCATION

1976 Bachelor of Science degree in business (accounting), University of Colorado, Boulder
1983 Distinguished graduate, Squadron Officer School, Maxwell AFB, Ala.
1985 Air Command and Staff College, Maxwell AFB, Ala.
1986 Master of Aeronautical Science degree, Embry-Riddle Aeronautical University
1995 Master of Science degree in national security strategy, National War College, National Defense University, Fort Lesley J. McNair, Washington, D.C.
2001 Senior Executive Fellows Program, Harvard University, Cambridge, Mass.

ASSIGNMENTS

1. February 1977 - May 1978, student, undergraduate pilot training, Reese AFB, Texas
2. June 1978 - November 1978, student, B-52 Combat Crew Training School, Castle AFB, Calif.
3. December 1978 - April 1982, B-52 co-pilot and standardization and evaluation co-pilot, 62nd Bombardment Squadron and 2nd Bomb Wing, Barksdale AFB, La.
4. April 1982 - November 1982, KC-10 co-pilot, 32nd Air Refueling Squadron, Barksdale AFB, La.
5. November 1982 - September 1986, KC-10 co-pilot, pilot, instructor pilot, and Assistant Chief, Standardization and Evaluation, 9th Air Refueling Squadron and 22nd Air Refueling Wing, March AFB, Calif.
6. October 1986 - November 1989, Major Command Chief, KC-10 Tactics Branch and MAJCOM Chief, KC-10 Evaluation Branch, 1st Combat Evaluation Group, Barksdale AFB, La.
7. November 1989 - August 1992, KC-10 Program Element Monitor and KC-135/KC-10 Program Element Monitor and Programmer, Headquarters U.S. Air Force, Washington, D.C.
8. August 1992 - July 1994, operations officer, then Commander, 32nd Air Refueling Squadron, Barksdale AFB, La.
9. August 1994 - June 1995, student, National War College, National Defense University, Fort Lesley J. McNair, Washington, D.C.
10. July 1995 - August 1997, Deputy Chief, Strategic Planning Team; Legislative Affairs Officer; and Deputy Chief, Commander's Action Group, Headquarters U.S. Transportation Command, Scott AFB, Ill.
11. November 1997 - July 1999, Commander, 22nd Operations Group, McConnell AFB, Kan.
12. August 1999 - June 2000, Chief, Global Mobility Division, and Global Mobility Panel Chair, Office of the Deputy Chief of Staff for Plans and Programs, Headquarters U.S. Air Force, Washington, D.C.
13. June 2000 - January 2002, Commander, 375th Airlift Wing, Scott AFB, Ill.
14. January 2002 - July 2003, Inspector General, Air Mobility Command, Scott AFB, Ill.
15. July 2003 - November 2005, Director of Weather, Deputy Chief of Staff for Air and Space Operations, Headquarters U.S. Air Force, and U.S. Air Force Deputy to National Oceanic and Atmospheric Administration, Washington, D.C.
16. November 2005 - present, Vice Commander, 18th Air Force, Scott AFB, Ill.

FLIGHT INFORMATION

Rating: Command Pilot

Flight Hours: More than 5,300

Aircraft Flown: B-52, T-37, KC-10, T-38, KC-135, C-21 and C-9

MAJOR AWARDS AND DECORATIONS

Distinguished Service Medal

Legion of Merit with oak leaf cluster

Distinguished Flying Cross

Bronze Star Medal

Defense Meritorious Service Medal

Meritorious Service Medal with three oak leaf clusters

Air Force Commendation Medal with oak leaf cluster

Air Force Achievement Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant June 2, 1976

First Lieutenant Dec. 2, 1978

Captain Dec. 2, 1980

Major Jan 1, 1988

Lieutenant Colonel April 1, 1992

Colonel Dec. 1, 1997

Brigadier General Oct. 1, 2003

JOHN D. MURPHY

Colonel, United States Air Force

December 2005 - Jun 2006

&

Seventh Commander Air Force Weather Agency

(26 March 2008 – 20 April 2010)

Colonel Murphy was commissioned in 1982 and graduated with honors from Lyndon State College (Saint Michael's College ROTC program). He earned Master of Science degrees in Meteorology (Pennsylvania State University) and in Strategic Studies (U.S. Army War College). He has commanded at the detachment (Langley AFB, VA), squadron (Sembach AB, Germany), and Field Operating Agency (Offutt AFB, NE) levels. During Operations Desert Shield and Desert Storm, he deployed as officer-in-charge of the Theater Forecast Unit and was responsible to the Combined Joint Forces Commander for weather support across the entire Central Command area of responsibility. In 2007 he returned to the Central Command area of responsibility as director of staff to the Combined Forces Air



Component commander, U.S. Central Command; commander, Air Force Forces Central Command; and commander, 9th Air and Space Expeditionary Task Force, Air Combat Command, Southwest Asia.

His staff experience included: weather processing systems acquisition supervisor and director of personnel to Headquarters Air Weather Service, career field management chief and executive officer to Headquarters USAF/XOW, deputy director of weather-army and staff weather officer to the Headquarters U.S. Army, chief of the weather resources and programs division, and deputy director of weather.

During his tenure as Acting Director of Weather he championed the preparation of an Air Force Doctrine Document 2-9.1, *Weather Operations*. This was the first appearance of AF doctrine that examined the employment and/or exploitation of weather information. The document concisely explained the organization and training of weather forces and the way they fit into the joint picture; examined the process that formed the basis of environmental prediction and the tailoring weather personnel performed for specific users addressing their particular needs.

As the Commander of Air Force Weather Agency, he made organizational adjustments to ensure a more effective and responsive organization to the Nation's warfighter. Most important was the 3-month transition of the Air Force Weather Agency staff and weather operations into a newly constructed \$30 million facility without any interruption to daily support.

After departing AFW, he assumed the position as the Deputy Foreign Policy Advisor to the Commander, United States Strategic Command, Offutt AFB, NE.

EDUCATION

1982 Reserve Officer Training Corp (ROTC), St Michael's College, VT.
1982 Associate of Science degree (physics), Lyndon State College, VT.
1982 Bachelor of Science degree (mathematics), Lyndon State College, VT.
1982 Bachelor of Science degree (meteorology), Lyndon State College, VT.
1983 Squadron Officer School, Correspondence
1988 Squadron Officer School, Maxwell AFB, AL.
1992 Master of Science degree (meteorology), Pennsylvania State University, PA.
1992 Introduction to Acquisition Management, Wright-Patterson AFB, OH.
1994 Acquisition Planning and Analysis, Wright-Patterson AFB, OH.
1994 Air Command and Staff College, Correspondence
1994 GSA Trail Boss Contracting Course, Hagerstown, MD.
1997 Air Command and Staff College, Maxwell AFB, AL.
1999 Air War College, Correspondence
2002 Master of Science degree (strategic studies), Army War College, Carlisle Barracks, PA.

ASSIGNMENTS

1. June 1982 – January 1983, European and Korean Forecast Sections OIC, Global Weather Central, Offutt AFB, NE.
2. January 1983 – January 1984, Severe Weather Section OIC, Global Weather Central, Offutt AFB, NE.
3. January 1984 – December 1984, Product Management Officer, Global Weather Central, Offutt AFB, NE.
4. December 1984 – December 1985, Wing Weather Officer to the 487th Tactical Missile Wing (Det. 9, 31st Weather Squadron) Comiso Air Station, Italy

5. December 1985 – December 1987, Student, Pennsylvania State University (Air Force Institute of Technology), State College, PA.
6. December 1987 – June 1988, Staff Climatology Officer, 5th Weather Wing, Langley AFB, VA.
7. June 88 – August 90, Scientific Services Officer, 5th Weather Wing, Langley AFB, VA.
8. August 1990 – October 1991, Commander/Staff Weather Officer to 1st Tactical Fighter Wing (Detachment 7. 3rd Weather Squadron), Langley AFB, VA.
9. October 1991 – May 1993, Director of Operations, 1st Weather Squadron, Langley AFB, VA.
10. May 1993 – July 1995, Weather Processing Systems Acquisition Supervisor (& Program Manager), Headquarters Air Weather Service, Scott AFB, IL.
11. July 1995 – July 1996, Director of Personnel, Headquarters Air Weather Service, Scott AFB, IL.
12. July 1996 – June 1997, Student/Seminar Leader, Air Command and Staff College, Maxwell AFB, AL.
13. June 1997 – December 1997, Chief, Career Field Management Branch, Directorate of Weather, DCS/Air and Space Operations, Headquarters United States Air Force, Pentagon, Washington, D.C.
14. December 1997 – July 1999, Executive Officer, Directorate of Weather, DCS/Air and Space Operations, Headquarters United States Air Force, Pentagon, Washington, D.C.
15. July 1999 – June 2001, Commander, United States Air Forces in Europe Operational Weather Squadron, Sembach AB, Germany.
16. July 2001 – June 2002, Student/Assistant Seminar Leader, Army War College, Carlisle Barracks, PA.
17. June 2002 – October 2003, Deputy Director of Weather, Army, DCS G-2, Headquarters United States Army, Pentagon, Washington, D.C.
18. November 2003 – June 2005, Chief, Weather Resources and Programs Division, Directorate of Operations and Training, DCS/Air and Space Operations, Headquarters United States Air Force, Pentagon, Washington, D.C.
19. June 2005 – February 2007, Assistant, Acting, and Deputy Director of Weather, Directorate of Operations and Training, DCS/Air, Space & Information Operations, Plans & Requirements, Headquarters United States Air Force, Pentagon, Washington, D.C.
20. February 2007 – March 2008, Director of Staff, Al Udeid Combined Air and Space Operations Center, United States Central Command Air Forces, Shaw AFB, S.C.
21. March 2008 – March 2010, Commander, Air Force Weather Agency, Offutt AFB, NE.
22. March 2010 – August 2011, Deputy Foreign Policy Advisor (POLAD), United States Strategic Command, Offutt AFB, NE.

MAJOR AWARDS AND DECORATIONS

Defense Superior Service Medal
 Legion of Merit Medal with one Oak Leaf Cluster
 Bronze Star Medal
 Meritorious Service Medal with four Oak Leaf Clusters
 Department of State Meritorious Honor Award
 Air Force Commendation Medal with two Oak Leaf Clusters
 Army Commendation Medal
 Army Achievement Medal
 Joint Meritorious Unit Citation with one Oak Leaf Cluster
 Air Force Outstanding Unit Award with one Oak Leaf Cluster
 Air Force Organizational Excellence Ribbon with two Oak Leaf Clusters

Air Force Recognition Ribbon
National Defense Service Medal with one Bronze Star
Southwest Asia Service Medal with two Bronze Stars
Global War on Terror Expeditionary Medal
Global War on Terror Service Medal
Humanitarian Service Medal
Military Outstanding Volunteer Service Medal
Air and Space Campaign Medal
Air Force Overseas Short Tour Ribbon with three Oak Leaf Clusters
Air Force Overseas Long Tour Ribbon
Air Force Expeditionary Service Ribbon
Air Force Longevity Service Award with one Silver and one Oak Leaf Cluster
Small Arms Expert Marksmanship Ribbon
Air Force Training Ribbon
Kuwait Liberation Medal from Saudi Arabia
Kuwait Liberation Medal from Kuwait
Air Force Merewether Award
Air Force Moorman Award (twice)
National Weather Service Best Award
Air Force Outstanding Operational Weather Squadron
Master Meteorologist Badge
Air Staff Identification Badge
Army Staff Identification Badge
USSTRATCOM Staff Identification Badge
Commander Insignia Badge
Air Force Weather Agency Honorary Chief Master Sergeant

EFFECTIVE DATES OF PROMOTION

Second Lieutenant May 22, 1982
First Lieutenant June 2, 1984
Captain June 2, 1986
Major July 1, 1993
Lieutenant Colonel Feb. 1, 1999
Colonel Dec. 1, 2004

LAWRENCE A. STUTZRIEM
Major General, United States Air Force
July 2006 - May 2007

Lawrence A. Stutzriem was a command pilot with more than 2,200 flying hours in F-16, A-10, F-4 and Air Force training aircraft. He was commissioned in 1978 through the Air Force ROTC program at Arizona State University, and in 1980 he completed undergraduate pilot training at Vance Air Force Base, OK. He commanded at the squadron, group and wing levels, including the 355th Wing at Davis-Monthan AFB, AZ. In June 2001, the general served as Director of Operations, Joint Task Force - Southwest Asia, and Deputy Director of the Combined Air Operations Center.



During General Stutzriem's brief tenure as Director of Weather he directed the AF's participation in the scientific advisory group which addressed how the Government would mitigate wind farm impacts on weather radars. He encouraged the planning and prototype development of an ensemble weather model forecasting capability for AFW. He also championed the development of tropospheric airborne meteorological data reporting equipment aboard DoD unmanned aerial systems to increase the quantity of weather observations in battlefield areas of operation.

After departing AFW, he was Director, Chief of Staff of the Air Force Strategic Studies Group - CHECKMATE, Headquarters U.S. Air Force, Washington, D.C. In 2008 he was promoted to Major General and in 2009 became Director, Plans, Policy and Strategy, North American Aerospace Defense Command and U.S. Northern Command, Peterson Air Force Base, CO.

EDUCATION

1978 Bachelor of Science degree in civil engineering, Arizona State University, Tempe, AZ.
1984 Squadron Officer School, Maxwell AFB, AL.
1986 Air Command and Staff College, by correspondence
1995 Air War College, by correspondence
1995 Master of Science degree in aviation management, Embry-Riddle Aeronautical University
1996 Master of Science degree in national security strategy, National War College, Fort Lesley J. McNair, Washington, D.C.

ASSIGNMENTS

1. April 1979 - July 1980, student, undergraduate pilot training, Vance AFB, OK.
2. July 1980 - March 1981, F-4 student, 306th Tactical Fighter Training Squadron, Homestead AFB, FL.
3. March 1981 - October 1984, F-4 pilot, squadron training officer, and weapons and tactics officer, 3rd Tactical Fighter Squadron, Clark Air Base, Philippines
4. October 1984 - October 1986, aide to the Commander, Headquarters Pacific Air Forces, Hickam AFB, HI
5. December 1986 - May 1989, flight commander and F-16 instructor pilot, 309th Tactical Fighter Squadron, Homestead AFB, FL.
6. May 1989 - August 1989, Chief of Standardization and Evaluation, 31st Tactical Fighter Wing, Homestead AFB, FL.

7. August 1989 - November 1989, operations officer, 309th Tactical Fighter Squadron, Homestead AFB, FL.
8. November 1989 - January 1991, exercise plans officer and Chief, Command Post Exercise Division, Headquarters 7th Air Force, Osan AB, South Korea
9. January 1991 - September 1991, Chief, New Sensor Technology Division, Headquarters Tactical Air Command, Langley AFB, VA
10. September 1991 - September 1992, Chief, Special Management Organization for Low Altitude Navigational and Targeting Infrared for Night, Requirements Directorate, Air Combat Command, Langley AFB, VA.
11. September 1992 - July 1993, executive officer to the Director of Requirements, Headquarters ACC, Langley AFB, VA.
12. August 1993 - August 1995, Commander, 50th Flying Training Squadron, Columbus AFB, MS.
13. August 1995 - July 1996, student, National War College, Fort Lesley J. McNair, Washington, D.C.
14. July 1996 - June 1998, Chief of Staff of the Air Force chair and professor of Military Strategy and Operations, National War College, Fort Lesley J. McNair, Washington, D.C.
15. June 1998 - July 2000, Commander, 47th Operations Group, Laughlin AFB, TX.
16. July 2000 - June 2001, Vice Commander, 355th Wing, Davis-Monthan AFB, AZ.
17. June 2001 - July 2002, Director of Operations, Joint Task Force - Southwest Asia, and Deputy Director, Combined Air Operations Center, Southwest Asia
18. July 2002 - February 2003, Assistant Director of Plans and Programs, Headquarters ACC, Langley AFB, VA.
19. February 2003 - August 2004, Commander, 355th Wing, Davis-Monthan AFB, AZ.
20. August 2004 - June 2006, U.S. Department of State senior military representative and Director, Office of International Security Operations, Washington, D.C.
21. June 2006 - May 2007, Director of Weather, Deputy Chief of Staff for Air, Space and Information Operations, Plans and Requirements, Headquarters U.S. Air Force, and U.S. Air Force Deputy to NOAA, Washington, D.C.
22. May 2007 - July 2009, Director, Chief of Staff of the Air Force Strategic Studies Group - CHECKMATE, Headquarters U.S. Air Force, Washington, D.C.
23. July 2009 – Nov 2011, Director, Plans, Policy and Strategy, North American Aerospace Defense Command and U.S. Northern Command, Peterson AFB, CO.

FLIGHT INFORMATION

Rating: Command pilot

Flight hours: 2,200

Aircraft flown: F-16, A-10, F-4, T-37 and T-38

MAJOR AWARDS AND DECORATIONS

Defense Superior Service Medal

Legion of Merit with oak leaf cluster

Bronze Star Medal

Meritorious Service Medal with silver oak leaf cluster

Air Force Commendation Medal

Air Force Achievement Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant May 31, 1978

First Lieutenant Dec. 15, 1980

Captain Dec. 15, 1982

Major March 1, 1988

Lieutenant Colonel May 1, 1993

Colonel Jan. 1, 1998

Brigadier General July 1, 2005

Major General Aug. 31, 2008

MARY LOCKHART

**Colonel, United States Air Force.
Acting May 2007 - September 2007**

Mary Lockhart was commissioned in 1982 as a distinguished graduate through the Air Force ROTC program at the College of Holy Cross, Worcester, Massachusetts, with a Bachelor's Degree in Mathematics. In 1983, she was awarded a Bachelor's Degree in Meteorology with high honors from Pennsylvania State University. After tours in Strategic Air Command, NORAD and AFSPACECOM as a Command Weather Briefer, Colonel Lockhart left active duty. She immediately entered the Air Force Reserve and was involved in various phases of weather operations including research, test and evaluation, mission planning, electro-optical and space environment analysis. In 2000, Colonel Lockhart was the first weather officer assigned to the United States Air Force Weapons School advising the Commandant and his staff on state-of-the-art weather prediction applications for combat.



Colonel Lockhart began serving as Reserve Individual Mobilization Augmentee (IMA) to the Air Force Director of Weather in May 2006. She returned to active duty in January 2007 to serve first as the Deputy Director of Weather and then as Acting Director of Weather in May. She was responsible for developing weather doctrine, plans, and programs. She managed the execution of the \$350 million per year weather program and the 4,441-person weather career field.

After departing AFW in October 2007, Colonel Lockhart moved to the position of IMA to the Chief, House Liaison Office, United States House of Representatives, Legislative Liaison, Office of the Secretary of the Air Force, Headquarters U. S. Air Force, Washington, DC. She assisted interaction between the Air Force and Congress on issues such as legislative and constituent inquiries, programs and weapons systems. Colonel Lockhart was responsible for establishing and maintaining Air Force rapport with the House of Representatives and their staffs ensuring they were informed of Air Force programs, policies and positions.

She married former astronaut; Colonel Paul S. Lockhart (USAF, Retired) and they raised two daughters.

EDUCATION

1982 Bachelor of Arts degree in Mathematics, College of the Holy Cross, Worcester, Mass.
1983 Bachelor of Science degree in Meteorology, Pennsylvania State University, State College, Pa.
1986 Squadron Officer School
1995 Master of Science degree in Mechanical Engineering, Boston University, Boston, Mass.
1997 Air Command and Staff College
2001 Air War College

ASSIGNMENTS

1. June 1982 - June 1983, AFIT Student, Pennsylvania State University, State College, PA.
2. June 1983 - May 1985, Wing Weather Officer, 416 Bombardment Wing, Griffiss AFB, NY.
3. June 1985 - Aug 1986, Command Weather Briefer to CINCNORAD, USCINCSpace and Commander AFSPACECOM, Peterson AFB, CO.
4. August 1986 - June 1988, Space Shuttle Weather Officer, Johnson Space Center, Houston, TX.
5. June 1988 - December 1990, Weather Officer, 52 TFW Spangdahlem AB, Germany.
6. December 1990 - May 1994, Staff Weather Officer, Grissom AFB, IN, 160th Air Refueling Group at Rickenbacker Air National Guard Base, OH, attached for training to Edwards and Eglin Air Force Bases, weather support to test aircraft/weapons programs and shuttle landings.
7. May 1994 - April 1995, Staff Weather Officer, McConnell AFB, Kan., supported 121st Air Refueling Wing and 190th Air Refueling Wing at Forbes Air National Guard Base, attached for training at Eglin AFB, FL.
8. April 1995 - October 1997, Weather Officer, 27 FW, Cannon AFB, NM supported the 140 FW at Buckley Air National Guard Base, CO.
9. October 1997 - November 2000, Weather Flight Commander, Nellis AFB, NV.
10. December 2000 - July 2002, Chief of Weather Applications, United States Weapons School, Nellis AFB, NV.
11. July 2002 - May 2006, IMA to Chief, Weather Operations Division, Headquarters Air Combat Command, Langley AFB, VA.
12. May 2006 - October 2007, IMA to the Director of Weather, Directorate of Current Operations and Training, Headquarters U.S. Air Force, Pentagon, Washington, D.C.
13. January 2007 – May 2007, Deputy Director of Weather, Directorate of Current Operations and Training, Headquarters U.S. Air Force, Pentagon, Washington, D.C.
14. May 2007 – September 2007, Acting Director of Weather, Directorate of Current Operations and Training, Headquarters U.S. Air Force, Pentagon, Washington, D.C.
15. October 2007 – present, IMA to the Chief, House Liaison Office, United States House of Representatives, Legislative Liaison, Office of the Secretary of the Air Force, Headquarters U.S. Air Force, Washington, DC.

MAJOR AWARDS AND DECORATIONS

Meritorious Service Medal with four oak leaf clusters
Air Force Commendation Medal with two oak leaf clusters
Air Force Achievement Medal
Master Meteorologist Badge

EFFECTIVE DATES OF PROMOTIONS

Second Lieutenant May 28, 1982

First Lieutenant May 28, 1984

Captain June 2, 1986

Major March 5, 1992

Lieutenant Colonel Sept. 18, 1998

Colonel April 1, 2002

FRED P. LEWIS **Doctor, Senior Executive Service,** **October 2007 – Present**

Fred P. Lewis was born in Cottonwood, AZ. A member of the Senior Executive Service, his government career began when he entered the Air Force through the ROTC program at the University of Arizona in 1972. While on active duty, he commanded a weather squadron, a computer systems group, and was the Air Force Director of Weather in addition to serving in many weather and joint staff officer assignments. In December 1985 he became the first Air Force weather officer selected for space shuttle duty, but never flew due to the Challenger disaster. He served on the U.S. Transportation Command Staff, including two years spent as Director of the Joint Transportation Corporate Information Management Center.



When Dr. Lewis was previously assigned as the Director of Weather, he led efforts to implement a total force transformation of the Air Force's weather functional area to significantly improve weather support for operators worldwide. Base weather station and deployed weather operators focused on mission execution and regional forecast units, called operational weather squadrons, prepared the necessary planning information such as terminal aerodrome forecasts, point weather warnings, and flight hazard information. He retired from the Air Force in 2000 in the rank of brigadier general.

During Dr. Lewis' current tenure he has focused his efforts on improving weather information provided to the Nation's warfighting forces. He revised the weather career field training pipeline; streamlined the acquisition of new weather capabilities; and injected new science and technology into the meteorological processes used by Air Force weather operators. Most notably was the delivery of improved weather observations and forecast capabilities to the U.S. Central Command's area of operations.

EDUCATION:

1972 Bachelor of Science degree in physics, University of Arizona

1973 Basic Meteorology Program, University of Utah

1979 Doctor of Philosophy in meteorology, University of Utah

1980 Distinguished graduate, Squadron Officer School, Maxwell AFB, AL.

1984 Armed Forces Staff College, Norfolk, VA.

1990 Air War College, Maxwell AFB, AL.

1996 Air Force Senior Leader Orientation Course, Crystal City, VA.

1998 Capstone General and Flag Officer Course, Fort Lesley J. McNair, Washington, D.C.

CAREER CHRONOLOGY:

1. September 1972 - June 1973, student, Basic Meteorology Program, University of Utah
2. June 1973 - June 1976, automated program designer, Air Force Global Weather Central, Offutt AFB, NE.
3. June 1976 - July 1979, doctoral student, Meteorology Program, University of Utah
4. July 1979 - January 1981, assistant chief, Numerical Forecast Section, Air Force Global Weather Central, Offutt AFB, NE.
5. January 1981 - December 1982, officer in charge, Weather Forecast Models Unit, Air Force Global Weather Central, Offutt AFB, NE.
6. January 1983 - January 1984, officer in charge, Operating Location B, Detachment 15, 30th Weather Squadron, Suwon Air Base, South Korea
7. January 1984 - July 1984, student, Armed Forces Staff College, Norfolk, VA.
8. August 1984 - May 1986, assistant chief, Environmental Services Branch, Headquarters Military Airlift Command, Scott AFB, IL.
9. May 1986 - July 1987, Vice Commander, U.S. Air Force Environmental Technical Applications Center, Scott AFB, IL.
10. July 1987 - August 1989, Commander, 26th Weather Squadron, Barksdale AFB, LA.
11. August 1989 - June 1990, student, Air War College, Maxwell AFB, AL.
12. June 1990 - October 1990, Deputy Chief of Staff, Automation Support, Airlift Communications Division, Headquarters Military Airlift Command, Scott AFB, IL.
13. October 1990 - August 1992, Commander, 1500th Computer Systems Group, Scott AFB, IL.
14. August 1992 - February 1994, Chief, Weather Division, U.S. Transportation Command, Scott AFB, IL.
15. March 1994 - July 1996, Director, Joint Transportation Corporate Information Management Center, U.S. Transportation Command, Scott AFB, IL.
16. July 1996 - June 2000, Director of Weather, Deputy Chief of Staff for Air and Space Operations, Headquarters U.S. Air Force, Washington, D.C.
17. August 2000 - August 2002, Vice President, IPS MeteoStar, Inc., Aurora, CO.
18. August 2002 - September 2005, President, IPS MeteoStar, Inc., Aurora, CO.
19. September 2005 - September 2007, Deputy Director, Distribution Portfolio Management, Command, Control, Communications and Computer Systems Directorate (TCJ6), U.S. Transportation Command, Scott AFB, IL.
20. October 2007 - present. Director of Weather, Deputy Chief of Staff for Air, Space and Information Operations, Plans and Requirements, Headquarters U.S. Air Force, Washington, D.C.

AWARDS AND HONORS:

Distinguished Service Medal
Defense Superior Service Medal
Legion of Merit
Meritorious Service Medal with four oak leaf clusters
Air Force Commendation Medal

OTHER ACHIEVEMENTS:

1998 Federal 100 Award, Federal Computer Week magazine, acknowledging the year's top 100 Information Technology professionals

2002 Distinguished Alumni Award, University of Utah Meteorology Department

EFFECTIVE DATES OF PROMOTION:

Second Lieutenant Jan. 26, 1972

First Lieutenant July 26, 1974

Captain July 26, 1976

Major Oct. 1, 1983

Lieutenant Colonel March 1, 1986

Colonel Oct. 1, 1989

Brigadier General Sept. 1, 1996

Senior Executive Service Sept. 2005

MAJCOM WEATHER FUNCTIONAL MANAGERS

Prior to 1991, the Air Weather Service wing structure provided operational support to the various MAJCOMs that existed at that time. With the disestablishment of Air Weather Service in 1991, MAJCOM's established weather functional manager positions at various levels within each command. This section lists the officer in charge of each MAJCOM position as of 2012. This information was based on research information gained through searches of various sources to create a chronology. Information not available is noted.

AIR COMBAT COMMAND

1 Oct 91-93	Col Thomas K. Klein, Sr.	2002-2004	Col Mark Welshinger
1993-1995	Col Ronald D. Townsend	2004-2006	Col Patrick M. Condray
1995-1997	Col Edward J. Eadon	2006-2009	Col Robert Mahood
1997-2000	Col Richard St. Pierre	2009-Present	Col Michael J. Dwyer
2000-2002	Col Kenneth Stokes		

AIR MOBILITY COMMAND

1 Oct 91	Col Melvin L. Turner	o/a Jul 02	Col Carl Daubach
o/a Feb 92	Col David O. Roark	May 03	Col Frederick Wirsing
o/a Jun 92	Col Joseph J. Butchko	Aug 06	Col Brian Bjornson
o/a Jul 93	Col Thomas P. Walters	Sep 09	Col John B. Knowles
o/a Jul 96	Col H. Webster Tileston III	Jun 12	Mr. Frederick Wirsing
o/a Jul 98	Col Philip G. Yavorsky		

PACIFIC AIR FORCES

1 Oct 91	Col Robert P. Wright	Apr 03	Col Robert L. Hamilton
Sep 92	Col Donald W. Pittman	Apr 04	Col Wendell T. Stapler
Dec 93	Col Clifford Matsumoto	May 07	Lt Col Bruce Shapiro
Jul 95	Col Charles W. French	Jul 08	Lt Col Paul Roelle
Aug 98	Col Robert H. Allen	Jul 10	Lt Col Gary Kubat
Nov 00	Col Joel D. Martin	Jul 11	Col Robert T. Swanson, Jr.

UNITED STATES AIR FORCES IN EUROPE

1 Oct 91	Col Richard J. Vogt	Dec 03	Col Ralph O. Stoffler
May 93	Col Earl C. Bogard	Jun 07	Col Kim M. Waldron
May 95	Col Michael A. Neyland	Jun 08	Col Frederick L. Fahlbusch
Jun 98	Col Paul H. Harris	Jun 12	Col Michael R. Dennis
Jun 01	Col Richard C. Clayton		

AIR FORCE SPACE COMMAND

1 Oct 91	Col James W. Overall	Jun 01	Lt Col Randy Thomas
o/a Sep 92	Lt Col Thomas W. Metzger	12 Aug 02	Lt Col Michael Bedard
95	Lt Col Alan E. Ronn	1 Apr 03	Mr. Alan Gibbs
o/a Jul 96	Lt Col Billy G. Davis	Mar 06	Mr. Jeffrey L. Carson
Aug 98	Lt Col Steve Carr		

AIR EDUCATION AND TRAINING COMMAND

91	Col Patrick J. Larkin	Jun 98	Lt Col Norbert Cordeiro
Jun 92	Unknown	Jul 00	Lt Col Michael Hoofard
Jun 94	Lt Col Dave McClurkin	10 Sep 02	Lt Col Charles M. Davenport
Jul 96	Lt Col Larry J. Becker	5 Jul 09	Mr. Charles M. Davenport

AIR FORCE MATERIEL COMMAND

Jul 92	Col John L. Hayes	o/a Oct 02	Lt Col David Goe
Jun 94	Col Joel D. Bonewitz	Unknown	Lt Col Scott Saul
o/a Jun 96	Col Philip G. Yavorsky	Oct 06	Lt Col Steven P. Dickey
Nov 98	Lt Col Terry Clark	Feb 10	Lt Col Douglas Tunney
Jun 00	Lt Col Dave Sautter		

AIR FORCE SPECIAL OPERATIONS COMMAND

91	Maj John R. Conley	Jul 05	Col Robert L. Russell
93	Lt Col Cranston R. Coleman	Aug 07	Col William J. Spendley
Jul 96	Col James H. Love	Jun 10	Col Michael R. Dennis
Aug 01	Lt Col Michael Davenport	May 12	Lt Col Bryan Adams

AIR FORCE GLOBAL STRIKE COMMAND

7 Aug 09	Maj. Jason Blackerby
Jun 10	Lt Col Edward Harris
Jul 11	Lt Col Neal Sanger

AIR WEATHER SERVICE COMMANDERS

WILLIAM O. SENTER
Lieutenant General, United States Air Force
First Commander of Air Weather Service
14 April 1943 - 14 March 1945
&
Fourth Commander of Air Weather Service
1 August 1950 - 22 April 1954

William Oscar Senter was born 15 June 1910 near Stamford, Texas. He attended grade school and high school in Abilene, Texas. After one year at Hardin-Simmons University, he was appointed in 1929 to West Point. While at West Point, he lettered in football and lacrosse. He entered the Air Corps Flying School at Randolph Field, Texas, in 1933, and received his pilot wings in October 1934. In April 1937 Lieutenant Senter married Ruth Jane Tinsley. The Senters raised two daughters.

As a second lieutenant he served at Langley Field, Virginia, with the 20th Bomb Squadron of the 2d Bomb Group. There Major Barney M. Giles selected Lieutenant Senter to be his navigator when the Army Air Corps took delivery of Boeing's first production B-17 bomber.



In June 1938 First Lieutenant Senter completed his meteorology training at the Massachusetts Institute of Technology, studying under Carl-Gustav Rossby and Hurd C. Willet. He was then assigned as station weather officer at Maxwell Field, Alabama. There he was promoted to captain (October 1940) and major (July 1941). He eventually commanded the 4th Weather Squadron. Promoted to lieutenant colonel in January 1942, he was assigned to the Army Air Forces Headquarters in Washington, D.C., as Chief of the Operations Division of the Directorate of Weather. He was promoted to colonel on 21 July 1943.

Colonel Senter assumed command of and organized the Army Air Forces Weather Wing in Asheville, North Carolina, when the Directorate of Weather was disbanded in 1943. In March 1945 Colonel Senter was assigned to command the Far East Air Forces (FEAF) Weather Group (Provisional), and became staff weather officer to Lieutenant General George C. Kenney and later meteorological advisor to General of the Army Douglas MacArthur. In September 1945 the FEAF Weather Group became the 43d Weather Wing, which moved to Tokyo in March 1946. In addition to his normal duties, he was also responsible for the rehabilitation of the Japanese and Korean weather services and for the establishment of a weather service within the Ryukyuan Islands.

In July 1948 he entered Air War College and, after graduation in June 1949, became Deputy Chief of Air Weather Service. On 1 August 1950 he assumed command of the Air Weather Service and was promoted to brigadier general on 4 August. He was promoted again on 8 March 1952 making him the first major general to command Air Weather Service. He moved to Headquarters Air Materiel Command in 1957 and was subsequently assigned as the Assistant

Deputy Chief of Staff for Material at Headquarters U.S. Air Force in 1959. Promoted to lieutenant general in August 1963, he was named Director of Petroleum Logistics Policy in the Office of Assistant Secretary of Defense. He retired in 1966.

Significant events during General Senter's tenure as AWS Commander include the establishment of the Severe Weather Warning Center at Tinker in February 1951; and the reorganization of AWS from geographic to functional support in May 1952.

JAMES W. TWADDELL, JR.
Colonel, United States Army
15 March 1945 - 30 June 1945
Second Commander Air Weather Service

James W. Twaddell, Jr., a native of Germantown, PA, was born in 1911. He enlisted in the Pennsylvania National Guard in 1929 and served until he received an appointment in 1932, to the U.S. Military Academy at West Point in. Graduating in 1936 as a Cavalry officer, he attended pilot training at Randolph and Kelly Fields in San Antonio, TX. His first pilot assignment was to the 24th Pursuit Squadron, Panama Canal Zone from Nov 1937 until May 1940.



Col Twaddell received his weather training as a graduate student at Massachusetts Institute of Technology graduating in May 1941. His professional military education included attendance at the Air Command and Staff College and the National War College.

Col Twaddell was assigned as a weather officer to the 88th Reconnaissance Squadron, Ft Douglas, UT. On 7 Dec 1941, he was the vice commander of a squadron of B-17, Flying Fortress bombers that arrived at Pearl Harbor as the Japanese attacked. He crashed landed his plane on a beach on the North Shore of Hawaii. He remained briefly in Hawaii until he was reassigned back to the 88th Reconnaissance Squadron which had now located to Townsville, Australia. From April 1942 until October 1944 he served as the 5th AF Weather Officer, Southwest Pacific AAF, Melbourne, Australia, where he helped organize a weather wing that provided weather services in the Australian and New Guinea areas of operation. In November 1944 he was assigned to the AAF Weather Service initially as the deputy commander and then briefly as the commander. After leaving the headquarters, Col Twaddell commanded the 8th Weather Group at Westover AFB, MA, 2059th Air Weather Wing, Tinker AFB, OK, 2143rd Weather Wing, Far East Air Force, Tokyo, Japan, and was the first commander of 1st Weather Wing. While at the 2059th he was instrumental in formulating the conduct of weather operations during the Korean War.

Following his tour of the Far East he returned to Washington D.C. to serve as the Chairman of the Joint Study Group, Joint Chiefs of Staff and instructor and then Vice-Commandant of the National War College. The final 6 years of service were with Air Defense Command, first as Vice Commander of the 25th Air Division, McChord AFB, WA and then as Vice Commander of the 30th Air Division, Truax Field, WI. He retired from the Air Force in June 1966.

His awards and decorations included the Silver Star, three awards of the Legion of Merit, and two awards of the Air Force Commendation Medal.

DONALD N. YATES
Lieutenant General, United States Air Force
Third Commander – 10 January 1945 – 31 July 1950
[Biography listed with Directorate of Weather list]

THOMAS S. MOORMAN
Lieutenant General, United States Air Force
Fifth Commander – 23 April 1954 – 27 March 1958
[Biography listed with Directorate of Weather list]

HAROLD H. BASSETT,
Major General, United States Air Force
Seventh Commander – 13 November 1958 – 31 October 1959
[Biography listed with Directorate of Weather list]

NORMAN L. PETERSON
Brigadier General, United States Air Force
Sixth Commander of Air Weather Service
8 March 1958 - 12 November 1958
&
Eighth Commander November
1959 - 17 March 1963

Norman Lewis Peterson was born in Houston, Texas, on 28 November 1911. He attended Alamo Heights High School in San Antonio, Texas, and later married Roselle Fulmore. They raised three children. He entered Yale University at New Haven, Connecticut, and graduated with a Bachelor of Arts degree, majoring in history, in 1932. On 1 October 1936 he was commissioned a second lieutenant in the Regular Army (Air Corps) after earning his pilot wings at Kelly Field, Texas.

After performing numerous Air Corps assignments, he entered the California Institute of Technology in 1940 where he wrote a masters thesis titled, "The Origin and Movement of Tropical Hurricanes." He was promoted to captain 9 September 1940 and to major 5 December 1941. He became station weather officer at Langley AFB, Virginia, and later at Bolling AFB, Washington, D.C. He was promoted to lieutenant colonel on 1 March 1942, and in November 1942 he became commander of the 2d Weather Region.

In September 1943 Lieutenant Colonel Peterson was transferred to the South Pacific theater as Commander, 17th Weather Region and on 1 January 1944 was promoted to the grade of colonel. In July 1944 Colonel Peterson left the Air Weather Service to serve on the staff of Lieutenant General Millard F. Harmon, Commander of Army Air Forces in the Pacific Ocean Area. In September 1945 he served as Commander, 400th Army Air Forces (AAF) Base Unit (Headquarters, 4th Air Force) for a year and as Commander, 465th AAF Base Unit at MacDill AFB, Florida, for a year.



In 1947 he returned to Air Weather Service as Chief of Staff, 59th Weather Wing, Tinker AFB, Oklahoma, and the following year he attended Air War College. He was subsequently assigned as commanding officer of the 2108th Air Weather Group at Westover AFB, Massachusetts, in 1949. In October 1951 he was assigned as Commander, 2058th Air Weather Wing (now 2d Weather Wing) in Wiesbaden, Germany, where he became staff weather officer for the U.S. Air Forces in Europe.

In April 1954 Colonel Peterson returned to the United States to become Deputy Commander, Air Weather Service. On 28 March 1958 he became commander of the Air Weather Service serving in that capacity until Major General Harold H. Bassett assumed command on 13 November 1958. Peterson was promoted to brigadier general on 20 November 1958 and served as AWS Vice Commander until 31 October 1959, at which time he again assumed command of Air Weather Service. In 1963 he was assigned as Commander, Air Force Communications Service's Pacific Communications Area at Wheeler AFB, Hawaii.

Significant events during General Peterson's tenure as AWS Commander include the world's first weather satellite launch on 1 April 1960; issuance of the first official clear air turbulence forecast from the Kansas City Centralized Forecast Facility on 1 November 1961; implementation of the first Continental U.S. Meteorological Teletype (COMET) System on 28 August 1962; release of the first solar forecast in October 1962.

ROY W. NELSON, JR.
Brigadier General, United States Air Force
Ninth Commander of Air Weather Service
18 March 1963 - 5 October 1965

Born in Tacoma, Washington, on 20 September 1916, Roy Nelson attended Lincoln High School in Seattle. He married Helene Snow and they raised three children. In 1934 he entered the University of Washington and in 1940 he graduated from West Point. He was commissioned a second lieutenant on 11 June 1940 after receiving his pilot wings at Stockton, California. He was promoted to first lieutenant 10 October 1941, and soon thereafter entered the California Institute of Technology to study meteorology.

During World War II he served in the Mediterranean theater of operations as staff weather officer to the North African Coastal Command and to Major General Nathan W. Twining's Fifteenth Air Force from its activation until V-E Day.

In 1947 he was transferred to Guam where he commanded the 514th Reconnaissance Squadron, Very Long Range, Weather, which was the first B-29 weather reconnaissance squadron overseas. In January 1948 he became Deputy Commander, 43d Weather Wing in Tokyo, Japan. In July he was promoted to lieutenant colonel.

In December 1949 he returned from the Far East to attend the Armed Forces Staff College, from which he graduated in June 1950. Reassigned to Air Weather Service headquarters, he served as Director of Plans and Organization until August 1951 when he became AWS Chief of Staff at the rank of colonel.



In 1951 he was appointed commander of MATS activities supporting the Operation Ivy nuclear bomb tests in the Pacific. When he returned he was assigned as commander of the newly activated 9th Weather Group at Andrews AFB, Maryland.

In 1955 Colonel Nelson entered the National War College. After his graduation in 1956, he went to Europe to command the 2d Weather Wing at Wiesbaden, Germany, in February 1957. He remained there until July 1960 when he became Vice Commander, Air Weather Service. Promoted to brigadier general on 26 February 1963, Nelson became Air Weather Service Commander on 18 March 1963. In October 1965 he was reassigned to Travis AFB as Deputy Commander of MATS' Western Transport Air Force.

Significant events during General Nelson's tenure as AWS Commander include the JCS decision to develop weather support concepts for the Worldwide Military Command and Control System (WWMCCS) on 2 April 1963; receipt by 3WW of the first operationally ready automatic picture transmission (APT) weather satellite readout on 20 August 1963; redesignation of the Washington D.C. Climatic Center as the Environmental Technical Applications Center on 15 December 1964; and opening of the Automated Weather Network (AWN) to link Fuchu AS, Japan, RAF High Wycombe, United Kingdom and Global Weather Central, Offutt AFB, Nebraska, through the Tinker AFB, Oklahoma, switch on 1 July 1965.

RUSSELL K. PIERCE, JR.
Major General, United States Air Force
Tenth Commander of Air Weather Service
6 October 1965 - 26 July 1970

Russell K. Pierce was born in Fremont, Nebraska, on 17 January 1921. After graduation from Fremont High School in 1939, he attended Midland College where he majored in chemistry and mathematics. He joined the Army Air Corps in August 1941 and began flight training at Mather Field, Sacramento, California, where he received his commission as a second lieutenant in March 1942. In November 1943 he married Helenjane Gray and they raised three children.



During World War II, Lieutenant Pierce served with the 98th Bombardment Group in Palestine and the Middle East as a B-24 pilot. He flew 33 missions. In April 1943 he was promoted to captain and assigned as a B-24 aircraft instructor pilot at Casper, Wyoming.

In early 1944 he became section commander and director of flying training in B-29 aircraft at air bases in Nebraska and New Mexico. He attended the command and General Staff School at fort Leavenworth, Kansas, in 1946, and the Weather Officers School at Chanute AFB, Illinois, in 1947.

In June 1947 he went to Lowry Field, Colorado, and served as station weather officer until July 1948 when he became Commander, 19th Weather Squadron, as a 24-year-old major.

In May 1951 he went overseas to Tripoli, Libya, as Commander, 29th Weather Squadron until September 1953. He was then assigned as operations officer for the 1st Weather Group at Offutt AFB, Nebraska. In July 1954 he became commander of the 3d Weather Group. Following graduation from the Air War College in June 1959, he was assigned as the Commander, 10th

Weather Group, and staff weather officer to the Fifth Air Force, Fuchu Air Station, Japan. In October 1960, upon inactivation of the 10th Weather Group, he became commander of the advanced echelon of the 1st Weather Wing at Fuchu. In early 1961 he was assigned as the Deputy Commander, 3d Weather Wing, and in July 1963 he took command of the 3d Weather Wing.

On 6 October 1965 he assumed command of the Air Weather Service at Scott AFB, Illinois. He was the only AWS Commander without service on the Headquarters AWS staff. He was promoted to brigadier general in March 1966, at age 45, and to major general in March 1969. In July 1970 he was appointed Deputy Commandant, Industrial College of the Armed Forces.

Significant events during General Pierce's tenure as AWS Commander include the first operational test of cold fog dissipation using dry ice with tethered balloons (test results determined inconclusive); establishment of the Air Force Global Weather Central on 7 October 1966; and operation of the first Automated Digital Weather Switch at Carswell AFB, Texas, in 1969.

WILLIAM H. BEST, JR.
Brigadier General, United States Air Force
Eleventh Commander of Air Weather Service
27 July 1970 - 29 July 1973

William Henry Best was born in Brooklyn, New York on 24 August 1920. He graduated from Princeton University in 1941 with a bachelor of arts degree in mathematics. Enlisting in the Army Air Corps in August 1942, he graduated from the aviation cadet course in meteorology at the Massachusetts Institute of Technology in September 1943, when he was commissioned as a second lieutenant. He married Evelyn Louise Gonzales of Yonkers, New York, and they raised four children.



From 1943 to 1945 Lieutenant Best served as a weather officer in the Pentagon Weather Central and earned his captain bars in February 1945. In June 1945 he was released from active military service, and in April 1946 he began work as a U.S. Weather bureau meteorologist and staff weather officer for the Colorado Air National Guard in Denver. He was recalled to active military duty in June 1947.

From July 1947 through December 1949 he was chief forecaster at the U.S. Air Force Weather Central at Haneda, Tokyo, Japan. After graduation from the Air Tactical School at Tyndall AFB, Florida, in April 1950, he became Assistant Operations Officer, 2102d Weather Group at Mitchel AFB, New York. In 1951 he obtained a master's degree in meteorology from New York University under the Air Force Institute of Technology Program and was subsequently assigned to the Air Weather Service headquarters in Washington D.C., in July 1951. He was promoted to major in September.

Major Best entered the University of Stockholm, Sweden, in August 1954 under the Air Force Institute of Technology directorate-level program, and one of the first U.S. Air Force officers to be so selected. He received the rank of lieutenant colonel in April 1955, and was

assigned as Assistant Technical Services Officer, 2d Weather Wing, at Furstenfeldbruck, Germany, in August 1955.

In October 1957 he returned to the United States and assumed command of Detachment 30, 5th Weather Group, at Westover AFB, Massachusetts. In August 1960 he entered Air War College and was promoted to the rank of colonel on 10 March 1961. In July 1961 he became Deputy Commander, 4th Weather Group at Andrews AFB, Maryland. In July 1963 he returned to Westover and was assigned as Commander, 8th Weather Squadron, and staff weather officer for SAC's 8th Air Force. In June 1966 he assumed command of the 7th Weather Wing and one year later became Deputy Chief of Staff for Operations, Air Weather Service. In February 1970 he became AWS Vice Commander and received his first star. On 27 July 1970 Brigadier General Best took command of Air Weather Service. He was the first nonrated Air Weather Service commander. Three years later he retired.

Significant events during General Best's tenure as AWS Commander include the transfer of the MAC computer flight plan function from Suitland, Maryland, to AFGWC on 1 August 1970; operation of the Automatic Response to Query (ARQ) system with the ADWS at Carswell AFB, Texas, on 3 November 1970; launching of the centralized terminal forecast program which led to AFGWC on 1 November 1971 issuing terminal forecasts for all U.S. units; and inactivation of the last AWS unit in South Vietnam on 3 March 1973.

THOMAS A. ALDRICH
Major General, United States Air Force
Twelfth Commander of Air Weather Service
30 July 1973 - 14 February 1974

Thomas A. Aldrich was born on 30 November 1923 in Rosebud, Texas. He enlisted in the Army Air Forces in December 1942. An avid hunter and sports enthusiast, he married Virginia Peterson of Alta, Iowa, and they raised three children.

In February 1944 he was commissioned after completing the aviation meteorological cadet training at the University of Chicago. He was corps commander of his cadet class. First assigned as a weather officer at Goodfellow Field, Texas, he later went to Waco Army Air Field, Texas, as a weather instructor. He was transferred to the Air Reserve School, Keesler Field, Mississippi, as an assistant station weather officer and later as detachment commander.

In August 1946 he was sent to Japan and served as station weather officer, squadron communications, officer, and operations and training officer with the 20th Weather Squadron.

In March 1950, at the age of 26, he completed basic and advanced pilot training at Randolph AFB, Texas, and Vance AFB, Oklahoma, respectively. He was promoted to captain on 19 December 1950. From April 1950 to November 1952 he was assigned as officer-in-charge of flight operations for the 10th Weather Squadron and as squadron weather officer with the 55th Strategic Reconnaissance Squadron, Medium, Weather, McClellan AFB, California. In November 1952 he was transferred to the 58th Strategic Reconnaissance Squadron, Medium,



Weather, Eielson AFB, Alaska. Rated as a command pilot with more than 7,500 flying hours, he flew more than 50 polar ice cap missions in WB-29 aircraft.

Major Aldrich joined Headquarters Air Weather Service, Andrews AFB, Maryland, in March 1955 as Chief, Programs and Standards Branch, Office of the Deputy Chief of Staff for Operations. In 1957 he was named Deputy Director, Air Operations, and went with the headquarters when it moved to Scott AFB, Illinois. In August 1960 Lieutenant Colonel Aldrich began studies at the Air War College.

He was reassigned to Victoria, Australia, in September 1962 where he commanded the first Air Force flying unit in the "land down under" since World War II, the 57th Weather Reconnaissance Squadron, based at Avalon Airfield. At that time, he was the only United States Air Force base commander in Australia, and the only base commander in Air Weather Service.

Lieutenant Colonel Aldrich was assigned to Maxwell AFB, Alabama, in September 1965. Promoted to colonel on 20 December 1965, he was on the staff of the Air Command and Staff College as Chief, Military Employment Division and Deputy Director of Curriculum. In July 1968 Colonel Aldrich started a one-year tour of duty as Director of War Plans, Headquarters MAC. He was named Vice Commander, 9th Weather Reconnaissance Wing (which was responsible for all U.S. Air Force weather reconnaissance and atmospheric sampling throughout the world) at McClellan AFB, California, in July 1969, and in October he assumed command of that organization.

In July 1970 Colonel Aldrich was named Vice Commander, Air Weather Service, Scott AFB, Illinois. He became Commander, U.S. Forces, Azores, and Commander, 1605th Air Base Wing, Lajes Field, Azores, in June 1971. He was promoted to brigadier general effective 1 August 1971 and on 30 July 1973 he assumed command of Air Weather Service. He was reassigned as the Deputy Chief of Staff for Plans, Headquarters MAC in February of 1974, where he pinned on his second star. Major General Aldrich took over MAC's Twenty-Second Air Force in August 1975, and in March 1978 he retired from the Air Force.

Significant events during General Aldrich's tenure as AWS Commander include assignment of the first female weather reconnaissance crewmember, a dropsondes operator, in December 1973; operation of a liquid propane cold fog dissipation system at Elmendorf AFB, Alaska, in October 1973; establishment of Palace Weather, a concept for management of weather officer personnel actions on 1 December 1973 (three years later it included enlisted as well) at Randolph AFB, Texas; and the beginning of an AWS program to qualify all enlisted weather people as both observers and forecasters.

JOHN W. COLLENS III
Major General, United States Air Force
Thirteenth Commander of Air Weather Service
15 February 1974 - 5 August 1975

John Collens was born on 14 November 1924 in Monroe, Louisiana. He attended Loyola University at New Orleans, the University of Mississippi at Oxford, and Schreiner College at Kerrville, Texas. His hobby was golfing. He married Barbara Wesbrook of Chico, California, and they raised two children.

He began his military career as an aviation cadet in May 1943 and received his commission and pilot wings in April 1944. First Lieutenant Collens served as a pilot at Gulfport Army Air Field, Mississippi, until October 1944 when he went to the European theater of operations where he flew 28 B-17 combat missions with the 96th Bombardment Squadron. He was released from active duty in October 1945.



In March 1949 First Lieutenant Collens returned to active duty. After attending the Weather Officer Course at Chanute AFB, Illinois, he entered the Air Weather Service. In March 1950 he was sent to Okinawa as a weather forecaster with the 15th Weather Squadron. In 1950 he was sent to Okinawa as a weather forecaster with the 15th Weather Squadron. In 1951 he was in Korea with the 6166th Air Weather Reconnaissance Flight with whom he flew, over a period of six months, 75 tactical weather reconnaissance combat missions in WB-26Cs. He was a command pilot with more than 5,600 flying hours, which included more than 1,200 hours in single jet engine aircraft.

Captain Collens was a weather forecaster at Shaw AFB, South Carolina, from October 1951 to July 1954. In July 1954 he transferred to Germany and commanded the weather detachment at Sembach Air Base. Then in October 1956 Major Collens moved to Ramstein Air Base to serve on the weather operations staff of the 30th Weather Squadron. He accompanied a squadron of fighter aircraft on a month-long exercise in Pakistan, providing their weather support through liaison with foreign meteorological agencies.

In July 1958 Major Collens returned to the United States for duty with Headquarters Air Weather Service as a staff duty officer, Deputy Chief of Staff Plans, Scott AFB, Illinois. He served on the ad hoc committee that justified and obtained the first sole-use computer for AFGWC. He entered Air Command and Staff College in July 1960.

In July 1961 he served on the Twelfth Air Force weather operations staff at Waco, Texas. Major Collens was the weather officer for Air Task Force 13 at Taipei, Taiwan, from July 1963 to July 1965. At that time he was assigned to the 5th Weather Wing Operations Staff at Langley AFB, Virginia, and promoted to lieutenant colonel in February 1966.

He was assigned to the 58th Military Airlift Squadron at Robins AFB, Georgia, in September 1966, and flew 40 C-141 combat support missions into Vietnam. In June 1969 he was reassigned as Chief, Civil Air Division, Headquarters Military Airlift Command (MAC), Scott AFB, Illinois. He then became Director, Studies and Analysis, HQ MAC.

In June 1971 Colonel Collens was appointed Vice Commander, Air Weather Service, and in May 1973 he was named Commander, 9th Weather Reconnaissance Wing at McClellan AFB, California. On 22 January 1974 the Air Force announced Colonel Collens' nomination for

promotion to brigadier general (he pinned on his new rank on 1 September 1974, with an adjusted date of rank of 9 August 1974), and on 15 February 1974 he became Air Weather Service Commander. On 5 August 1975 he moved to Headquarters MAC as Deputy Chief of Staff for Plans. He received his second star on 1 September 1976 and was appointed Headquarters MAC Chief of Staff on 11 July 1977. In November 1978 he became the Deputy Inspector General, Headquarters USAF, Washington, D.C. He retired in October 1979 from that position.

Significant events during General Collens' tenure as AWS Commander include aerial photography by the 53WRS of a non-nuclear detonation at the Nevada Test Site on 17 August 1974; launch of the first rocketsonde from Shemya, 26 March 1974; operation of the first SOON telescope at Palehua, Hawaii, on 1 July 1975; initiation of weather support for Apollo Test Project, 14 July 1975; and the selection of the first enlisted detachment commander in 1975.

BERRY W. ROWE
Brigadier General, United States Air Force
Fourteenth Commander of Air Weather Service
August 1975 - 16 August 1978

Born on 14 September 1924 in Kanarra, Utah, Berry W. Rowe graduated from Las Vegas High School, Las Vegas, Nevada, in 1942. One of his favorite hobbies was photography. He married Alta Carter of Logan, Utah, and they raised three children.

He began his military career as an enlisted man in the Army Air Corps serving with the 17th Airborne Division and the Corps of Engineers during World War II. He received a commission as a second lieutenant in 1949 and was a distinguished military graduate of the Air Force Reserve Officers Training Corps program at Utah State University, where he received his bachelors degree in political science.



He entered Air Tactical School in Florida and upon graduation requested and received an assignment to Air Weather Service. From May 1950 to August 1951, he served as squadron reserve coordinator at Lowry AFB, Colorado. He then entered Pennsylvania State University and received a Bachelor of Science degree in meteorology in 1952. He was reassigned as a detachment weather officer at Nellis AFB, Nevada, in August 1952 and the following year received orders to go to Okinawa where he provided forecaster support for B-29 operations.

In November 1953, he became wing manpower officer in Tokyo, Japan, and remained in that position until January 1956. He rotated to Washington, D.C., to serve as detachment weather officer at Bolling AFB until July 1956 when he became a member of the Group Forecasting/Technical Services at Andrews AFB, Maryland. Later he served in the same capacity at Scott AFB, Illinois. He entered Air Command and Staff College, Maxwell AFB, Alabama, in July 1960.

From July 1961 to July 1964, he served as assistant staff weather officer for the Pacific Air Forces at Hickam AFB, Hawaii. He was then assigned as Director, Long Range Plans, Headquarters AWS, at Scott AFB, Illinois, from July 1964 to January 1968. It was there he conceived the idea of an AWS Council, which came into being in November 1967. He then

became Deputy Assistant for Weather in the Office of the Deputy Chief of Staff for Programs and Resources, Headquarters USAF, Washington, D.C. He pinned on his colonel's eagles in 1969.

Colonel Rowe was assigned as commander of the 1st Weather Group at Tan Son Nhut Air Base, Republic of Vietnam, from January until June 1972 when it was inactivated as part of the American withdrawal from Southeast Asia. In July 1972, he became Commander, 10th Weather Squadron at Udorn, Thailand.

He returned to Scott AFB in November 1972 to serve as Inspector General for Headquarters AWS. In May 1973 he was transferred to Offutt AFB, Nebraska, where he served as Vice Commander, 3d Weather Wing until February 1974 when he became commander of that wing. On 18 July 1975 Colonel Rowe again returned to Scott, this time as Vice Commander, AWS. On 6 August 1975 he became AWS commander. He was promoted to the grade of brigadier general on 15 December 1975 and retired from the Air Force on 1 September 1978.

Significant events during General Rowe's tenure as AWS Commander include relocation of USAFETAC to Scott AFB, Illinois, on 30 August 1975; initial implementation of the Continental U.S. Meteorological Data System (COMEDS) on 1 July 1976; issuance by AFGWC of Mission Success Indicators for aerial refueling operations on 1 September 1976; the launch of a new generation of Defense Meteorological Satellites (Block 5D) in September 1976; and the implementation of the "single career ladder" whereby enlisted observers eventually became forecasters.

ALBERT J. KAEHN, JUNIOR
Brigadier General, United States Air Force
Fifteenth Commander of Air Weather Service
17 August 1978 - 29 July 1982

Born in Queens County, New York, on 2 December 1929, Albert J. (A.J.) Kaehn graduated from John Adams High School in Ozone Park in 1947. He received his bachelor's degree in 1951 and a masters of arts degree in 1952 from the State University of New York at Albany. He married Melina (Melly) Kayaian and they raised two children.

He entered active duty via a direct commission in the Air Force Reserve in 1952. He then studied undergraduate meteorology at Pennsylvania State University through the Air Force Institute of Technology program.

Lieutenant Kaehn served as a detachment forecaster in Korea in 1954, supporting fighter bomber and fighter interceptor operations. He was also a forecaster at Roslyn, New York, for Air Defense Control Center operations. From April 1956 to March 1959 he flew tactical aerial weather reconnaissance in WB-26 and WB-66D aircraft with the 42d Tactical Reconnaissance Squadron in Europe. He was commissioned into the Regular Air Force in 1958.

His duty as Assistant Professor of Air Science and Commandant of Cadets in the Air Force Reserve Officers Training Course at New York University from April 1959 to August 1962 was followed by graduate work in meteorology at New York University. In 1964 Captain



Kaehn was assigned to Headquarters AWS, serving as a division chief in the Aerospace Sciences staff agency until 1968, and then as a Director of Special Projects (the “vault” area that managed AWS support to sensitive and highly classified Defense Department and Air Force missions) where, by 1970, he had risen to the rank of lieutenant colonel.

From July 1970 until July 1971 he commanded the 10th Weather Squadron in Thailand, and in October 1971 he was promoted to colonel below the zone. Following oceanography training at the U.S. Naval Postgraduate School at Monterey, California, Colonel Kaehn became a Military Assistant for Environmental Sciences, Office of the Director, Defense Research and Engineering, Office of the Secretary of Defense. In March of 1974, he testified as an expert witness in behalf of the Defense Department during sensitive hearings conducted by Senator Clairborne Pell into AWS’ rainmaking operations in Southeast Asia.

In July 1975 Colonel Kaehn was assigned as Commander, 3d Weather Wing, with concurrent duty as Director of Weather, Deputy Chief of Staff for Operations, Headquarters Strategic Air Command, Offutt AFB, NE. He became Commander, Air Weather Service on 17 August 1978. He was promoted to brigadier general effective 1 May 1979.

Significant events during General Kaehn’s tenure as AWS Commander include return of the 24-hour forecast to the base weather station; restoration of selective reenlistment bonuses for the enlisted; and initiation of the two-tier enlisted promotion system. On 27 July 1982, AWS’ noncommissioned officers recognized General Kaehn’s significant contributions to the welfare and prestige of the AWS enlisted force by awarding him the Order of the Sword.²

GEORGE E. CHAPMAN
Brigadier General, United States Air Force
Sixteenth Commander of Air Weather Service
30 July 1982 - 30 June 1988

George Chapman was born in Detroit, Michigan, on 3 April 1934. His hobbies included nearly all sports and, in particular, golf. He married Lisa Modde and they raised four children.

He enlisted in the U.S. Air Force in July 1952 and subsequently attained the rank of staff sergeant. He was commissioned through the Officer Candidate School as a second lieutenant in September 1959. He then served as a forecaster at Laredo AFB, Texas, until 1963, interrupted by an extended temporary tour at Point Mugu Naval Air Station, California, as a member of a weather satellite team developing TIROS (Television Infrared Observation Satellite) in 1962.



He entered the Air Force Institute of Technology program in 1963 and received a bachelors degree in meteorology from Texas A&M in 1965. Captain Chapman then went to South Ruislip, England where he served first as the staff weather officer to Headquarters Third Air Force, and then as director of the AWS’ Terminal Forecast Facility there from 1965 to 1968.

Major Chapman completed his masters degree at the Massachusetts Institute of Technology in 1969 and was then assigned as staff meteorologist at the Space and Missile

² Web, *Order of the Sword (United States)*, Wikipedia, the free encyclopedia, #79, downloaded from [http://en.wikipedia.org/wiki/Order_of_the_Sword_\(United_States\)](http://en.wikipedia.org/wiki/Order_of_the_Sword_(United_States)), 11 Feb 2012

Systems organization, Los Angeles, California from 1969 to 1970. Reassigned to the Republic of Vietnam in late 1970, he served initially at Headquarters 1st Weather Group at Tan Son Nhut, and then as Commander, Detachment 18, 30th Weather Squadron, at Cam Ranh Bay.

Following his attendance at the Armed Forces Staff College in 1972, he was assigned to Headquarters AWS from July 1972 to June 1975. He held positions of Chief, Analysis Division, and Director of Operational Evaluation. He completed the Industrial College of the Armed Forces by correspondence in 1975. On 16 June 1975 Lieutenant Colonel Chapman was assigned as commander of the 25th Weather Squadron, Bergstrom AFB, Texas, supporting TAC's Twelfth Air Force. He entered Air War College in residence in 1977, completing his coursework in 1978.

Colonel Chapman was then assigned to Headquarters U.S. Air Force, Office of the Deputy Chief of Staff for Research, Development and Acquisition, as acting Chief, Aeronautical Systems Division, and as special assistant for the Airborne Early Warning and Control System (AWACS). In the latter role, he served as U.S. government agent for the NATO AWACS program and the NATO AWACS program and the U.S. representative to the NATO Program Management Office Technical and Configuration Committee and Board of Directors' meetings in Brunssum, Netherlands.

In July 1980 Colonel Chapman was assigned as Vice Commander, Air Force Global Weather Central (AFGWC), Offutt AFB, Nebraska, and in June 1981 he assumed command of AFGWC. He became Commander, Air Weather Service, on 30 July 1982 and attained the rank of brigadier general on 1 June 1985. He was the first commander to rise through the AWS enlisted ranks.

Significant events during General Chapman's tenure as AWS Commander include bringing the manning of the enlisted forecaster career field up to 100% in 1986 for the first time since Vietnam drawdowns; installation of various types of digital equipment at base weather stations; distribution of personal computers and microprocessors throughout AWS; implementation of a sixth generation computer (Cray X-MP) at AFGWC; and arranging for a weathernaut to fly aboard the space shuttle. On 26 April 1986, AWS' noncommissioned officers recognized General Chapman's significant contributions to the welfare and prestige of the AWS' enlisted force by awarding him the Order of the Sword.³

JOHN J. KELLY, JR.
Brigadier General, United States Air Force
Seventeenth Commander – 1 July 1988 – 20 Mar 1991
[Biography listed with Directorate of Weather list]

³ *Ibid*, #105

GEORGE L. FREDERICK, Jr.
Colonel, United States Air Force
Eighteenth Commander of Air Weather Service
21 March 1991 - 27 May 1993

George L. Frederick, Jr. was born Dec. 27, 1940, in Sandusky, Mich. He received a Bachelor of Science degree in engineering sciences from the United States Air Force Academy, June 5, 1963. He completed basic meteorology training at the University of California, Los Angeles and earned a Master of Science degree in meteorology at the University of Wisconsin in January 1969. He completed Squadron Officer School, Army Command and General Staff College, and the National Defense University.



Colonel Frederick's first weather assignment was as a wing weather officer for the 23rd Tactical Fighter Wing, McConnell AFB, KS. Following an Air Force Institute of Technology tour, he was assigned as staff meteorologist to the Air Force Flight Test Center, Edwards AFB, CA where he provided weather advice and technical data to flight test directors and engineers. In late 1970, he assumed command of Detachment 6, 5th Weather Squadron, Qui Nhon Army Airfield, South Vietnam. Later, he was appointed staff weather officer to the U.S. Army's 23rd Infantry Division (Americal), Chu Lai Army Installation, South Vietnam.

In late 1971, the colonel returned from Southeast Asia to become assistant chief of the Atmospheric Dynamics Division, DCS Aerospace Sciences, Headquarters AWS. For more than two years, he was responsible for exploiting advances in computer technology, numerical weather prediction techniques, and employment of remotely piloted vehicles for weather data collection.

In 1975, Colonel Frederick was appointed staff weather officer of the U.S. Army's III Corps and commander of Detachment 14, 5th Weather Squadron, Fort Hood, TX. Additionally, he supervised tactical cadre weather teams assigned to deploy with III corps, 1st Cavalry Division (Armored), 2nd Armored Division (Hell on Wheels), and the 6th Cavalry Brigade (Air Combat).

In 1979, he returned to AWS as the director of Technical Plans. In this assignment, he was responsible for the long-range road map leading to the modernization of AWS. His organization formulated the weather input to the Air force planning, programming, and budgeting system.

In 1981, Colonel Frederick was assigned as commander, 31 WS, Sembach AB, West Germany, and concurrently staff weather officer for 16th and 17th Air Forces.

In 1983, he returned to the United States as chief, Forecasting Services Division, Air Force Global Weather Central, Offutt AFB, NE.

In 1985, the colonel was assigned to the Air Staff as deputy chief, Airspace and Air Traffic Services, where he was primarily responsible for all weather and general flight operations programs. In this position, he developed and tested Department of Defense policy and procedures for dealing with air piracy worldwide. He became vice commander, 3rd Weather Wing, Offutt AFB, Neb., in 1987, and commander in July 1988, where he also served as director of weather, DCS Operations, Headquarters Strategic Air Command. He was appointed vice commander of AWS in July 1990. He assumed command of AWS March 21, 1991.

Colonel Fredrick's immediate challenge was to lead the reshaping of AWS from a technical service aligned with Military Airlift Command to a field operating agency aligned with Headquarters USAF. As weather wings inactivated and field weather personnel were transferred to the host organization, he was concerned about standardization and enhanced combat capability from day 1. He focused the AWS staff on providing technical expertise to USAF and MAJCOM directorates of weather staffs as they formulated revised weather function directives. He pushed for the establishment of the Combat Weather Center at Hurlburt Field and he ensured Air Force Global Weather Central and the rest of the field agency were able to seamlessly integrate their products and services into the peacetime and contingency operations of the Air Force and Army. Colonel Frederick also strongly believed that USAF Academy graduates needed a firm understanding of the impact of weather on overall Air Force operations. He initiated efforts to assist the academy in instituting a meteorological curriculum by the end of his tenure and was instrumental in establishing the Thomas Moorman Meteorological Laboratory there named for a previous commander of AWS and a Superintendent at USAFA in the 1960s.

FRANK J. MISCIASCI, JR.
Colonel, United States Air Force
Nineteenth Commander of Air Weather Service
28 May 1993 - 17 May 1995

Frank J. Misciasci, Jr. was born on 5 December 1946, in Cleveland, Ohio. He graduated from John Marshall High School in 1965 and received his Bachelor of Science degree in Physics from Ohio State University in 1969. After his commissioning through the Reserve Officers Training Corps (ROTC) in 1969, he was assigned to the University of Utah where he received a Bachelor of Science degree in Meteorology in 1970. He married the former Sue Campbell of Howell, MI.



Upon completion of basic meteorological training, Lieutenant Misciasci reported to Kelly AFB, Texas, where he served as a forecaster and as Chief Forecaster. In 1972, Lieutenant Misciasci was promoted to captain and selected for a regular commission. That same year, he was selected for an Air Force Institute of Technology assignment to attend the U. S. Naval Post Graduate School in Monterey, CA, where he earned a Master of Science Degree in Oceanography. Upon graduation in 1974, he was assigned as a staff meteorologist at Lajes Field, Azores, Portugal where he supported Anti-submarine Warfare Activities in association with the Navy, as well as other Air Force and Army operations.

Upon completion of this tour, Captain Misciasci was assigned to AFGWC, Offutt AFB, NE in 1976 where he served as a team chief in the Special Support Division, Chief of Satellite Operations and staff officer responsible for satellite plans and programs in the Directorate of Operations. During this assignment, he was selected for promotion to Major. In 1980, he was chosen to serve as a weather detachment commander at Hill AFB, UT. In 1982, he was assigned duty at Space Division, Los Angeles Air Force Station, CA, where he served as the program manager for the Defense Meteorological Satellite Program's (DMSP) Satellite Data Handling system (SDHS) acquisition for deployment within the AFGWC. During this assignment, Major

Misciasci was selected for promotion to Lieutenant Colonel, and served as the Deputy Director of Ground Systems engineering for the DMSP System Program Office.

In 1986, Lieutenant Colonel Misciasci was assigned to Headquarters, AWS, as Chief, Centralized Support and as Director of current Operations. In 1989, he moved to Headquarters, United States Air Force as Chief, Weather Operations and Doctrine Branch, and Deputy Chief, Airspace and Air Traffic Services, Directorate of Operations, Deputy Chief of Staff for Plans and Operations. During this assignment, Lieutenant Colonel Misciasci was selected for promotion to Colonel.

In 1991, Colonel Misciasci was a key player in the conceptualization and creation of the Directorate of Weather within the Air Staff. In February 1991, he was selected Chief of the Weather Resources Division, Directorate of Weather. In November 1992, he assumed the position of the deputy Director of Weather, assisting the director in the development and implementation of weather doctrine, policies, plans, programs, and standards for the 5,000 person Air Force weather function. He also assisted the director in the planning, programming, and budgeting for the execution of the \$580 million-per-year Air Force weather program.

On 28 May 1993, Colonel Misciasci assumed command of Air Weather Service, Scott Air Force Base, IL. As commander of 1,300 military and civilian personnel, he directed the centralized weather and space environmental service to the Air Force, Army, Joint Chiefs of Staff, designated unified and specified commands, and other agencies as directed by the Chief of Staff, Headquarters, United States Air Force. Significant events during Colonel Misciasci's tenure included forging a strategic vision and plan for Air Weather Service as a Field Operating Agency interacting with the Air Staff and conducting daily weather operations in support of mission tasks. Forced with implementing an Air Staff directed reduction of 300 manpower positions, Colonel Misciasci orchestrated a viable reduction plan without crippling operational capability. This plan included the merging and co-location of the Environmental Tactical Applications Center with its Operating Location-A at Asheville, NC, and its ultimate re-designation as the Air Force Combat Climatology Center (AFCCC). His oversight of weather programs such as Global Theater Weather Analysis and Prediction System and the Advanced Computer Flight Plan Program brought to fruition improved atmospheric modeling of small-scaled forecasting operations at AFGWC.

**JOSEPH D. DUSHAN,
Colonel, United States Air Force
Twentieth Commander of Air Weather Service
18 May 1995 - 12 September 1997**

Joseph D. Dushan was born on July 29, 1944 in Madison, WI. He graduated from the University of Wisconsin with a Bachelor of Science degree in Meteorology in 1968. He married the former Terry Lynne Vacanti of Santa Monica, CA and they raised two sons.

He was commissioned as a distinguished graduate of the Reserve Officer Training Corps Program in June 1968. He earned a Master of Science degree from Texas A&M University in 1971. Colonel Dushan's professional military education included Squadron Officer School, Air Command and Staff College, and Air War College.



Following his commissioning, Colonel Dushan was assigned to Barksdale AFB, La., where he served as a forecaster and command post weather operations officer providing direct weather support to the Strategic Air Command's 2nd Bombardment Wing and to the 2nd Air Force.

From August 1970 to December 1971, the colonel was assigned to the Air Force Institute of Technology with duty at Texas A&M University where he completed his master's degree.

Colonel Dushan was then assigned to the Air Force Global Weather Central, Offutt AFB, NE, where he served as a current operations officer. In 1973 he moved to the 3rd Weather Wing as a command weather briefer and mission weather officer with the Strategic Reconnaissance Center, Deputy Chief of Staff for Operations, Headquarters, Strategic Air Command, also at Offutt.

In January 1976, Colonel Dushan was transferred to Yongsan Army Installation, Seoul, Republic of Korea, where he performed duties as the Chief Forecaster. He later served as Chief, Staff Support Liaison Branch, 30th Weather Squadron, supporting the United Nations Command, United States Forces Korea, and the 8th United States Army.

In July 1978, he assumed command of Detachment 10, 7th Weather Squadron, Giebelstadt Army Air Field, Germany, with concurrent responsibilities as Staff Weather Officer for the commanding general, 3rd Infantry Division (Mechanized).

Following graduation from the Air Command and Staff College, Colonel Dushan was assigned to the Headquarters, Air Weather Service, Scott AFB, IL, where he served as Deputy Director for Technical Plans, Deputy Chief of Staff, Systems. In May 1984, he was transferred to Shaw AFB, SC, where he became the Chief of Operations, 3rd Weather Squadron. He assumed command of the squadron on March 14, 1986 and served as the Staff Weather Officer to the United States Central Command Air Forces and Tactical Air Command's 9th Air Force.

In August 1987, the colonel was once again assigned to AFGWC, this time serving as the Assistant Chief, Forecasting Services Division and in July 1989, he became the division chief. He was promoted to the grade of colonel on June 1, 1990

In August 1990, Colonel Dushan took command of the 7th Weather Squadron, Heidelberg Army Installation, Germany. His duties included serving as the Staff Weather Officer for the Commander-in-Chief, United States Army, Europe.

On July 21, 1992, Colonel Dushan was once again assigned to AFGWC, where he became the vice commander and subsequently assumed command on July 16, 1993.

Assuming command of AWS on May 18, 1995, Colonel Dushan guided the command toward improving coordination of activities between AWS's staff, strategic processing centers, and operational weather units providing support to USAF and Army operations.

JOHN L. HAYES,
Colonel, United States Air Force
Twenty First Commander Air Weather Service
12 September 1997 - 14 October 1997
(During this period he also served as the AFGWC Commander)
[Refer to biography in AFWA Commander Section]

AIR FORCE WEATHER AGENCY COMMANDEDRS

**JOHN L. HAYES,
Colonel, United States Air Force
First Commander Air Force Weather Agency
15 October 1997 - 24 September 1998**

John L. Hayes was born in Toledo, OH, and graduated from high school in 1966. He was commissioned in June 1970 through the Reserve Officer training corps program at Bowling Green State University. In August 1970, he entered active duty as a meteorology student at the University of Oklahoma and completed the program in 1971. Colonel Hayes married the former Sharon Marie Ciprian of Bedford, OH. They raised three children: Laurel, Jennifer, and Marc. His hometown is Maumee, OH.



Colonel Hayes commanded at the detachment, squadron, center, and field operating agency level. He held various weather officer positions throughout Air Force Weather. His staff experience included chief of the numerical weather prediction section and operations staff officer at Air Force Global Weather Central, directors of Aerospace Development and Strategic Planning at Headquarters Air Weather Service, director of weather at Air Force Materiel Command, and as vice commander of Air Weather Service.

For a brief period, he served as both commander of both Air Force Global Weather Center and Air Weather Service. As the commander of Air Force Weather Agency he led over 1100 agency members at nine locations. During his tenure, he led the merger of Headquarters Air Weather Service and Air Force Global Weather Center into a coherent field operating agency providing centralized operational support to the Nation's operational organizations, conducting staff functions for Air Force Weather, and providing centralized weather products and services to DoD activities. Colonel Hayes championed the use of emerging Internet/web based technologies to extend delivery of product and services to remote users. He initiated a restructuring of the weather production operations along theater lines so products were tailored specifically to meet theater needs. As Air Force Weather's total transformation (also referred to as "AFW reengineering") began, he directed the development of strategies and plans to reallocate agency resources to keep pace with the evolving strategies of Air Force Weather reengineering. He guided the staff in the development of Air Force Weather's Mission Support Plan [a *Weather 85/Weather 2000* like document] that would serve the weather force as the basis for modernizing Air Force Weather beyond reengineering with a focus on improved warfighter success.

On 4 April 1998, AFWA's noncommissioned officers recognized Col Hayes' significant contributions to the welfare and prestige of the AFWA enlisted force by awarding him the Order of the Sword.⁴

⁴ *Ibid.*, #186

EDUCATION:

1970 Bachelor of Science degree, Mathematics, Bowling Green University
1973 Squadron Officer School
1975 Master's degree, Meteorology, US Navy Post Graduate School
1978 Air Command and Staff College
1983 Doctoral degree, Meteorology, US Navy Post Graduate School
1986 Air War College

ASSIGNMENTS:

1. August 1970 – August 1971, student, Air Force Institute of Technology,
2. August 1971 - December 1972, weather officer, 3rd Weather Wing, Shaw AFB, SC. First Lieutenant
3. January 1973 - July 1975, weather officer to Detachment 1, Strategic Reconnaissance Wing, weather officer to 376 Strategic Wing, Officer in Charge, Defense Meteorology Program Site, Kadena AB, Okinawa, Japan.
4. October 1975 - March 1977, student, Distinguished Graduate, Air Force Institute of Technology Naval Post Graduate School, Monterey, CA.
5. April 1977 – June 1979, Chief, Numerical Weather Prediction Section, AFGWC, Offutt AFB, NE.
6. June 1979 - August 1980, Operations Staff Officer AFGWC, Offutt AFB, NE.
7. August 1980 - March 1983, student, Air Force Institute of Technology, Naval Post Graduate School, Monterey, CA.
8. April 1983 - June 1985, Detachment 1, HQ AWS, Pentagon, Washington, DC.
9. June 1985 - June 1988, Director, Aerospace Development Directorate and Director, Strategic Planning, HQ, AWS, Scott AFB, IL.
10. June 1988 - June 1991, Commander, detachment 30, 2nd Weather Squadron, Vandenberg AFB, CA.
11. June 1991 - Jul 1992, Commander, Detachment 1, 2nd weather Squadron, Vandenberg AFB, CA.
12. July 1992 - June 1994, Director of Weather, HQ AFMC, Wright-Patterson AFB, OH
13. June 1994 - May 1995, Vice Commander, HQ AWS, Scott AFB, IL.
14. May 1995- October 1997, Commander Air Force Global Weather Center, Offutt AFB, NE.
15. September 1997 – October 1997, Commander Air Weather Service, Scott AFB, IL.
16. October 1997 - September 1998, Commander Air Force Weather Agency, Offutt AFB NE.

MAJOR AWARDS AND DECORATIONS:

Legion of Merit with one oak leaf cluster
Meritorious Service Medal with three oak leaf clusters
Air Force commendation Medal with two oak leaf clusters
Air Force Outstanding Unit award with one oak leaf cluster
Air Force Organizational excellence award with three oak leaf clusters
National Defense Service Medal with one oak leaf cluster

EFFECTIVE DATES OF PROMOTION:

Second Lieutenant, 3 June 1970

First Lieutenant, 12 February 1972

Captain, 12 April 1974

Major, 1 July 1982

Lieutenant Colonel, 1 January 1987

Colonel, 1 June 1992

**CHARLES W. FRENCH,
Colonel, United States Air Force
Second Commander of Air Force Weather Agency
25 September 1998 - 12 November 2000**

Charles W. French was born in Philadelphia, PA and graduated as valedictorian from Wissahickon Senior High School, Ambler, PA. In 1971, he was selected as distinguished Air Force Reserve Officer Training Corps program graduate while receiving a Bachelor of Science degree in environmental sciences from Rutgers University. Colonel French was commissioned a second lieutenant in June 1971 and immediately attended graduate school at Pennsylvania State University. He reported for active duty following graduate school in August 1973 to Air Force Global Weather Central, Offutt Air Force Base, NE, where he became an automated systems analyst. He was instrumental in developing and fielding the first real-time satellite global data base for use in providing cloud analyses and forecasts to special strategic programs.



Colonel French commanded at the detachment level at Howard AB, Panama and George AFB, CA. His staff experience included staff weather officer and liaison to the Techniques Development Laboratory of the National Weather Service; staff weather officer to the 193rd Infantry Brigade and staff support to the USSOUTHCOM Joint Reconnaissance Center and Theater Intelligence Center where he earned the Best Staff Weather Officer award in 1984 for all of Air Weather Service. He also provided staff support at Military Airlift Command as chief of Weather Computer Programs where he awarded 12 contracts valued at over \$100 million. He was selected as Outstanding Contributor to Contracting in 1989 and Resource Advisor of the Year in 1990 for Military Airlift Command. He obtained additional staff experience serving as director of communications at Headquarters Air Weather Service; deputy program manager for DoD at the Joint Systems Program Office for Next Generation Weather Radar; and as chief policy division, at AF Directorate of Weather.

As commander of Air Force Weather Agency, he led over 1000 agency members at 19 locations around the world providing centralized weather products and services to DoD activities. Significant during his tenure included the award of the Theodore von Karman Award in recognition of AFWA's outstanding scientific contributions to the national defense during 1999. Faced with the challenge of ensuring different missions and responsibilities were met with an equitable share of the resources, he directed the creation and execution of innovative strategies to reallocate available resources to meet needs of competing mission areas. He resolved the final pieces of the initial relocation and reengineering of AFWA and its relationship

with the newly formed operational weather squadrons, thus ensuring the “Air Force weather weapon system” was working efficiently.

Colonel French married the former Mary Chase of Omaha, NE. They raised a daughter, Christine Elisabeth.

EDUCATION

1971 Bachelor of Science degree, Environmental Sciences, Rutgers University

1974 Master of Science degree, Meteorology, Pennsylvania State University

1976 Squadron Officer School

1981 Master of Science degree, Computer Science, Johns Hopkins University

1982 Air Command and Staff College

1988 Air War College

ASSIGNMENT AND DATES

1. August 1973-July 1978, automated systems analyst, Air Force Global Weather Central, Offutt AFB NE

2. July 1978-January 1982, staff weather officer and liaison, Techniques Development Laboratory of the National Weather Service, Silver Spring, MD

3. January 1982-May 1983, staff officer, 193d Infantry Brigade, Howard Air Base, Panama

4. May 1983-January 1985, staff support liaison to USSOUTHCOM, Quarry Heights, Panama

4. March 1985-March 1988, commander, Weather Detachment, 831st Air Division, George AFB, CA

5. March 1988-April 1991, chief of weather computer programs, Airlift Communications Division, Scott AFB, IL

6. April 1991-August 1992, director of communications and computer systems, Headquarters Air Weather Service, Scott AFB, IL

7. August 1992-June 1994, deputy program manager for DoD Next Generation Weather Radar, Joint Systems Program Office, Silver Spring, MD

8. June 1994-June 1995, chief policy division, directorate of weather, deputy chief of staff, Plans and Operations, Headquarters United States Air Force, Washington DC

9. June 1995-September 1998, director of weather, Pacific Air Forces, Hickam AFB, HI

10. September 1998-November 2000, commander, Air Force Weather Agency, Offutt AFB, NE

MAJOR AWARDS AND DECORATIONS

Defense Meritorious Service Medal

Meritorious Service Medal with five oak leaf clusters

Air Force Commendation Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant 04 Jun 71

First Lieutenant 04 Jun 74

Captain 04 Jun 76

Major 01 Mar 84

Lieutenant Colonel 01 Dec 88

Colonel 01 Aug 94

ROBERT H. ALLEN,
Colonel, United States Air Force
Third Commander of Air Force Weather Agency
13 November 2000- 4 August 2002

Robert H. Allen was commissioned in June 1973 upon graduation from the United States Air Force Academy, Colorado Springs, CO. His assignments included support to fighters, strategic airlift, satellite operations and the National Reconnaissance Office. He was an instructor aerial reconnaissance weather officer with over 800 flight hours in the WC-130. He deployed as the USAFE Officer in Charge of weather support for DESERT STORM combat operations based in Turkey followed by humanitarian support to Operation PROVIDE COMFORT. He commanded at the detachment, squadron, and field operating agency levels. The Colonel's staff experience included positions as assistant chief, science and Technology Division, Headquarters Air Weather Service, chief of Production Branch and Special Projects Branch, Air Force Global Weather Central, and director of weather, Tanker Airlift Control Center. He also served as the chief, Plans Division and as deputy director, AF Directorate of Weather.



As the commander Air Force Weather Agency (AFWA) he led over 1000 agency members at 20 locations around the world providing centralized weather products and services to various Department of Defense activities. He was also responsible for providing technical support to AF weather units, for standardization of AF-wide weather equipment and procedures and for the acquisition and fielding of standard weather systems. He continued the reorganization of Air Force Weather, which began when he was the AF Deputy Director of Weather, with the consolidation of weather support at Offutt AFB. This included the integration of staff activities begun with the redesignation, relocation and consolidation of Air Weather Service with the AF Global Weather Center in Oct 1997 when he was AFWA's vice commander.

Significant during his tenure as commander was his leadership of the agency as it surged in response to the 11 September 2001 terrorist attack on the World Trade Center, New York, NY. In addition to keeping the organization focused on the Global War on Terrorism, he led AFWA through a historic period of change. The 7-year acquisition of Cloud Depiction and Forecast System II reached full operational capability; Detachment 7 was inactivated and the Automated Digital Weather Switch function as moved from Tinker to AFWA's Weather Data Collection and Dissemination System at Offutt; the Strategic Communications Program achieved full operational capability delivering 200 times more weather data/products to the warfighter than the dedicated AWN circuits could; the 55th Space Weather Squadron at Schriever AFB, CO was inactivated and AFWA's Space Weather Operations Center assumed responsibility for space weather operations; and AFWA tuned off its "mainframe computers" as the new server based architecture reached maturity.

EDUCATION

1973 Bachelor of Science, Basic Sciences, United States Air Force Academy
1974 Basic Meteorology Program, North Carolina State University
1978 Squadron Officer School

1980 Master's Degree, Meteorology, University of Oklahoma at Norman
1982 Air Command and Staff College
1987 Air War College

ASSIGNMENTS AND DATES

1. June 1973-August 1974, meteorology student, Air Force Institute of Technology, North Carolina State University, Raleigh, NC
2. August 1974-December 1976, forecaster, Ft Rucker, AL
3. December 1976-December 1978, instructor aerial reconnaissance weather officer, 54th Weather Reconnaissance Squadron, Andersen AFB, Guam
4. December 1978-May 1980, student, Air Force Institute of Technology, University of Oklahoma, Norman, OK
5. May 1980-February 1983, assistance chief, Science and Technology Division, Headquarters Air Weather Service, Scott AFB, IL
6. February 1983-July 1985, commander, Detachment 14, 25th Weather Squadron, Holloman Air Force Base, NM
7. July 1985-July 1988, chief, Production Branch, and chief, Special Projects Branch, Air Force Global Weather Central, Offutt Air Force Base, NE
8. July 1988-July 1991, chief, Operations, 31 St Weather Squadron, Sembach Air Base, Germany
9. July 1991-January 1992, commander, 15th Weather Squadron, McGuire Air Force Base, NJ
10. January 1992-July 1992, chief, Weather Support Division, Directorate of Weather, Deputy Chief of Staff for Operations and Transportation, Headquarters Military Airlift Command
11. July 1992-September 1994, commander, 375th Weather Squadron, Scott Air Force Base, IL, dual hatted as Tanker Airlift Control Center (TACC) Director of Weather
12. October 1994-June 1995, director of weather, Tanker Airlift Control Center (TACC), Headquarters Air Mobility Command Scott Air Force Base, IL
13. June 1995-July 1996, chief, Plans Division, Directorate of Weather, deputy chief of Staff/Plans and Operations, Headquarters United States Air Force
14. July 1996-July 1997, deputy director of weather, Deputy Chief of Staff/Air and Space Operations, Headquarters United States Air Force
15. August 1997 to August 1998, vice commander, Air Force Weather Agency, Offutt Air Force Base, NE
16. August 1998 to November 2000, chief, Weather Division, Directorate of Air and Space Operations, HQ PACAF
17. November 2000 to August 2002, commander, Air Force Weather Agency, Offutt AFB NE

FLIGHT INFORMATION/BADGES

Parachutist Badge

Non-rated Aircrew Member Badge, 800 hrs, WC-130 Instructor Aerial Reconnaissance Weather Officer

Master Meteorologist Badge

AWARDS AND DECORATIONS

Legion of Merit with oak leaf cluster
Meritorious Service Medal with four oak leaf clusters
Air Medal
Joint Service Commendation Medal
Air Force Commendation Medal
Joint Service Achievement Medal
Joint Meritorious Unit Award

CHARLES L. BENSON, JR.
Colonel, United States Air Force
Fourth Commander of Air Force Weather Agency
5 August 2002 - 1 June 2004

Charles L. Benson, Jr., graduated from Texan A&M University with a Bachelor of Science degree in meteorology in 1977. Upon completion of Officer Training School, 15 August 1978, he was commissioned as a Second Lieutenant. Colonel Benson commanded at the detachment and group levels, including the United States Air Force Academy's 34th Support Group. He served as a wing weather officer in Korea; executive assistant to the Commander, Air Weather Service; and Chief of the Advanced Systems Management Section at Air Force Global Weather Central. His staff experience included Headquarters USAF, Major Air Command, and Joint Command levels. Some of those positions included program element monitor in Headquarters USAF's Directorate of Weather; chief of Force Enhancement Requirements, Headquarters USAF's Directorate of Operational Requirements; director of weather for Headquarters Air Mobility Command's Tanker Airlift Control Center; and Chief of Protocol for the Commander in Chief, United States Transportation Command.



Colonel Benson was vice commander of the Air Force Weather Agency prior to assuming command of the Agency. As commander, he directed over 1200 agency members at 20 world-wide locations providing centralized weather products and services to DoD activities. He immediately motivated the organization into a cohesive team focused on providing world-class weather products and services to the warfighter. This paid off as the United States initiated hostilities of Operation IRAQI FREEDOM in Mar 2003. Key capabilities reached initial operational capability in time for planners to build an effective campaign plan and influence combat operations. Programs such as Space Weather Analysis and Forecast System delivered improved space weather products; Three-dimensional Variational Data Assimilation improved weather model accuracies; and Diagnostic Cloud Forecast model of cloud cover over target areas. Improved Target Acquisition Weather Software and Infrared Target-Scene Simulation Software were delivered just in time for initial airstrikes. Colonel Benson continued organization transformational efforts begun in 1998. Ramey solar observatory was closed and the unclassified production branch issued their last weather forecast as operational weather squadrons picked up responsibility of providing point weather warnings and flight hazard forecasts to AF and Army operations. Looking to the future, he championed the development of a National concept of

operations for the next generation weather model capability called Weather Research Model (WRF).

EDUCATION

1977 Bachelor of Science degree in Meteorology, Texas A&M University

1978 Officer Training School

1985 Master's degree in Meteorology from St. Louis University

1986 Air Command and Staff College (Correspondence)

1990 Distinguished Graduate, Naval War College's Naval Command & Staff

1991 Master's degree in National Security & Strategic Studies, Naval War College

1995 Air War College, Maxwell AFB, AL

ASSIGNMENTS AND DATES

1. September 1978 - April 1981 Wing Weather Officer., 463rd Tactical Airlift Wing, Dyess AFB, TX
2. April 1981 - June 1982 Wing Weather Officer, 8th Tactical Fighter Wing, Kunsan AB, Korea
3. June 1982 - January 1984 Executive Assistant to the Commander, Air Weather Service, Scott AFB, ILs
4. January 1984 - June 1985 Student, St. Louis University, St. Louis, MO
5. June 1985 - October 1987 Chief, Advanced Systems Management Section, Air Force Global Weather Central, Offutt AFB, NE
6. October 1987 - August 1990 Commander, Detachment 23, 9th Weather Squadron, McConnell AFB, KS
7. August 1990 - December 1991 Student, Naval War College, Newport, RI
8. December 1991 - November 1992 Program Element Monitor, Directorate of Weather, Headquarters USAF, Washington, D.C.
9. November 1992 - August 1994 Chief of Force Enhancement Requirements, Directorate of Operational Requirements, Headquarters USAF, Washington, D.C.
10. August 1994 - June 1995 Student, Air War College, Maxwell AFB, AL
11. June 1995 - September 1997 Director of Weather, Tanker Airlift Control Center, Headquarters Air Mobility Command, Scott AFB, IL
12. September 1997 - August 1998 Chief of Protocol, United States Transportation Command, Scott AFB, IL
13. August 1998 - April 1999 Deputy Commander, 60th Support Group, Travis AFB, CA
14. April 1999 - May 2001 Commander, 34th Support Group, United States Air Force Academy, Colorado Springs, CO
15. May 2001 – August 2002 Vice Commander, Air Force Weather Agency, Offutt Air Force Base, NE

AWARDS AND DECORATIONS

Legion of Merit

Meritorious Service Medal with five oak leaf clusters

Air Force Commendation Medal with one oak leaf cluster

Air Force Achievement Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant 15 August 1978

First Lieutenant 15 August 1980

Captain 15 August 1982

Major 1 June 1989

Lieutenant Colonel 1 June 1993

Colonel 1 April 1999

**JOHN M. LANICCI,
Colonel, United States Air Force
Fifth Commander of Air Force Weather Agency
2 June 2004 - 8 June 2006**

John M. Lanicci was commissioned in May 1979 upon graduating Summa Cum Laude from Manhattan College, Bronx, NY. He served as a Wing Weather Officer and Chief of Meteorological Models during two different tours at Air Force Global Weather Central. He was a research meteorologist and atmospheric dispersion project manager at the Air Force Geophysics Lab, Hanscom Air Force Base, MA.



Col Lanicci commanded at the detachment and squadron levels. He gained staff experience as Chief, Data Management and Environment Branch at the Air Force Directorate of Command and Control, Headquarters USAF, and he served as Chief, Plans Division at the Air Force Directorate of Weather. Colonel Lanicci spent three years as a full-time faculty member at the Air War College, where he authored Maxwell Paper No. 29, *Weather Operations in the Transformation Era*.

As commander of the Air Force Weather Agency, Col Lanicci led over 800 agency members at 20 locations around the world providing centralized weather products and services to the national intelligence community and DOD activities. He focused his immediate actions on achieving “unity of effort” within the organization. He charted an effort to quantify the value of weather services to combatant commanders, which resulted in a two-volume AFWA Technical Note-05/001. He oversaw the design and presided over the ground breaking ceremony of a new headquarters building for the agency. He was the force behind the preparation and marketing of a complete portfolio of planning documents created to guide AFWA and AFW down the road of “Air Force Transformation” during the second decade of the 21st Century.

EDUCATION:

1979 Bachelor of Science degree in Physics, Manhattan College, Bronx, NY (Summa Cum Laude)

1980 Bachelor of Science degree in Meteorology, Penn State University, University Park, PA (With Highest Distinction)

1984 Master of Science degree in Meteorology, Penn State University, University Park, PA

1985 Squadron Officer School

1986 Air Command and Staff College

1991 Ph.D. in Meteorology, Penn State University, University Park, PA
1996 Air War College

ASSIGNMENTS AND DATES:

1. June 1979 — May 1980, Basic Meteorology Program Student, Air Force Institute of Technology, Penn State University, University Park, PA
2. June 1980 — February 1982, Wing Weather Officer, Air Force Global Weather Central, Offutt Air Force Base, NE
3. March 1982 — December 1983, Graduate Meteorology Student, Air Force Institute of Technology, Penn State University, University Park, PA
4. January 1984 — February 1987, Research Meteorologist and Atmospheric Dispersion Project Manager, Air Force Geophysics Laboratory, Hanscom Air Force Base, MA
5. March 1987 — April 1988, Commander, Detachment 3, 11th Weather Squadron, Shemya Air Force Base, AK
6. April 1988 — June 1991, Doctoral Student, Air Force Institute of Technology, Penn State University, University Park, PA
7. July 1991 — February 1995, Assistant Chief, then Chief, Meteorological Models work center, Air Force Global Weather Central, Offutt Air Force Base, NE
8. March 1995 — September 1997, Chief, Data Management and Environment Branch, Directorate of Modeling, Simulation, and Analysis, later, Directorate of Command and Control, Deputy Chief of Staff/Air and Space Operations, Headquarters U.S. Air Force, Washington, DC
9. September 1997 — June 2000, Commander, 88th Weather Squadron, Wright-Patterson Air Force Base, OH
10. June 2000 — July 2003, Professor, Department of Warfighting, and Chief Information Officer, Air War College, Maxwell Air Force Base, AL
11. July 2003 — June 2004, Chief, Plans Division, Directorate of Weather, Deputy Chief of Staff/Air and Space Operations, Headquarters U.S. Air Force, Washington, DC
12. June 2004 — June 2006, Commander, Air Force Weather Agency, Offutt AFB, NE

MAJOR AWARDS AND DECORATIONS:

Legion of Merit
Meritorious Service Medal with six oak leaf clusters
Air Force Commendation Medal
Air Force Achievement Medal
Global War on Terrorism Service Medal
National Defense Service Medal with bronze service star

EFFECTIVE DATE OF PROMOTION:

Second Lieutenant — 19 May 1979
First Lieutenant — 30 May 1981
Captain — 30 May 1983
Major — June 1990
Lieutenant Colonel — 1 October 1995
Colonel — 1 August 2001

PATRICK M. CONDRAY
Colonel, United States Air Force
Sixth Commander of Air Force Weather Agency
8 June 2006 – 26 March 2008

Colonel Patrick M. “Mike” Condray entered the Air Force in 1983 through the Reserve Officer Training Corps at Texas A&M University. Besides commanding the Air Force Weather Agency, Col Condray commanded at the operational weather squadron and weather detachment levels where he led personnel in support of numerous operations including, U.S. Army attack helicopter and armored deployments; Joint Task Force Bravo activities in Honduras; noncombatant evacuation operations from the Philippines during Operation FIERY VIGIL; bomber, tanker, and airlift missions during Operations DESERT SHIELD and DESERT STORM; and regional weather operations for the south central U.S. and Headquarters 8th Air Force. He also planned and led joint U.S. Air Force and U.S. Navy weather teams supporting Joint Force Air Component Commander operations in EUCOM and PACOM. Colonel Condray served in staff and scientific positions, including environmental analyst (specializing in weather impacts on precision munitions employment), weather requirements officer at Headquarters, U.S. Air Forces Europe, and Academic Instructor and Advisor at Air Command and Staff College. Following his graduation from the School of Advanced Airpower Studies, Colonel Condray served on the Air Staff as a member of the Aerospace Integration Task Force and as a member of the Air Force National Defense Review team articulating air and space power issues during the 2000-2001 Quadrennial Defense Review.



During Colonel Condray’s tenure as AFWA’s commander he used his vast operational and strategic experience to reorganize Air Force Weather Agency into a more objective Air Force structured unit to separate staff from Air Force weather operation functions. He arranged the organize, train, and equipping staff functions in an A-Staff structure and placed day-to-day weather, climatological, and communication/computer functions into separate weather squadrons aligned under a weather group. With this reorganization Air Force Weather Agency became a more focused and effective organization providing efficient support to DoD operations.

EDUCATION

1983 Bachelor of Science degree in meteorology, Texas A&M University, College Station, TX
1987 Master of Science degree (research) in meteorology, Saint Louis University, St. Louis, MO.
1988 Distinguished Graduate, Squadron Officer School, Maxwell AFB, AL.
1996 Distinguished Graduate, Air Command and Staff College, Maxwell AFB, AL.
1997 Joint Doctrine Air Campaign Course, Maxwell AFB, AL.
1998 Master of Arts degree in Airpower Arts and Sciences, School of Advanced Airpower Studies, Maxwell AFB, AL.
2000 Air War College by correspondence
2002 With Highest Distinction Graduate, Naval War College, Master of Arts degree in National Security Strategy, Newport, R.I.
2003 Joint Aerospace Operations Senior Staff Course, Hurlburt Field, FL.

ASSIGNMENTS

1. June 1983 – August 1985, Staff Weather Officer, Det. 14, 5th Weather Squadron, Fort Hood AIN, TX.
2. September 1984 – December 1984, Officer in Charge, Base Weather Station, JTF-B, Palmerola AB, Honduras
3. August 1985 – May 1987, master's degree student, AFIT/CI, Saint Louis University, St. Louis, MO.
4. May 1987 – July 1990, Electromagnetic Propagation Analyst, USAFETAC/DNE, Scott AFB, IL.
5. July 1990 – June 1992, Commander, Det. 2, 20th Weather Squadron, Andersen AFB, Guam
6. June 1992 – July 1995, Weather Programs Action Officer, HQ USAFE/DOW, Ramstein AB, Germany
7. August 1995 – June 1996, student, Air Command and Staff College, Maxwell AFB, AL.
8. June 1996 – July 1997, instructor, Air Command and Staff College, Maxwell AFB, AL.
9. July 1997 – June 1998, student, School of Advanced Airpower Studies, Maxwell AFB, AL.
10. July 1998 – June 1999, Chief, Aerospace Integration Plan Branch, HAF/XPX-AITF, Pentagon, Washington, D.C.
11. June 1999 – July 2001, Deputy Chief, Outreach Division, Quadrennial Defense Review Staff, HAF/QRO, Pentagon, Washington, D.C.
12. August 2001 – June 2002, student, Naval War College, Newport, R.I.
13. June 2002 – June 2004, Commander, 26th Operational Weather Squadron, Barksdale AFB, LA
14. June 2004 – May 2006, Chief, Weather Operations Division, HQ ACC Langley AFB, VA
15. June 2006 – March 2008, Commander, Air Force Weather Agency, Offutt AFB, NE.
16. Mar 2008 – June 2011, Director, NATO Capabilities, Office of the Secretary of Defense (Policy), OSDP EUR/NATO, Pentagon, Washington, D.C.
17. June 2011 – Present, Military Faculty, National War College, Fort McNair AIN, Washington, D.C.

MAJOR AWARDS AND DECORATIONS

Defense Superior Service Medal
Legion of Merit
Meritorious Service Medal with two oak leaf clusters
Air Force Commendation Medal with two oak leaf clusters
Army Commendation Medal
Joint Service Achievement Medal
Air Force Achievement Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant May 6, 1983
First Lieutenant June 1, 1985
Captain June 1, 1987
Major May 1, 1995
Lieutenant Colonel Sept. 1, 1998
Colonel June 1, 2004

JOHN D. MURPHY
Colonel, United States Air Force
Seventh Commander of Air Force Weather Agency
26 March 2008 – 20 April 2010
Also served as the Acting Director of Weather
(Refer to biography in the directorate of weather section)

ROBERT L. RUSSELL
Colonel, United States Air Force
Eighth Commander of Air Force Weather Agency
20 April 2010 – 9 March 2012

Colonel Robert L. Russell entered the Air Force as a graduate of the Air Force Officer Training School. His previous duty assignments include assignments at Air Force Global Weather Central, Headquarters Air Weather Service, Joint Special Operations Command and Headquarters Air Force. Colonel Russell had the honor and privilege of commanding the 10th Combat Weather Squadron at Hurlburt Field, the Department of Defense's primary provider of Special Operations Weather Team operators to the Unified Combatant Commanders. He also served as the Weather Operations Officer for the Chairman of the Joint Chiefs of Staff, the senior weather officer for both the Air Force and Army Special Operations Commands, and as a student at the Air War College.



During Colonel Russell's tenure as commander, his leadership and vision were instrumental to the swift acquisition, fielding, and operational exploitation of \$8.7 million in computing and data storage equipment, data routing solutions, and forecasting techniques and procedures in response to Central Command's Joint Urgent Operational Need Statement, Improving Weather Forecasting. Within 6 months of AF's acceptance of the "Need", AFWA reached initial operational capability providing unprecedented improvement of weather support to \$980 million Persistent Threat Detection System critical surveillance assets at 70 forward operating bases. Air Force weather forces increased weather forecast and warning accuracy by 10% and delivered nearly instantaneous information to warfighting commanders and surveillance platform operators. Colonel Russell also orchestrated and oversaw the stand-up of the Air Force Weather Web Services capability which fused over 600,000 products into Air Force Central Command's common operational picture and displayed 400% more products than were previously available. In addition, he consolidated the agency's computer operations and field support functions into a single Operations Center, which enabled constant monitoring of thousands of weather components around the world and led to a 58% timeliness improvement in executing repairs at field locations as well as at the agency's \$277 million production center. In addition, Col Russell guided the 1,244 person agency to an "Outstanding" rating; with an unprecedented 98.82% compliance rating, during its 2011 Air Force-level Unit Compliance Inspection.

EDUCATION:

1985 Bachelor's in Atmospheric Sciences, University of Missouri, Columbia, MO
1990 Squadron Officer School, Maxwell AFB, AL
1997 Master's in Business Administration, Organizational Management, University of Phoenix
2000 Air Command and Staff College, MA in Military Operational Art and Science, Air University, Maxwell AFB, AL
2008 Air War College, MA in Strategic Studies, Air University, Maxwell AFB, AL

ASSIGNMENTS:

1. July 1986 – April 1987, Forecaster/Wing Weather Officer, 9th Weather Squadron, Fairchild AFB, WA
2. April 1987 – January 1991, Wing Weather Officer, 353rd Special Operations Wing, Clark AB, Philippines
3. February 1991 – May 1993, Chief of Technical Services in Mission Tailored Product and Contingency Branch, Air Force Global Weather Center, Offutt AFB, NE
4. June 1993 – July 1996, Command Meteorologist, Joint Special Operations Command, Fort Bragg, NC
5. July 1996 – May 1998, Chief, Operations Programming Branch, HQ Air Weather Service, Scott AFB, IL
6. June 1998 – June 1999, Chief, Weather Plans and Readiness, HQ Air Force Special Operations Command, Hurlburt Field, FL
7. July 1999 – June 2000, student, Air Command and Staff College, Maxwell AFB, AL
8. June 2000 – July 2002, Commander, 10th Combat Weather Squadron, Hurlburt Field, FL
9. July 2002 – July 2003, Chief, Air Force and Army Weather Systems, Directorate of Weather, Headquarters United States Air Force, Pentagon, Washington, DC
10. July 2003 – July 2005, Weather Operations Officer, Operations Directorate, Joint Chiefs of Staff, Pentagon, Washington, DC
11. July 2005 – June 2007, Weather Division Chief, Air, Space and Information Operations, Headquarters Air Force Special Operations Command, Hurlburt Field, FL
12. June 2007 – June 2008, student, Air War College, Maxwell AFB, AL
13. June 2008 – April 2010, Director, Strategic Plans, Requirements, and Programs, Air Force Weather Agency, Offutt AFB, NE
14. April 2010 – March 2012, Commander, Air Force Weather Agency, Offutt AFB, NE

FLIGHT INFORMATION

Rating: Master Parachutist

MAJOR AWARDS AND DECORATIONS

Legion of Merit
Defense Meritorious Service Medal with one Oak Leaf Cluster
Meritorious Service Medal with four Oak Leaf Clusters
Air Force Commendation Medal with one Oak Leaf cluster
Joint Service Achievement Medal with one Oak Leaf Cluster
Air Force Achievement Medal

EFFECTIVE DATES OF PROMOTION:

Second Lieutenant--July 25th, 1986
First Lieutenant--July 25, 1988
Captain--July 25, 1990
Major--April 1, 1998
Lieutenant Colonel--October 1, 2002
Colonel--February 1, 2008

LOUIS V. ZUCCARELLO
Colonel, United States Air Force
Ninth Commander of the Air Force Weather Agency
9 March 2012 – Present

Colonel Louis V. Zuccarello was commissioned in 1985 as a distinguished graduate of the ROTC program at the Pennsylvania State University. He has commanded a weather group and an operational weather squadron and has served in a variety of staff and operational assignments at the Joint Staff, Air Staff, Air Force Weather Agency, Air Force Personnel Center, HQ Air Weather Service, 100th Air Refueling Wing and Air Force Global Weather Central.



As Colonel Zuccarello assumed command of the 1400-person agency he faced a number of challenges. He dedicated his tenure to continue the development of high-resolution weather modeling capabilities; lead efforts to mitigate cloud forecasting capability as DoD redefined the military weather satellite program; integrate other sources of cloud imagery into the cloud forecast process; and guide planning and programming activities to provide cutting-edge service-based weather information for integration into warfighter operations as DoD moved into a period of reduced appropriations. In addition, he continued efforts to successfully field the Joint Environmental Toolkit Increment 2 and AN/FMQ-22 automated observing capabilities Air Force-wide, and complete Portable Doppler Radar fielding in Air Force Central Command's area of operations to improve the ability to detect micro-scale weather events.

EDUCATION

1985 Bachelor's degree in meteorology, Pennsylvania State University, University Park, PA.
1986 Squadron Officer School (Correspondence)
1988 Squadron Officer School, Maxwell AFB, AL.
1994 Master's degree in meteorology, Pennsylvania State University, University Park, PA.
1997 Air Command and Staff College, Seminar
2000 Master's degree in military operational art and science, Air University
2000 Distinguished Graduate, Air Command and Staff College, Maxwell AFB, AL.
2002 Air War College, Seminar
2005 Master's degree in national resource strategy, National Defense University
2005 Industrial College of the Armed Forces, Fort McNair, Washington, DC.

ASSIGNMENTS

1. July 1985 - July 1989, Assistant Team Chief and Team Chief, Special Projects Production Section, Air Force Global Weather Central, Offutt AFB, NE.
2. July 1989 - July 1992, Wing Weather Officer and Chief, Strategic Air Command Special Support Cell, 100th Operations Support Squadron, RAF Mildenhall, UK.
3. July 1992 - May 1994, Student, Air Force Institute of Technology, Pennsylvania State University, State College, PA.
4. May 1994 - May 1996, Manager, Future Centralized Weather Programs, Headquarters, Air Weather Service, Scott AFB, IL.
5. May 1996 - May 1997, Executive Officer and Headquarters, Squadron Section Commander, Headquarters, Air Weather Service, Scott AFB, IL.
6. May 1997 - July 1999, Chief, Weather Officer Assignments, Headquarters, Air Force Personnel Center, Randolph AFB, TX.
7. July 1999 - June 2000, Student, Air Command and Staff College, Maxwell AFB, AL.
8. June 2000 - July 2002, Director of Operations, 15th Operational Weather Squadron, Scott AFB, IL.
9. July 2002 - July 2004, Commander, 15th Operational Weather Squadron, Scott AFB, IL.
10. July 2004 - June 2005, Student, Industrial College of the Armed Forces, Ft. McNair, Washington, DC.
11. June 2005 - July 2007, Meteorological and Oceanographic Operations Officer, Joint Staff, Pentagon, Washington, DC.
12. July 2007 - June 2008, Chief, Weather Resources and Programs Division, Directorate of Operations and Training, DCS, Operations, Plans & Requirements, U.S. Air Force, Pentagon, Washington, DC.
13. June 2008 - July 2010, Commander, 1st Weather Group, Air Force Weather Agency, Offutt AFB, Neb.
14. July 2010 - February 2011, Director of Operations, Training and Evaluations, HQ Air Force Weather Agency, Offutt AFB, Neb.
15. February 2011 - March 2012, Vice Commander, Air Force Weather Agency, Offutt AFB, Neb.
16. March 2012 - present, Commander, Air Force Weather Agency, Offutt AFB, Neb.

MAJOR AWARDS AND DECORATIONS

Legion of Merit

Defense Meritorious Service Medal

Meritorious Service Medal with four oak leaf clusters

Air Force Commendation Medal

Joint Meritorious Unit Award with oak leaf cluster

Air Force Outstanding Unit Award with silver oak leaf cluster

Air Force Organizational Excellence Award with four oak leaf clusters

National Defense Service Medal

Global War on Terrorism Service Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant May 18, 1985

First Lieutenant June 16, 1987

Captain June 16, 1989

Major April 1, 1997

Lieutenant Colonel October 1, 2001

Colonel April 1, 2007

USAF DIRECTORATE OF WEATEHR STAFF

This section lists the officer in charge of key staff positions at USAF Directorate of Weather. This information was extracted from various sources to create a chronological list. Information not available is noted. This section is current as of 30 April 2012; the last name listed was in the position on that date.

INDIVIDUAL MOBILIZATION AUGMENTEES (IMA)

A member of the Air Force Reserve designated as the Individual Mobilization Augmentee (IMA) to the Directorate of Weather. During incumbent's period of active duty, the Director of Weather normally assigned the individual tasks related to their particular area of expertise in meteorology that would benefit Air Force Weather most.

1 Oct 91	Col Karl F. Zeller
97	Col Richard W. Fisher
Jul 01	Col Timothy H. Miner
May 06	Col Mary Lockhart
Nov 07	Col Michael Kelly

AIR NATIONAL GUARD ASSISTANT

o/a Jul 92	Col Dan G. Bellue	05	Col Debra Carroll
96	Col William Drzal	Unknown	Col Steve Sutherland
00	Col Atlee Fritz	o/a Aug 10	Col Bill Thomas
01	Col Fred R. Johnson		

DEPUTY DIRECTOR

Apr 91	Col Charles H. Tracy	Nov 03	Col Richard C. Clayton
Jun 92	Col Richard Vogt	Jun 05	Col John D. Murphy
Nov 92	Col Frank J. Misciasci, Jr.	Dec 05	Col Mary Lockhart
May 93	Col Thomas F. Tascione	Jun 06	Col John Murphy
o/a Mar 96	Col John M. Haas	Feb 07	Col Mary Lockhart
Jul 96	Col Robert H. Allen	Jun 07	Col Ralph O. Stoffler
Jul 97	Col Paul H. Harris	Jun 10	Col Ralph O. Stoffler & Col John M. Egentowich
1 Jul 98	Col Michael A. Neyland	Dec 10	Col John M. Egentowich
Oct 00	Col H. Webster Tileston III		

ENLISTED ADVISOR TO USAF DIRECTOR OF WEATHER

When Headquarters USAF established the Director of Weather function in 1991, it did not include a designated position to serve as enlisted advisor to the Director of Weather. Depending on the situation, the Director relied on the expertise of the first two Chief Master Sergeants assigned to the directorate, CMSgts Leslie Taylor and Daniel Michalewicz, for advice and assistance for enlisted matters, weather career field management and weather operations policy. In January 1995, Brigadier General Thomas J. Lennon formally established a Weather Chief Enlisted Manager position. In October 2005, the Chief Enlisted Manager and Career Field Manager functions were combined and accomplished by a single Chief Master Sergeant with the duty title Enlisted Career Field Manager.

Apr 91-94	No designated position established	Apr 04	CMSgt Jacob Lee
Jan 95	CMSgt James Hoy	Oct 05	CMSgt Marvin (Andy) Million
Apr 97	CMSgt Thomas E. Klumb	Aug 07	CMSgt Marty J. Kaczmarik
Jul 97	CMSgt Anthony R. Ramirez	Aug 10	CMSgt Stephen A. Lebrun
Jun 00	CMSgt Penny Heinen/Braverman	Aug 12	CMSgt Patrick McGuffin

DIRECTOR OF STAFF

(Position established Jan 2011)

Jan 11 Mr. Ralph O. Stoffler

DEPUTY FOR PROGRAM EVALUATION

(This position was eliminated in fiscal year 1995)

Feb 91 Col Thomas E. Sieland
Aug 91 Col William H. Campbell
May 93 Col Michael A. Neyland

DEPUTY FOR RESOURCES

Feb 91	Col Frank J. Misciasci, Jr.	Jul 99	Lt. Col Robert D. LeFebre
Nov 92	Col Ed Eadon	Jul 01	Col Ralph O. Stoffler
Jun 94	Col Charles W. French	Nov 03	Lt Col John D. Murphy
Mar 95	Col John M. Haas	Jun 05	Col Donald H. Berchhoff
96	Col Paul H. Harris	Jun 07	Col Louis V. Zuccarello
96	Lt Col Joel D. Martin	Jun 08	Col Scott Van Blarcum
98	Col H. Webster Tileston III	Jan 11	Mr. Scott Van Blarcum

DEPUTY FOR PLANS

Apr 91	Col Ronald D. Townsend	00	Lt Col William Sjoberg
o/a Jun 92	Lt Col Thomas F. Tascione	Jul 01	Col Lawrence Key
o/a Sep 92	Lt Col Rob Ericson	Jul 03	Col John M. Lanicci
Jun 95	Col Robert H. Allen	Jun 04	Col Harold A. Elkins
o/a Jul 96	Lt Col Marsha S. Korose	Jul 06	Col Mark D. Zettlemyer
o/a Jul 97	Lt Col William Sjoberg	Jan 11	Lt Col Christopher Cantrell
98	Col Carl Daubach	Jun 11	Col Dan Edwards

DEPUTY FOR POLICY

Apr 91	Col Robert J. Dumont	23 May 02	Col Mark Weadon
o/a Jun 92	Col Steve O. Ouzts	2 Mar 04	Col Mark Welshinger
Mar 95	Col Charles W. French	31 Aug 05	Col Robert D. LaFebre
Jun 95	Col Douglas Pearson	Jun 07	Col Charles (Dean) Corpman
o/a Jun 97	Lt Col Frank L. Estis	Jun 09	Col Michael J. Dwyer
99	Col Carl Daubach	Dec 09	Lt Col T. C. Moore
24 May 01	Col Mark Welshinger	Dec 10	Col Leanne Siedlarz

AIR WEATHER SERVICE STAFF

This section chronologically lists the officer in charge of key staff positions at Air Weather Service. This information was extracted from two sources, "AWS Heritage, 1937-1987" and annual AWS histories on file in the AFWA/HO archives. Information not available is noted.

INDIVIDUAL MOBILIZATION AUGMENTEES

A member of the Air Force Reserve designated as the Individual Mobilization Augmentee (IMA) to the Air Weather Service/Air Force Weather Agency commander. During incumbent's period of active duty, the AWS/AFWA Commander normally assigned him tasks related to his area of expertise in meteorology that would benefit AWS/AFWA most.

1949 Brig Gen Joseph J. George
1961 Brig Gen Kenneth C. Spengler
1975 Brig Gen Paul W. Kadlec
July 1983 Brig Gen Clarence B. H. Lee

DEPUTY CHIEF/DEPUTY/VICE COMMANDER (CV)

25 Jul 49	Col William O. Senter	1 Aug 74	Col Edwin E. Carmell
9 Aug 51	Col Thomas S. Moorman	18 Jul 75	Col Berry W. Rowe
23 Apr 54	Col Norman L. Peterson	6 Aug 75	Col Alfred C. Molla, Jr.
28 Mar 58	Col James T. Seaver, Jr.	31 Jul 78	Col Salvatore R. LeMole
13 Nov 58	BGen Normal L. Peterson	3 Jul 81	Col Thomas L. Harris
1 Nov 59	Col James T. Seaver, Jr.	1 May 83	Col Norman F. Rauscher
30 Jul 60	Col Roy W. Nelson, Jr.	15 Apr 86	Col James A. Young
May 63	Col William S. Barney	1 Jul 88	Col Gary S. Zeigler
1 Aug 67	Col Ralph G. Suggs	29 Jun 90	Col George L. Frederick, Jr.
6 Feb 70	BGen William H. Best, Jr.	21 Mar 91	Col Gene J. Pfeffer
27 Jul 70	Col Thomas A. Aldrich	Jun 94	Col John L. Hayes
1 Jun 71	Col John W. Collens	12 May 95	Col Gerald F. Riley, Jr.
14 May 73	Col Thomas D. Potter	Aug 97	Col Robert H. Allen

SENIOR ENLISTED ADVISORS

Created as the Special Assistant for Airmen Affairs under Brigadier General Pierce in December 1968, the Military Airlift Command Commander, the following September, ordered the title of the position changed to Chief Master Sergeant of AWS and directed the position be filled only by Chief Master Sergeants. The title was subsequently changed to Senior Enlisted Advisor. The position was retired on 9 Oct 1991.

23 Dec 68 CMSgt William M. Gardner
3 Jul 70 CMSgt Martin W. Dwyer
1 Jul 73 CMSgt Sam E. Parrish
1 Dec 75 CMSgt Howard M. Bock
1 Jan 79 CMSgt George M. Horn
20 Aug 82 CMSgt Charles T. Melson
1 Jul 88 CMSgt Jack Williams
1 Jul 90 CMSgt Danny Milner

CHIEF OF STAFF (CS)

1947-48	Col Harold L. Smith	16 Aug 56	Col Richard M. Gill (temporary)
Unknown	Lt Col Anthony T. Shtogren (temporary)	15 Mar 57	Col James T. Seaver, Jr.
18 Apr 49	Col Lewis L. Mundell	28 Mar 58	Col Virgil E. Sandifer
17 Jul 50	Col John K. Arnold, Jr.	1 Jul 58	Col Walter C. Phillips
1 Jul 51	Col Roy W. Nelson (temporary)	Jul 59	Col James T. Seaver, Jr.
16 Aug 51	Col Roy W. Nelson	1 Nov 59	Col Arthur W. Anderson
7 Jan 52	Col Diran Arakelian (temporary)	18 Jul 60	Col Walter C. Phillips
5 Feb 52	Col Diran Arakelian	Mar 63	Col Thomas J. Arbogast
18 Feb 52	Col Oliver K. Jones	14 Jun 66	Col Arthur W. Anderson
Aug 52	Col Nicholas H. Chavasse	28 Feb 71	Col Douglas C. Purdy

CHIEF OF STAFF (CS) (Cont'd)

1 Jul 72	Col Edwin E. Carmell	1 Jun 83	Col Wesley E. Robb
1 Aug 74	Col Morris H. Newhouse	1 Apr 85	Col Ronald C. Overby
1 Sep 75	Col Hyko Gayikian	11 Aug 86	Col Thomas D. Guest
15 Nov 77	Col Ramon C. Wilkins	May 87	Col Paul D. Try
1 Jul 81	Col Joseph D. Saccone	6 May 88	Col Thomas O. Proffitt
1 Jan 83	Col Norman F. Rauscher	17 Feb 90	Col Gene J. Pfeffer

(Position was eliminated in 1990)

DEPUTY CHIEF OF STAFF OPERATIONS (DO)

20 Sep 45	Col Richard E. Ellsworth	1 Jul 72	Col Leonard E. Zapinski
12 Aug 46	Lt Col Nicholas H. Chavasse	Aug 73	Col James M. Burkhardt
Jan 49	Col Diran Arakelian	1 Jul 74	Col Hyko Gayikian
7 Jan 52	Col Oliver K. Jones	Aug 75	Col Robert M. Chamberlain
18 Feb 52	Col Lawrence A. Atwell	17 Aug 76	Col Salvatore R. LeMole
28 Apr 54	Lt Col Thomas J. Arbogast	26 Jul 78	Col Joseph D. Saccone
Jun 54	Col Richard M. Gill	1 Jul 81	Col Wesley E. Robb
8 Jun 56	Col Arthur W. Anderson (temporary)	27 Jun 83	Col Tommy D. Guest
15 Mar 57	Col Richard M. Gill	4 Aug 86	Col Glen A. Ryan
30 Apr 58	Lt Col R.G. Bounds, Jr.	2 Feb 87	Col Darrell L. Lucas
15 Jun 58	Col Robert F. Long	1 Jun 89	Col Melvin L. Turner
8 Aug 60	Col Clarence E. Roache, Jr.	Aug 90	Col Peter F. Abt
6 May 64	Col Lowell A. Stiles	18 Sep 92	Col Gary L. Sickler
4 Aug 67	Col William H. Best, Jr.	28 Oct 92	Lt. Col Stephen W. Carroll
6 Feb 70	Col Douglas C. Purdy	1 Aug 93	Col Francis X. Routhier
1 Mar 71	Col Edwin E. Carmell	1 Aug 94	Col William S. Weaving

Redesignated as:

DIRECTOR OF TECHNOLOGY, PLANS, and PROGRAMS (XO)

Aug 1994	Col William S. Weaving
5 Aug 1994	Col Gerald F. Riley, Jr.
12 May 1995	Col Carlton L. Bjerkaas
17 Aug 1995	Col Clifford R. Matsumoto

DEPUTY CHIEF OF STAFF LOGISTICS

(Directorate of Materiel redesignated as Directorate of Logistics in January 1970)

20 Sep 45	Lt Col Jerome A. Pryber	27 Nov 67	Col Wayne c. Bogard
7 Jan 46	Maj Ernest R. Miller (temporary)	31 Jan 70	Col Kenneth Bixler
Aug 46	Col Wilson H. Neal	1 Aug 71	Col Frank Z. Kamer
Jan 49	Col Lloyd A. Walker	1 Jun 73	Col Wilson V. Palmore
17 Aug 49	Lt Col Hyme A. Budd	1 Apr 75	Lt Col Paul F. Pulse II
2 Apr 51	Lt Col Ronald Mogford	1 Dec 76	Lt Col Edward D. Aitken
7 Jan 54	Col John E. Crowley	15 Jun 77	Lt Col William J. Haugen
2 Jun 58	Col Robert C. Ross	18 Jun 79	Lt Col Jerry R. Crenshaw
22 Jun 58	Col Roberg G. David	Apr 82	Col John R. Sweeney
10 Jun 59	Col Robert C. Ross	6 Dec 82	Col Jareld L. Picantine
8 Jul 59	Col William W. Riser, Jr.	30 Jun 84	Col Glenn A. Ryan
Jul 62	Col James A. Hogg	30 Jun 86	Col Ronald D. Haynes
1 Jun 66	Col Arthur L. Moreland		

(redesignated as Directorate of Program Management 1 May 87)

DIRECTOR OF PROGRAM MANAGEMENT (PM)

1 May 87	Col Ronald D. Haynes
16 Jun 89	Col Gene J. Pfeffer
1 Jul 90	Col Joseph J. Butchko
Aug 92	Col Carlton L. Bjerkaas

DIRECTOR OF RESOURCE MANAGEMENT (RM)

(Established in 1991 with the elimination of CS position)

Apr 1991	Lt Col Carlton L. Bjerkaas
Sep 1992	Lt Col Thomas N. Walker
Aug 1993	Lt Col Stephen W. Carroll
Jun 95	Lt Col Gerald D. Swoboda
Jan 97	Lt Col Stephen M. Harcourt

DIRECTOR OF COMMUNICATIONS AND COMPUTER SYSTEMS (SC)

(Established with the designation of AWS as a Field Operating Agency in 1991)

Apr 91	Lt Col Charles W. French
Sep 92	Lt Col Frank A Jansen
	(Reactivated in 1996)
Jan 97	Lt Col Joel Martin

DEPUTY CHIEF OF STAFF SYSTEMS (SY)

(The Directorate of Systems, in DCS Operations, was elevated to DCS status on 1 July 1970)

1 Jul 70	Col Ralph J. Steele	9 Jul 78	Col Joseph K. Lambert
1 Jul 72	Col Herbert A. Million	16 Jul 79	Col Charles D. Stephens
1 May 74	Col Castor Mendez-Vigo, Jr.	3 Jun 81	Col Ronald C. Overby
7 Jul 75	Col Arthur Bidner	6 Mar 86	Col John P. Upchurch
31 Jul 77	Col Ramon C. Wilkins (temporary)	29 Jun 86	Col Ronald R. Brown
15 Nov 77	Col Robert J. Fox		

DIRECTOR OF TECHNOLOGY (XT)

(Established, 1 Jun 89, by combining DCS Systems with DCS Aerospace Sciences)

1 Jun 89	Col James W. Overall
Jul 91	Col Adrian A. Ritchie, Jr.
31 Jul 92	Col Francis X. Routhier

DIRECTOR OF SYSTEMS (SY)

(SC and PM were combined o/a Dec 1994)

o/a Dec 94	Col Carlton L. Bjerkaas
12 May 95	Col Paul H. Harris
o/a 1997	Col Michael J. Jamilkoski

DEPUTY CHIEF OF STAFF AEROSPACE SCIENCES (DN)

(Directorate of Scientific Services redesignated as Aerospace Sciences on 1 July 1965.)

29 Sep 48	Dr Sverre Petterssen	15 Aug 79	Col Thomas A. Studer
1 Oct 52	Dr Robert D. Fletcher	1 Apr 82	Col Allan C. Ramsay
1 Jul 71	Col Dale J. Flinders	21 Aug 84	Col Floyd F. Hauth
1 Aug 74	Col Joseph M. Tyndall	29 Jul 85	Col John H. Taylor
1 Sep 75	Col David L. Roberts	12 Jul 86	Col David L. Donley
1 Feb 76	Col Robert H. Gottuso	27 Jan 89	Col Peter J. Havanac

(Position was eliminated on 1 Jun 1989.)

CHIEF SCIENTIST

Headquarters, Air Weather Service (AWS) requested approval from Military Airlift Command (MAC) to establish a Chief Scientist position on 25 January 1971. The U.S. Air Force (USAF) approved the request on 23 February 1971. This position was not filled during some periods because of AWS' policy of only filling the slot on a yearly basis. In October 1978 the AWS Chief Scientist position was abolished at the headquarters. This slot was used, along with five others, as validations for additional manpower spaces at the United States Air Force Environmental Technical Applications Center.

23 Feb 71	Dr Robert D. Fletcher	20 Aug 74	Dr Paul L. Smith, Jr.
30 Jun 72	UNFILLED	20 Aug 75	UNFILLED
19 Feb 73	Dr Thomas E. Oberbeck	29 Jul 76	Dr Robert G. Miller
20 Feb 74	UNFILLED	19 Jul 77	UNFILLED

DEPUTY CHIEFS OF STAFF PERSONNEL/ADMINISTRATION PERSONNEL DIVISION

(This function was abolished on 15 March 1973.)

1945	Col Keene Watkins	28 Mar 58	Lt Col Jay T. Treat
22 Sep 45	Col James W. Twaddell, Jr.	2 Jul 58	Col Virgil E. Sandifer
15 Nov 45	Lt Col Paul W. Norton	13 Jul 59	Col Wilson H. Neal
14 Jan 46	Lt Col Anthony T. Shtogren	7 Jul 60	Col Arnold L. Smith
28 Jun 46	Col Leigh H. Hunt	9 Aug 65	Col Franklin W. Horton
Unknown	Lt Col Edward W. Wigman	4 Sep 68	Col Arthur Yorra
Unknown	Col Anthony T. Shtogren	31 Mar 71	Lt Col Wilson J. Boaz (acting)
30 Jun 51	Col Evan F. Bourne, Jr.	28 Jun 71	Col Isaac S. Israel
11 May 53	Col Oliver K. Jones	1 Jul 72	Lt Col Wilson J. Boaz
1 Oct 56	Col Virgil E. Sandifer		

DEPUTY CHIEFS OF STAFF PLANS

The Deputy Chief of Staff for Plans and Requirements, Headquarters Air Weather Service, was established on 1 August 1946. It was replaced by the Directorate of Plans and Organizations, Headquarters Air Weather Service, on 18 April 1950. The function was abolished on 1 July 1972.

1 Aug 46	Lt Col Oscar A. Heinlein	Jul 55	Col Wilson H. Neal
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10 Dec 46	Lt Col Joseph W. Ruebell	7 Oct 57	Mr James V. Bassett (acting)
18 Apr 50	Lt Col Diran Arekelian	14 Jun 58	Lt Col Donald C. Rhoads
1 Aug 50	Maj Max M. Stratten (acting)	Dec 58	Col Wilson H. Neal
20 Aug 50	Lt Col Roy W. Nelson, Jr.	6 Jul 59	Col Thomas J. Arbogast
2 Jul 51	Maj Max M. Stratten (acting)	17 Mar 63	Col Robert A. Taylor
31 Aug 51	Lt Col Norman E. King	Jun 65	Col James R. Anderson
7 Mar 54	Lt Col Clarence E. Roache, Jr.	21 Jul 67	Col Robert B. Hughes
Nov 54	Lt Col Joseph S. Slack (temporary)	3 Nov 69	Col Morris H. Newhouse
Jun 55	Lt Col Charles R. Dole	1 Jun 71	Col Leonard E. Zapinski

INSPECTOR GENERAL/AIR INSPECTOR

(The Inspector General function was abolished on 23 May 1973.)

20 Sep 45	Lt Col Maxwell W. Roman	1 Jun 57	Col Arthur W. Anderson
24 Aug 48	Col John K. Arnold	1 Nov 59	Lt Col Carl H. Morales
8 Aug 50	Col Karl T. Rauk	10 Aug 60	Col George E. Rath
8 Jul 52	Col Oliver K. Jones	31 Aug 63	Col Eugene D. Wallace
4 Mar 53	Lt Col James M. Fahey	13 Jun 66	Col James M. Burkhart
Jul 54	Col William S. Barney	29 May 68	Col Hal R. Montague
12 Oct 55	Lt Col Joseph A. Viger (acting)	20 Aug 71	Col Hubert E. Harvey
4 Aug 56	Col William S. Barney	1 Feb 73	Col Berry W. Rowe

COMPTROLLER

The Office of the Comptroller, Headquarters Air Weather Service, was established on 1 December 1949. The function was abolished on 1 July 1972.

1 Dec 49	Lt Col Charles E. Baldwin, Jr.	25 Aug 61	Col Thomas C. McGuire
15 Sep 52	Lt Col Kenneth A. Swanson	1 Aug 65	Lt Col Nicholas Tony
16 Nov 53	Col John M. Tucker	Aug 66	Col George A. Williamson
10 Jun 58	Lt Col Roland H. Leisy	31 Jul 70	Col Steven Pusker, Jr.
19 Oct 59	Col Harry G. Bowman		

DEPUTY CHIEFS OF STAFF/DIRECTORATE OF AIR OPERATIONS/ RECONNAISSANCE DIVISION

(The function was abolished on 1 September 1975)

18 Jan 46	Capt Ralph W. Spurlock	Sep 62	Col Harvey P. Hall
Mar 46	Lt Col James B. Baker	Oct 64	Col Robert A. Kerr
May 54	Lt Col Virgil N. Nestor	13 Sep 67	Col Robert L. Kane
Jul 54	Lt Col Lawrence Cometh	10 Jul 69	Col Whitney L. Morgan
Unknown	Lt Col Griffin H. Wood	1 Aug 70	Col Tedd L. Bishop
Jun 59	Lt Col Thomas A. Aldrich	2 Jul 71	Col Ralph M. Hayes
20 Jul 59	Col Templeton S. Walker	20 Nov 72	Col Hiram P. Bilyeu ⁵
Jul 62	Col Carl H. Morales (acting)		

⁵ E-Mail, AirWeaAssn@aol.com to acqwxman1@aol.com, *AFW publication edits*, 16 Jul 2012. [Previous 50-year heritage document had the incorrect spelling of Col Bilyeu.]

AIR WEATHER SERVICE HISTORIAN

1944 Capt Cushman Reynolds

1948 Mr Frederick L. Rodenbeck, Jr.

1952 Mr Samuel Milner

1958 1Lt Philip M. Flammer (interim)

1958 Mr Charles W. Dickens

1970 Mr John F. Fuller

1987 Dr Hans S. Pawlisch

1987 Dr. William E. Nawyn

(Position eliminated Nov 1992 and then reestablished in 1995)

13 Mar 95 Ms. Lillian E. Nolan

HEADQUARTERS AIR FORCE WEATHER AGENCY STAFF

This section chronologically lists the person in charge of key staff positions at the Air Force Weather Agency. This information was extracted from annual AWS/AFWA histories and is on file in the AFWA/HO archives. Information not available is noted.

INDIVIDUAL MOBILIZATION AUGMENTEE (IMA)

Oct 97	Col James Hoke
Jul 02	Col Beth McNulty
Nov 07	None assigned after this date

VICE COMMANDER

Oct 97	Col Robert H. Allen	Jun 06	Col Richard Twigg
Aug 98	Col Thomas H. Accola	Jun 08	Col Thomas B. Frooninckx
Jul 99	Col Richard C. Clayton	Jun 09	Col Charles (Dean) Corpman
May 01	Col Charles L. Benson, Jr.	Feb 11	Col Louis V. Zuccarello
Aug 02	Col William F. Burnette	Jun 12	Col John B. Knowles
May 04	Col Ray M. Clark		

TECHNICAL DIRECTOR

Oct 97	Mr. Donald G. Caviness
Nov 00	Mr. Michael R. Howland

SENIOR ENLISTED ADVISOR

After the AFWA was formed in October 1997, there was no full-time designated senior enlisted leader within the Air Force Weather Agency due to lack of a formal authorization for this position. This leadership “additional duty” was filled by several Chief Master Sergeants working in other significant leadership positions. However, on 28 Mar 2007 Col John D. Murphy formally established the senior enlisted leader position which eventually was designated as AFWA’s “Senior Enlisted Advisor”.

May 07	CMSgt Mark Redford
Jun 09	CMSgt Patrick T. McGuffin
Aug 12	CMSgt Ron L. Richards

DIRECTOR OF OPERATIONS, TRAINING, AND EVALUATION (DO)
(Renamed **A3/5** on 28 Mar 2007 and **A3** in 2010)

Oct 97	Col David S. Ladwig	Jul 06	Col Kim M. Waldron
Apr 98	Col Francis X. Routhier	Mar 07	Col John M. Shepley
Aug 98	Col Lawrence E. Key	May 09	Col John B. Knowles
Jul 01	Col William Burnette	Aug 09	Lt Col Jeffery M. Cox
Aug 02	Col Wendell T. Stapler	Nov 10	Col Louis V. Zuccarello
Apr 04	Ms. Kay M. Meehan	Feb 11	Mr. Mark T. Surmeier
Aug 04	Col Andrew "Pete" Boerlage	Aug 11	Lt Col David S. Andrus

DIRECTOR OF STRATEGIC PLANS, PROGRAMS, AND REQUIREMENTS (XP)
(Renamed **A8**, 28 Mar 2007 and **A5/8** in 2010)

Oct 97	Col Michael Jamilkowski	May 04	Mr. George N. Coleman III
Mar 98	Col David Ladwig	Jul 04	Col Michael Babcock
Jun 99	Col Alan R. Shaffer	Jul 06	Col Harold Elkins
Aug 00	Col Nathan Feldman	Jun 08	Col Robert Russell, Jr.
28 Feb 03	Mr. George N. Coleman III	Apr 10	Col John M. Shepley
Jun 03	Col Ray M. Clark		

DIRECTOR OF COMMUNICATIONS and INFORMATION (SC)
(Renamed **A6**, 28 Mar 2007)

Oct 97	Col Linda M. Quintero
Jul 00	Col Joe S. Morales
May 02	Col David A. Handle
Oct 07	Col Kurt R. Fox
Apr 11	Mr. Bradley Kassube

DIRECTOR OF AEROSPACE SCIENCES (DN)
(This function was abolished on 28 Mar 2007)

Oct 97	Col Larry E. Freeman
Jul 98	Col Nathan S. Feldman
Sep 00	Lt Col Ray M. Clark
Jul 01	Lt Col Wendell T. Stapler
Aug 02	Lt Col Eric J. McKinley
Jun 03	Lt Col Mark Zettelmoyer
Jun 05	Col Ronald P. Lowther

HISTORIAN

Oct 97	Ms. Lillian E. Nolan
Sep 01	Mr. Al Moyer
Aug 05	Mr. Donald J. May

CHAPTER 11—AFW AWARDS

Air Weather Service initiated its award program in 1956 with the presentation of the first “Commander’s Awards.” Since then Air Weather Service and subsequently the Air Force Director of Weather expanded the awards program to recognize individual achievements in a wide variety of functions and roles. A description of each award and a chronological listing of their recipients follow.

GROUP AWARDS

GRIMES AWARD



The Grimes Award was established in 1979 in honor of Colonel Keith R. Grimes who organized the First Air Weather Service Unconventional Warfare Detachment. It is for the weather unit exhibiting each year the highest state of readiness to support wartime tactical Air Force or tactical Army missions. In 2002 the criteria for this award was combined with the Williams Award criteria and renamed as the GRIMES/WILLIAMS AWARD. In 2006 the award was redefined to accommodate the formation of the Battlefield Airman Weather squadrons. Since then the Air Force Battlefield Weather Squadron of the Year Award recognizes the most outstanding weather squadron providing direct support

to the Army or AFSOC units.

- 1979 Detachment 15, 30th Weather Squadron, 1st Weather Wing, Osan AB, KR
- 1980 Detachment 75, 3d Weather Squadron, 5th Weather Wing, Hurlburt Field, FL
- 1981 Detachment 12, 7th Weather Squadron, 2d Weather Wing, Finthen AI, DE
- 1982 Detachment 3, 5th Weather Squadron, 5th Weather Wing, Fort Bragg, NC
- 1983 Detachment 75, 7th Weather Wing, Hurlburt Field, FL
- 1984 Detachment 20, 30th Weather Squadron, 1st Weather Wing, Camp Casey, KR
- 1985 Detachment 6, 5th Weather Squadron, 5th Weather Wing, Fort Lewis, WA
- 1986 Detachment 20, 30th Weather Squadron, 1st Weather Wing, Camp Casey, KR
- 1987 Detachment 12, 7th Weather Squadron, Finthen AI, DE
- 1988 Detachment 3, 5th Weather Squadron, Ft Bragg AI, NC
- 1989 Detachment 7, 20th Weather Squadron, Schofield Barracks, HI
- 1990 Detachment 75, 6th Weather Squadron, Hurlburt Field FL
- 1991 Detachment 8, 5th Weather Squadron, Ft Riley KS
- 1992 Operating Location-A, 18 Operations Support Squadron Kadena, JP
- 1993 Weather Flight, 16 Operations Support Squadron, Hurlburt Field, FL
- 1994 Weather Flight, 16 Operations Support Squadron, Hurlburt Field, FL
- 1995 25th Air Support Operations Squadron, Schofield Barracks, HI
- 1996 7th Weather Squadron, Heidelberg, DE
- 1997 10th Combat Weather Sq Hurlburt Field, FL
- 1998 62d Operational Support Sq McChord AFB, WA

- 1999 Detachment 3, 10th Combat Weather Sq Ft Carson AIN, CO
- 2000 Detachment 5, 10th Combat Weather Sq Ft Bragg, NC
- 2001 Weather Flight, 24th Special Tactics Squadron, Pope AFB, NC

OUTSTANDING AIR FORCE BATTLEFIELD WEATHER SQUADRON

- 2006 10th Combat Weather Squadron, Hurlburt Field, FL
- 2007 3rd Weather Squadron, Fort Hood AIN, TX
- 2008 18th Weather Squadron, Fort Bragg AIN, NC
- 2009 607th Weather Squadron, Yongsan AIN, KR
- 2010 3rd Weather Squadron, Fort Hood AIN, TX
- 2011 7th Weather Squadron, Heidelberg, DE

**FAWBUSH-MILLER
SQUADRON OF THE YEAR AWARD**



The Fawbush- Miller, Squadron of the Year Award, was established in 2000 in honor of Major Ernest J. Fawbush and Captain Robert C. Miller who pioneered efforts in the United States to forecast severe weather. The award recognizes an Air Force Weather squadron for providing outstanding operational and technical support. The award was



first established in 1990 as the Outstanding Squadron of the Year. In 2000, the award was redefined to recognize the most outstanding operational weather squadron (OWS).

OUTSTANDING SQUADRON OF THE YEAR

- 1990 3rd Weather Squadron, Shaw AFB, SC
- 1991-1998 No Award Presented
- 1999 USAFE Operational Weather Squadron, Sembach AB, DE

**FAWBUSH-MILLER
OUTSTANDING OWS OF THE YEAR**

- 2000 15th Operational Weather Squadron, Scott AFB, IL
- 2001 28th Operational Weather Squadron, Shaw AFB, SC
- 2002 28th Operational Weather Squadron, Shaw AFB, SC
- 2003 28th Operational Weather Squadron, Shaw AFB, NC
- 2004 USAFE Operational Weather Squadron, Sembach AB, DE
- 2005 28th Operational Weather Squadron, Shaw AFB, SC.
- 2006 17th Operational Weather Squadron, Hickam AFB, HI
- 2007 28th Operational Weather Squadron, Shaw AFB, SC
- 2008 21st Operational Weather Squadron, Sembach AB, DE
- 2009 15th Operational Weather Squadron, Scott AFB, IL
- 2010 25th Operational Weather Squadron, Davis-Monthan AFB, AZ
- 2011 17th Operational Weather Squadron, Joint Base Pearl Harbor-Hickam, HI

WILLIAMS AWARD



The Williams Award was established in 1956 in honor of Colonel Randolph P. Williams who organized the Army Air Corps Weather Service in 1937. It is presented each year to the most outstanding weather detachment or unit performing as a “weather station” with a weather observing, forecasting, or briefing function. Weather centrals and forecast centers are also eligible. It was redefined in 2007 to recognize the most outstanding weather flight, detachment, branch or section conducting any aspect of weather operations (i.e., characterizing the environment or exploiting environmental information. In 2002 the criteria for the Grimes award was merged with the Williams Award and renamed as the GRIMES/WILLIAMS AWARD. In 2006 it was renamed as the Outstanding Air Force Weather Organization Below Squadron Level

- 1956 Detachment 14, 9th Weather Squadron, 3rd Weather Wing, Dyess AFB, TX
- 1957 Detachment 11, 4th Weather Group, Patrick AFB, FL
- 1958 Detachment 24, 4th Weather Group, Holloman AFB, NM
- 1959 Detachment 18, 10th Weather Group, 1st Weather Wing, Yokota AB, JP
- 1960 Detachment 2, 8th Weather Squadron, 3rd Weather Wing, Homestead AFB, FL
- 1961 Detachment 4, 35th Weather Squadron, 4th Weather Wing, McChord AFB, WA
- 1962 Detachment 19, 9th Weather Squadron (March AFB Forecast Center), March AFB, CA
- 1963 Detachment 14, 21st Weather Squadron, 2nd Weather Wing, Moron AB, ES
- 1964 Detachment 2, 4th Weather Group, Andrews AFB, MD
- 1965 Detachment 28, 26th Weather Squadron, 3rd Weather Wing, Wurtsmith AFB, MI
- 1966 Detachment 8, 20th Weather Squadron, 1st Weather Wing, Kadena AB, JP
- 1967 Detachment 9, 30th Weather Squadron, 1st Weather Group, Da Nang Airport, VN
- 1968 Detachment 31, 5th Weather Squadron, 1st Weather Group, Nha Trang AI, VN
- 1969 Detachment 3, 17th Weather Squadron (formerly Detachment 24, 15th Wx Sq), Norton AFB, CA
- 1970 Detachment 1, 31st Weather Squadron, 2nd Weather Wing, Bitburg AB, DE
- 1971 Detachment 30, 10th Weather Squadron, 1st Weather Group, U-Tapao Airfield, TH
- 1972 Detachment 2, 1st Weather Wing, Andersen AFB, GU
- 1973 Detachment 7, 31st Weather Squadron, 2nd Weather Wing, Aviano AB, IT
- 1974 Detachment 8, 20th Weather Squadron, 1st Weather Wing, Kadena AB, JP
- 1975 Detachment 10, 2nd Weather Squadron, Air Force Global Weather Central, Eglin AFB, FL
- 1976 Detachment 13, 15th Weather Squadron, 7th Weather Wing, Robins AFB, GA
- 1977 Detachment 5, 1st Weather Wing, Clark AB, Republic of PH
- 1978 Detachment 1, 7th Weather Wing, Andrews AFB, MD
- 1979 Detachment 14, 7th Weather Wing, Norton AFB, CA
- 1980 Detachment 10, 7th Weather Squadron, 2nd Weather Wing, Kitzingen AB, DE
- 1981 Detachment 25, 31st Weather Squadron, 2nd Weather Wing, Rhein-Main AB, DE
- 1982 Detachment 8, 1st Weather Wing, Kadena AB, JP
- 1983 Detachment 3, 28th Weather Squadron, 2nd Weather Wing, RAF Lakenheath, GB
- 1984 Detachment 15, 9th Weather Squadron, 3rd Weather Wing, Grand Forks AFB, ND
- 1985 Detachment 14, 5th Weather Squadron, 5th Weather Wing, Fort Hood AI, TX
- 1986 Detachment 8, 31st Weather Squadron, 2nd Weather Wing, Zweibrucken AB, DE
- 1987 Detachment 11, 17th Weather Squadron, McChord AFB, WA
- 1988 Detachment 2, 7th Weather Squadron, 2nd Weather Wing, Hanau, DE

- 1989 Detachment 25, 5th Weather Wing Howard AFB, PA
- 1990 Detachment 8, 25th Weather Squadron, North Las Vegas, NV
- 1991 Weather Flight, 48th Operations Support Squadron, RAF Lakenheath, GB
- 1992 Weather Flight, 21st Operations Support Squadron, Peterson AFB, CO
- 1993 Weather Flight, 401st Operations Support Squadron, Aviano AB, IT
- 1994 46th Weather Flight, Eglin AFB, FL
- 1995 Weather Flight, 31st Operations Support Squadron, Aviano AB, IT
- 1996 Weather Flight, 62nd Operations Support Squadron, McChord AFB, WA
- 1997 Weather Flight, 5th Operations Support Squadron, Minot AFB, ND
- 1998 30th Weather Squadron, Vandenberg AFB, CA
- 1999 Weather Flight, 48th Operations Support Squadron, RAF Lakenheath, GB
- 2000 Weather Flight, 31st Operations Support Squadron, Aviano AB, IT
- 2001 Weather Flight, 16th Operations Support Squadron, Hurlburt Field, FL

GRIMES/WILLIAMS AWARD

- 2002 Gold Flight, 24th Special Tactics Squadron, Shaw AFB, SC
- 2003 24TH Special Tactics Squadron, Pope AFB, NC
- 2004 3rd Weather Squadron, Fort Hood, TX
- 2005 Weather Flight, 75th Operations Support Squadron, Hill AFB, UT

**OUTSTANDING AIR FORCE WEATHER ORGANIZATION
BELOW SQUADRON LEVEL**

- 2006 Weather Flight, 757th Operations Support Squadron, Creech AFB, NV
- 2007 Weather Flight, 25th Air Support Operation Squadron, Wheeler AAF, HI
- 2008 Weather Flight, 100th Operations Support Squadron, RAF Mildenhall, GB
- 2009 Detachment 3, 18th Weather Squadron, Hunter AAF, GA
- 2010 Weather Flight, 19th Operations Support Squadron, Little Rock AFB, AR
- 2011 Weather Intelligence Flight, 2nd Weather Squadron, Offutt AFB, NE

COLLENS AWARD



The Collens Award was established in 1975 in honor of Brigadier General John W. Collens, Commander, Air Weather Service, 1974-1975. It recognizes the most outstanding Air National Guard or Air Force Reserve Weather Flight. Prior to 2006 the award only included ANG units.

- 1975 120th Weather Flight, Colorado ANG, Buckley ANGB, CO
- 1976 107th Weather Flight, Michigan ANG, Selfridge ANGB, MI
- 1977 182d Weather Flight, Texans ANG, Kelly AFB, TX
- 1978 123d Weather Flight, Oregon ANG, Portland IAP, OR
- 1979 122d Weather Flight, Louisiana ANG, New Orleans, LA
- 1980 196th Weather Flight, California ANG, Ontario, CA
- 1981 121st Weather Flight, District of Columbia ANG, Andrews AFB, MD
- 1982 146th Weather Flight, Pennsylvania ANG, Pittsburgh, PA
- 1983 121st Weather Flight, District of Columbia ANG, Andrews AFB, MD

1984 209th Weather Flight, Texas ANG, Camp Mabry, Austin, TX
 1985 204th Weather Flight, New Jersey ANG, McGuire AFB, NJ
 1986 208th Weather Flight, Minnesota ANG, Saint Paul, MN
 1987 110th Weather Flight, Missouri ANG, St Louis MO
 1988 208th Weather Flight, Minnesota ANG, Saint Paul, MN
 1989 110th Weather Flight, Missouri ANG, St Louis MO
 1990 208th Weather Flight, Minnesota ANG, Saint Paul, MN
 1991-1998 No Award Presented
 1999 104th Weather Flight, Maryland ANG, Baltimore, MD
 2000 164th Weather Flight, Ohio ANG, Columbus, OH
 2001 146th Weather Flight, Pennsylvania ANG, Coraopolis, PA
 2002 146th Weather Flight, Pennsylvania ANG, Coraopolis, PA
 2003 209th Weather Flight, Texas ANG, Austin, TX
 2004 208th Weather Flight, Minnesota ANG, Saint Paul, MN
 2005 126th Weather Flight, Wisconsin ANG, Milwaukee, WI
 2006 107th Weather Flight, Michigan ANG, Selfridge ANGB, MI
 2007 116th Weather Flight (ANG), McChord AFB, WA
 2008 5th Operational Weather Flight (AFRC), 28th Operational Weather Squadron, Shaw AFB, SC
 2009 163rd Weather Flight, Operations Support Squadron (ANG), March AFB, CA
 2010 208th Weather Flight (ANG), St Paul, MN
 2011 208th Weather Flight (ANG), St Paul, MN

MOORMAN AWARD



The Moorman Award was established in 1962 in honor of Lieutenant General Thomas S. Moorman, Commander, Air Weather Service, 1954-1958. It is presented each year to a unit, other than a base weather station, that provides the most outstanding technical support to a Numbered Air Force. In 2007 the award was redefined to recognize the most outstanding squadron, center, or division providing specialized weather support (e.g., space/space-lift support, climatologically support, weather systems support, air mobility support).

1963 Terminal Forecast Facility, Detachment 42, 8th Weather Group, Kansas City, MO
 1964 Langley Forecast Center, Detachment 2, 2d Weather Group, Langley AFB, VA
 1965 Detachment 40, 28th Weather Squadron, 2d Weather Wing, High Wycombe AS, GB
 1966 Detachment 14, 1st Weather Group, 1st Weather Wing, Saigon Cholon City, VN
 1967 Detachment 44, 7th Weather Wing, Suitland, MD
 1968 Detachment 14, 7th Weather Squadron, 2d Weather Wing, Heidelberg AI, DE
 1969 Detachment 1, 4th Weather Wing, Ent AFB, CO (Formerly OL-10, Det 7)
 1970 European Weather Central, Detachment 40, 28th Weather Squadron, 2d Weather Wing, Croughton RAF, GB
 1971 Asia Weather Central, 20th Weather Squadron, 1st Weather Wing, Fuchu AS, JP
 1972 Air Force Global Weather Central, Special Projects, 6th Weather Wing, Offutt AFB, NE
 1973 Strategic Air Command Weather Support Unit, 3d Weather Wing, Offutt AFB, NE
 1974 No Award Presented
 1975 Detachment 1, 11th Weather Squadron, 3d Weather Wing, Elmendorf AFB, AK

- 1976 Detachment 1, 1st Weather Wing, Nimitz Hill, GU
- 1977 Detachment 21, 2d Weather Wing, Kapaun Barracks, DE
- 1978 U.S. Army Forces, Europe (USAREUR), Tactical Forecast Unit, 7th Weather Squadron, Heidelberg AI, DE
- 1979 Detachment 7, 12th Weather Squadron, 3d Weather Wing, Holloman AFB, NM
- 1980 Air Force Global Weather Central, Offutt AFB, NE
- 1981 Detachment 1, Headquarters Air Weather Service, Washington, DC
- 1982 Contingency Support Branch, Air Force Global Weather Central, Offutt AFB, NE
- 1983 Detachment 11, 1st Weather Wing, Hickam AFB, HI
- 1984 21st Air Force Weather Support Unit, 15th Weather Squadron, 7th Weather Wing, McGuire AFB, NJ
- 1985 Detachment 1, 1st Weather Wing, Joint Typhoon Warning Center, Nimitz Hill, GU
- 1986 Contingency Support Branch, Air Force Global Weather Central, Offutt AFB, NE
- 1987 US Southern Command Forecast Unit Quarry Heights, PA
- 1988 Detachment, 1st Weather Wing Nimitz Hill, GU
- 1989 21AF Weather Support Unit McGuire AFB, NJ
- 1990 DESERT SHIELD Forecast Unit, 1690 Provisional Weather Group, SA
- 1991 Staff Met Office, Wright-Patterson AFB, OH
- 1992 Weather Support Div, 375th Weather Squadron, Tanker/Airlift Control Center, Scott AFB, IL
- 1993 Weather Training Flight, 334th Technical Training Squadron (Weather School), Keesler AFB, MS
- 1994 No Award Presented
- 1995 Weather Training Flt, 334th Technical Training Squadron, (Weather School) Keesler AFB, MS
- 1996 24th Weather Squadron, Howard AFB, PA
- 1997 45th Weather Squadron, Patrick AFB, FL
- 1998 Multiple units:
Global Weather Center Division, Headquarters, Air Force Weather Agency Offutt AFB, NE
USAFE Operational Weather Squadron, Sembach AB, DE
Alaskan Weather Operations Center, Elmendorf AFB, AK
- 1999 45th Weather Squadron Patrick AFB, FL
- 2000 Weather Directorate, Aviation Tactics Evaluation Group, Fort Bragg, NC
- 2001 45th Weather Squadron, Patrick AFB, FL
- 2002 Systems Division, Air Force Weather Agency, Offutt AFB, NE
- 2003 7th Weather Squadron, Campbell Barracks, Heidelberg, DE
- 2004 Weather Operations Division, AF Operations Group, Pentagon, Washington D.C.
- 2005 7th Weather Squadron, Campbell Barracks, Heidelberg, DE

**Outstanding Specialized Weather Support Unit of the Year
Squadron Level (or equivalent)**

- 2006 Weather Directorate, Tanker and Airlift Control Center, Scott AFB, IL
- 2007 51ST Combat Communications Squadron, Robins AB, GA
- 2008 45th Weather Squadron, Patrick AFB, FL
- 2009 2nd Weather Squadron, Offutt AFB, NE
- 2010 2nd Combat Weather Systems Squadron, Hurlburt Field, FL
- 2011 Weather Directorate, 618th Air and Space Operations Center (TACC), Scott AFB, IL

MEREWETHER AWARD



The Merewether Award was established in 1956 in honor of Colonel Arthur F. Merewether, Chief of the Weather Section, Army Air Forces, from 1940-1942. The award is presented yearly to the individual (or individuals, in case of a joint contribution) that made the most significant technical contribution to the military meteorology/aerospace environmental support mission of Air Force Weather. Nomination of a team (not more than three individuals) is permitted for exceptional contributions.

- 1956 Maj Harold A. Bedient, Detachment 29, 9th Weather Group, Suitland, MD
- 1957 Lt Col Ronald C. Lame, Detachment 5, 21st Weather Squadron, 2nd Weather Wing, Sidi Slimane AB, MA
- 1958 Lt Col Gene E. Drubeck, 3rd Weather Wing, Offutt AFB, NE
- 1959 Capt Orville H. Daniel, Detachment 11, 4th Weather Group, Patrick AFB, FL
- 1960 Capt Guenther E. Luckenbach, 8th Weather Group, Randolph AFB, TX and
TSgt John C. Kocher, Detachment 29, 8th Weather Group, Kelly AFB, TX
- 1961 Lt Col Francis W. Murray and Capt Hugh M. O'Neil, 3rd Weather Wing, Offutt AFB, NE
- 1962 Maj Gordon D. Smith (AFIT), 1st Weather Wing, Fuchu AS, JP
- 1963 MSgt Myles M. Mitchell, Detachment 10, 4th Weather Group, Eglin AFB, FL
- 1964 Lt Col Roland Rogers, Detachment 1, 3rd Weather Wing, Offutt AFB, NE
- 1965 Maj Robert W. Fett, 1210th Weather Squadron, 6th Weather Wing, Washington, DC
- 1966 MSgt Richard R. Adkins, 6th Weather Squadron, 6th Weather Wing, Tinker AFB, OK
- 1967 Lt Col James G. Howcroft, Operating Location 10, Headquarters Air Weather Service (AWS), Suitland, MD
- 1968 Capt Robert E. de Michaels, Detachment 25, 10th Weather Squadron, 1st Weather Wing, Nakhon Phanom
Airport, TH
- 1969 Maj Golden R. Farr, USAF Environmental Technical Applications Center (ETAC), Washington, DC
- 1970 Lt Col Kenneth D. Hadeen, Air Force Global Weather Central (AFGWC), Offutt AFB, NE
- 1971 Lt Col Gary D. Atkinson, Headquarters AWS, Scott AFB, IL
- 1972 Capt Charles P. Arnold and Charles C. Olsen, Detachment 1, 1st Weather Wing, Nimitz Hill, GU
- 1973 No Award Presented
- 1974 Capt Robert G. Feddes and Robert D. Smith, USAF ETAC, Washington, DC
- 1975 Capt Robert D. Abbey, AFGWC, Offutt AFB, NE
- 1976 Capt Albert R. Boehm, Headquarters AWS, Scott AFB, IL
- 1977 Capt Bruce D. Springer, Detachment 6, 1st Weather Wing, Palehua, HI
- 1978 CMSgt Eugene M. Weber, 3rd Weather Wing, Offutt AFB, NE
- 1979 Capt Marcus D. Bailey and Gerard D. Wittman, Detachment 7, 12th Weather Squadron, 3rd Weather Wing,
Holloman Solar Observatory, NM
- 1980 Maj Roger C. Whiton and Captain Emil M. Berecek, USAF ETAC, Scott AFB, IL
- 1981 Capt Alan E. Ronn, Operating Location B, 2nd Weather Squadron, AWS, Kirtland AFB, NM
- 1982 Capt Ronald D. Townsend, Detachment 3, AWS, Sunnyvale AFS, CA
- 1983 Capt Michael D. Abel, USAF ETAC, Scott AFB, IL
- 1984 Capt Mitchell A. Langford, 1st Lt Jason P. Tuell, and Mr. Edward L. Carr, AFGWC, Offutt AFB, NE
- 1985 Capt Neil R. Wyse and Angelo A. Giuisti, Detachment 3, AWS, Sunnyvale AFS, CA
- 1986 Capt Joseph P. Alleca and Mr. Eugene Weber, AFGWC, Offutt AFB, NE
- 1987 Capt Jason P. Tuell, Detachment 10, 2nd Weather Squadron, Eglin AFB, FL
- 1988 Capt Daniel C. Tredo, Jr., First Lieutenant Duane L. Apling, and TSgt Rick A. Suggs, AFGWC, Offutt
AFB, NE

- 1989 Lt Col Charles R. Holliday, and Captain Kenneth R. Waters, AFGWC, Offutt AFB, NE
- 1990 Capt John D. Murphy, Detachment 7, 3rd Weather Squadron, Langley AFB, VA
- 1991 Capt Jeffrey L. Peters, Directorate of Weather, Headquarters Strategic Air Command, Offutt AFB, NE
- 1992 Maj Lauraleen O'Connor, and Capts Jeffrey H. McCoy, and Gary Welch, USAFETAC, Scott AFB, IL
- 1993 Capt Steven B. Allen, SrA Glenn E. Cahall, and Mr. Raymond B. Kiess, AFGW, Offutt AFB, NE
- 1994 Capts Carolyn M. Vadnais and Robert G. Hauser, and Mr. Steven Weaver, Weather Flight, 88th Air Base Wing, Wright-Patterson AFB, OH
- 1995 Mr. William P. Roeder, AFGWC, Offutt AFB, NE
- 1996 Capt Mark D. Conner, AFGWC, Offutt AFB, NE
- 1997 Capts Jennifer C. Roman, Billy R. Venable, and Robert T. William and Mr. George A. Gayno, AFGWC, Offutt AFB, NE
- 1998 Capt Robert P. Asbury, AF Research Laboratory, Kirtland AFB, NM
- 1999 Lt Col Mary G. Lockhart and 1st Lt James C. Weaver, 57th Operational Support Squadron, Nellis AFB, NV
- 2000 Space Weather Center of Excellence, AF Research Laboratory, Hansom AFB, MA; and Rapid Prototyping Center, Space Environmental Support Systems, Peterson AFB CO.
- 2001 Operations Support Element, 17th Operational Weather Squadron, Joint Typhoon Warning Center, Navy Pacific Meteorology and Oceanography Center, Pearl Harbor, HI
- 2002 Capt Phillips, Mr. Havener, MSgt Shupp, TSgt Wilkins, and SSgts Wright and Shaw, AF Combat Climatology Center, Asheville, NC
- 2003 Joint Typhoon Warning Center, 17th Operational Weather Support Squadron, Pearl Harbor, HI
- 2004 Machine-to-Machine Weather Initiative: Lt Col Lucy Lee, ACC/DOW, Maj David Bacot, USAF/XOO-R, Maj Scott Jacobs, USAFE/A3W, Maj Steve Renner, AFWA/XPFT; Capt Stephan Johnson, ACC/DOW; Capt Jeff Brittig, ESC/MB-WX; Capt Dean Carter, 26 OWS/WBX; 1st Lt Jonathan Wilson, 26 OWS/WBX; MSgt Lee Benson, 26 OWS/SYS; Mr. Harry Druckenmiller, 26 OWS/DOX; Mr. Jim Reardon, AFWA/XSPFT; And Mr. Christopher Andrejcik, 505 EXS/DOO
- 2005 Acquisitions Staff Meteorology Team (Maj Fred G. Meyer, Maj De Leon C. Narcisse, Capt Chad S. Deal, Capt James M. Bono, 1st Lt Joseph P. Reich, Ms. Mary A. Bedrick, Mr. Kurt R. Lutz) Det 3, AFWA, Wright-Patterson AFB, OH
- Outstanding Technical Achievement in Weather Operations**
- 2006 Air Force Combat Climatology Center Warfighter Integration Team, Maj Dean J. Carter, Maj Ken Cloys, Maj Jim Everitt, Mr. Tom Elio, Capt Scott Miller, Capt Darren Sokol, Capt Dan Wunder, AFCCC, Asheville, NC
- 2007 Tactics, Techniques, and Procedures High Performance Team, 1st Weather Group (Capts Paul F. Lucas, William Ryerson, MSgt Allan Brandt, Messrs. Shane Castle (SAIC), Daniel Brees (SAIC), Mr. Peter Copesky (SAIC), 25th Operational Weather Squadron (OWS); SMSgt Joseph Federico, 26th OWS; MSgt Anthony Soots, TSgt Jeffrey Wisner, Mr. Richard Korich (SAIC), 15th OWS), Offutt AFB, NE
- 2008 Capt David J. King, MSgt Kurt R. Rohl, SSgt Ryan Adkinson, SSgt Jennifer Williamson, Detachment 4, 18th Weather Squadron, Fort Campbell, KY
- 2009 16th Weather Squadron, Offutt AFB, NE
- 2010 2nd Lt M. Gibson, MSgt K. Campbell, TSgt M. Fischer, SSgt M. Jenkins, 123rd Weather Flight (ANG), Portland, OR
- 2011 Air Force Weather-Web Services (AFW-WEBS) Team, 16th Weather Squadron, Offutt AFB, NE

INDIVIDUAL AWARDS

BARNEY LEADERSHIP AWARD



The Barney Leadership Award was established in 1986 in honor of Colonel William S. Barney, Vice Commander, Air Weather Service, from May 1963-1967. This award is presented yearly to officer or enlisted personnel at wing level and below who demonstrate the highest quality of leadership in the performance of their duties and the conduct of their lives. It is limited to those members whose duties require them to assume active leadership roles. The award was redefined in 2002 to limit recognition to field grade officers.

- 1986 Col William S. Barney, USAF Retired
- 1987 MSgt Leonard L. Czepiel, Air Force Global Weather Central, Offutt AFB, NE
- 1988 SMSgt Mary F. Hebert, Detachment 8, 31st Weather Squadron, Zweibrucken, DE
- 1989-2001 No Award Presented

FIELD GRADE OFFICER OF THE YEAR

- 2002 Maj Paul Roelle, Air Force Combat Climatology Center, Asheville, NC
- 2003 Maj R. David Coxwell, Weather Flight, 15th Air Support Operations Squadron, Fort Stewart AIN, GA
- 2004 Maj Christopher Finta, 17th Operational Weather Squadron, Hickam AFB, HI
- 2005 Maj Steven E. Cahanin, 15th Operational Weather Squadron, Scott AFB IL
- 2006 Maj David C. Runge, 9th Operational Weather Squadron, Shaw AFB, SC
- 2007 Maj Tricia H. Kobberdahl, Weather Flight, 10th Air Support Operation Squadron, Ft Riley AIN, KS
- 2008 Maj Brian W. Kabat, Detachment 4, 18th Weather Squadron, Fort Campbell AIN, KY
- 2009 Maj Clayton M. Baskin, 3rd Weather Squadron, Fort Hood, TX
- 2010 Lt Col Steven Storch, US Special Operations Command, Aviation Tactics Evaluation Group, Fort Bragg, NC
- 2011 Maj Jason Wild, 7th Weather Squadron, Heidelberg, DE

AIR RESERVE COMPONENT FIELD GRADE OFFICER OF THE YEAR

- 2009 Maj Patricia A. Vollmer, 5th Operations Weather Flight (AFRC), Shaw AFB, SC
- 2010 Lt Col William Smith, Joint Force Command Center Global Strike, AFRC/US Strategic Command Offutt AFB, NE
- 2011 No Award Presented

GRISHAM AWARD

COMPANY GRADE OFFICER (*JUNIOR OFFICER*) OF THE YEAR AWARD



The Company Grade Officer (CGO) of the Year Award was established in 1981 to recognize the most outstanding individual conducting any aspect of weather operations (i.e., characterizing the environment or exploiting environmental information). Prior to 1985 the award was referred to as the Junior Officer of the Year Award. In 2000, the award was named after Capt. Leon M. Grisham, who was the first weather officer with the 5th Air Force to complete 100 combat missions in the F-80 Shooting Star in Korea. During WW II, he flew 41 combat missions over Germany in P-47s and P-51s, shooting down three ME-109s. On his 41st mission, he was shot down and spent the remainder of the war

as a prisoner of war at Fellingbestel. Grisham earned three Distinguished Flying Crosses, 13 Air Medals, a Bronze Star, and two Purple Hearts. After Korea, he remained with Air Weather Service in weather reconnaissance, rising eventually to command the 55WRS as a colonel.

- 1981 1st Lt Lauraleen O'Connor, Detachment 2, 7th Weather Squadron, 2d Weather Wing, Hanau AI, DE
- 1982 Capt Erwin L. Williams, Detachment 11, 1st Weather Wing, Hickam AFB, HI
- 1983 Capt David E. Howell, Air Force Global Weather Central, Offutt AFB, NE
- 1984 Capt Daniel C. Daubach, Commander, Detachment 12, 25th Weather Squadron, George AFB, CA
- 1985 Capt Alan R. Shaffer, Foreign Technology Division, AF Systems Command, Wright-Patterson AFB, OH
- 1986 1st Lt Kimberley L. Carver, Detachment 1, 31st Weather Squadron, Sembach AB, DE
- 1987 Captain timothy M. Springer, Detachment 5, 20th Weather Squadron, Clark AB, PH
- 1988 1st Lt Regina M. Franz, AF Global Weather Central, Offutt AFB, NE
- 1989 Capt Kenneth Johnson, Detachment 75, 6th Weather Squadron, Hurlburt Field, FL
- 1990 No award Presented
- 1991 Capt Michael H. McDonald, Detachment 1, 5th Weather Squadron, Fort Campbell, KY
- 1992 1st Lt Cynthia A. Koch, Weather Flight, 48th Operations Support Squadron, RAF Lakenheath, GB
- 1993 Capt Julie L. Hall, Detachment 8, Air Force Space Forecast Center, Falcon AB, CO
- 1994 Capt Patrick Ludford, Weather Flight, 12th Operations Support Squadron, Randolph AFB, TX
- 1995 Capt Timothy A. Rollins, 45th Weather Squadron, Patrick AFB, FL
- 1996 Capt Donald G. Shannon, Weather Flight, 353rd Operations support Squadron, Kadena AB, JP
- 1997 1st Lt Darryl N. Leon, AF Operations Center, Headquarters Air Force, Washington, DC
- 1998 Capt Kimberly W. Kries, Weather Flight, 55th Operations Support Squadron, Offutt AFB, NE
- 1999 Capt Thomas J. Goulter, Weather Flight, 12th Operations Support Squadron, Randolph AFB, TX

GRISHAM

- 2000 Capt Mark L. Mesenbrink, Weather Flight, 75th Operations Support Squadron, Hill AFB, UT
- 2001 Capt Ronnie G. King, 28th Operational Weather Squadron, Shaw AFB, NC
- 2002 1stLt Troy Kirk, Detachment 2, 10th Combat Weather Squadron, Fort Campbell, KY
- 2003 Capt Joseph T. Benson, Directorate of Weather, HQ US Air Forces Europe, Ramstein, DE
- 2004 1stLt Robert G. Branham, Weather Flight, 374th Operations Support Squadron, Yokota AB, JP
- 2005 Capt Robert C. Tournay, Detachment 1, 607th Weather Squadron, Camp Red Cloud, KR

AIR FORCE COMPANY GRADE OFFICER OF THE YEAR

- 2006 1stLt Angela L. Uribe-Olson, Weather Flight 757th Operations Support Squadron, Creech AFB, NV
- 2007 Capt Paul D. Lucas, 25th Operational Weather Squadron, Davis-Monthan AFB, AZ
- 2008 Capt William R. Ryerson, 25th Operational Weather Squadron, Davis-Monthan AFB, AZ
- 2009 Capt Captain Shawn P. Beskar, Joint Presidential Weather Support Unit, Fort Detrick, MD
- 2010 Capt William Frey, Weather Flight, 100th Operations Support Squadron, RAF Mildenhall, GB
- 2011 Capt Sonia Walker, 55th Operations Support Squadron, Weather Flight, Offutt AFB, NE.

**GARDNER AWARD
AIR FORCE WEATHER SENIOR NON-COMMISSIONED (SNCO)
OF THE YEAR AWARD**



The SNCO of the Year Award was established in 1979 to recognize excellence in performance of duty. It recognizes the most outstanding individual conducting any aspect of weather operations (i.e., characterizing the environment or exploiting environmental information). In 2000, the award was named for CMsgt William M. Gardner, who was selected as the first Senior Enlisted Advisor to the Air Weather Service commander on 23 December 1968.

- 1979 MSgt Leonard C. Hume, Jr., Detachment 4, Air Weather Service (AWS), Andersen AFB, GU
- 1980 MSgt John J. Hewitt, Detachment 2, 7th Weather Squadron, Hanau AI, DE
- 1981 MSgt Kirby Danielson, Detachment 25, 31st Weather Squadron, Rhein-Main AB, DE
- 1982 MSgt John F. Mullins, Detachment 19, 15th Weather Squadron, Lajes Field, Azores
- 1983 SMSgt Finis R. Herron, Air Force Global Weather Central, Offutt AFB, NE
- 1984 MSgt Michael A. Jimenez, Air Force Global Weather Central, Offutt AFB, NE
- 1985 MSgt Rosanne Eodchick, USAF Environmental Technical Applications Center, Scott AFB, IL
- 1986 SMSgt Dennis F. Gagne, 31st Weather Squadron, Sembach AB, DE
- 1987 MSgt Steven C. Thomas, USAF Environmental Technical Applications Center, Scott AFB, IL
- 1988 MSgt Mariano DeLaOssa, Jr., Detachment 7, 20th Weather Squadron, Schofield Barracks, HI
- 1989 MSgt Billy L. Dorsey, Detachment 2, 24th Weather Squadron, Columbus, MS
- 1990 MSgt Leonard A. Wells, Detachment 16, 31st Weather Squadron, Zaragoza, ES
- 1991 MSgt Richard A. Fisk, Weather Flight, 317th Operations Support Squadron, Dyess AFB, TX
- 1992 MSgt Raymond T. Solberg, Jr., Weather Flight, 39th Tactical Group, Incirlik AB, TR
- 1993 MSgt Jimmy W. Long, Weather Flight, 97th Air Mobility Wing, Altus AFB, OK
- 1994 MSgt Robert L. Fuller, Weather Flight, 19th Air Support Operations Squadron, Ft Campbell, KY
- 1995 MSgt Gerald C. Claycomb, Weather Flight, 92nd Operations Support Squadron, Fairchild AFB, WA
- 1996 SMSgt Jeffrey A. Fluegge, 25th Weather Flight, 25th Air Support Operations Squadron, Wheeler AAF, HI
- 1997 MSgt James C. Minyon, Weather Flight, 7th Operations Support Squadron, Dyess AFT, TX
- 1998 MSgt Alfredo Dominguez III, Weather Flight, 509th Operations Support Squadron, Whiteman AFB, MO
- 1999 MSgt, Ricky G. Kyle, Headquarters Air Force Weather Agency, Offutt AFB, NE

GARDNER

- 2000 MSgt David W. Lappie, Weather Flight, 52nd Operations Support Squadron, Spangdahlem AB, DE
- 2001 SMSgt Ronald L. Hoover, 25th Operational Weather Squadron, Davis-Monthan, AZ
- 2002 MSgt James Vinson, 2nd Weather Flight, Fort McPherson, GA
- 2003 MSgt Raymond L. Pelletier, Weather Flight 354th Operations Support Squadron, Eielson AFB, AK
- 2004 MSgt Joseph L. Nichols, Jr., 3rd Weather Squadron, Fort Hood, TX
- 2005 MSgt Paul T. Richard, Jr., Weather Flight, 51st Operations Support Squadron, Osan AB, KR

AIR FORCE WEATHER SNCO OF THE YEAR AWARD

- 2006 SMSgt Kirk D. Bailey, 25th Operational Weather Squadron, Davis-Monthan AFB, AZ
- 2007 MSgt Samuel T. Simmons, Weather Flight, 509th Operations Support Squadron, Whiteman AFB, MO
- 2008 SMSgt Wesley G. Fillmore, 21 Operational Weather Squadron, Sembach AB, DE
- 2009 MSgt Fambro W. Knight, Weather Flight, 100th Operations Support Squadron, RAF Mildenhall, GB
- 2010 MSgt Michael Sanborn, 2nd Weather Squadron, Offutt AFB, NE
- 2011 MSgt Margit Howard, 45th Weather Squadron, Patrick AFB, FL

AIR FORCE WEATHER NON-COMMISSIONED OFFICER (NCO) OF THE YEAR AWARD

PIERCE AWARD After 2000



The Air Force Weather NCO of the Year Award was established in 1979 to recognize the most outstanding individual conducting any aspect of weather operations (i.e., characterizing the environment or exploiting environmental information). In 2007 the award was renamed the Pierce Award.

- 1979 TSgt Donny Weaver, Detachment 3, 5th Weather Squadron, Fort Bragg AI, NC
- 1980 TSgt James A. Hoy, Operating Location C, 7th Weather Squadron, Bad Toelz City, DE
- 1981 SSgt Cynthia G. Mendonca, Air Force Global Weather Central, Offutt AFB, NE
- 1982 TSgt Leonard L. Czepiel, Detachment 14, 17th Weather Squadron, Norton AFB, CA
- 1983 TSgt Mary F. Hebert, Detachment 15, 28th Weather Squadron, RAF Mildenhall, GB
- 1984 TSgt Franklin C. Mullins, Detachment 10, 25th Weather Squadron, Bergstrom AFB, TXs
- 1985 TSgt Mariano De La Ossa, Jr., Air Force Global Weather Central, Offutt AFB, NE
- 1986 SSgt Frank J. Hall III, Detachment 25, 5th Weather Wing, Howard AFB, PA
- 1987 SSgt Albert F. Heineman, Detachment 9, 3rd Weather Squadron, Tyndall AFB, FL
- 1988 TSgt Ronald A. LaRosa, 4th Weather Wing, Peterson AFB, CO
- 1989 TSgt Scott D. Weber, Detachment 8, 31st Weather Squadron (Need Location)
- 1990 SSgt Lucy D. Bunch, Detachment 17, 28th Weather Squadron, RAF Upper Heyford, GB
- 1991 TSgt Philip D. Thompson, 81 Weather Flight, RAF Bentwaters and Woodbridge, GB
- 1992 TSgt Blake L. Lasher, Weather Flight, 319th Operations Support Squadron, Grand Forks, ND
- 1993 TSgt Matthew L. Kline, Weather Flight, 410th Bomb Wing, K.I. Sawyer AFB, MI
- 1994 TSgt Rich W. Downing, Weather Flight, 12th Operations Support Squadron, Randolph AFB, TX
- 1995 SSgt Chad S. Deal, 30th Weather Squadron, Vandenberg AFB, CA
- 1996 TSgt Tony B. Southerland, Weather Flight, 100th Operations Support Squadron, RAF Mildenhall, GB
- 1997 TSgt Dennis P. Davis, AF Combat Weather Center, Hurlburt Field, FL
- 1998 TSgt Douglas P. Anderson, Weather Flight, 354th Operations Support Squadron, Eielson AFB, AK
- 1999 SSgt Valerie A. smith, Weather Flight, 92nd Operations Support Squadron, Fairchild AFB, WA
- 2000 SSgt Jennifer Shields, Weather Flight, 75th Operations Support Squadron, Hill AFB, UT.
- 2001 SSgt William R. Wilson, Weather Flight, 80th Operations Support Squadron, Sheppard AFB, TX
- 2002 TSgt Glen DeMars, Weather Flight, 18th Operations Support Squadron, Kadena AB, JP
- 2003 TSgt James A. Gies, 30th Weather Squadron, Vandenberg AFB, CA
- 2004 SSgt Patricia M. Ford, 3rd Air Support Operations Squadron, Fort Wainwright AI, AK
- 2005 SSgt Christopher A. Patterson, 3rd Air Support Operations Squadron, Fort Wainwright, AK
- 2006 TSgt Jeffrey W. Hall, Weather Flight, 22nd Operations Support Squadron, McConnell AFB, KS
- 2007 TSgt Bradford N. Godwin, Weather Flight, 78th Operations Support Squadron, Robins AFB, GA
- 2008 TSgt James P. Bauman, 2nd Weather Squadron, Offutt AFB, NE
- 2009 TSgt Nicholas A. Ditondo, 2nd Combat Weather Systems Squadron, Hurlburt Field, FL
- 2010 SSgt Paul Alfred, Weather Flight, 612th Air Base Squadron, Soto Cano AB, HN

2011 TSgt Gregory Spiker, 56 Operational Support Squadron, Weather Flight, Luke AFB, AZ

AIRMAN OF THE YEAR AWARD

The Outstanding Airman of the Year Award was established in 1979 to recognize the most outstanding individual (E-4 and below) conducting any aspect of weather operations (i.e., characterizing the environment or exploiting environmental information). In 2000 the award was renamed as the Dodson Award.

1979 Sgt Harald Naestvold, USAF Environmental Technical Applications Center, Scott AFB, IL
1980 SrA Starr A. Olson, Detachment 20, 17th Weather Squadron, Little Rock AFB, AR
1981 SrA David L. Johansen, Air Force Global Weather Central, Offutt AFB, NE
1982 Amn Ricky A. Hiltbrand, Air Force Global Weather Central, Offutt AFB, NE
1983 SrA Harry L. Druckenmiller, Detachment 12, 7th Weather Squadron, Finthen AI, DE
1984 SrA Linda M. Bogart, Air Force Global Weather Central, Offutt AFB, NE
1985 SrA Bruce S. Linde, Detachment 11, 1st Weather Wing, Hickam AFB, HI
1986 SrA Matthew J. Cornell, Detachment 21, 15th Weather Squadron, 7th Weather Wing, Pope AFB, NC
1987 A1C Robert A. Steenburgh, Detachment 15, 28th Weather Squadron, RAF Mildenhall, GB
1988 SrA Edward C. Harris, Detachment 2, 24th Weather Squadron, Columbus AFB, MS
1989 SrA Anton Hembrod, Detachment 4, 28th Weather Squadron, RAF Bentwaters, GB
1990 SrA Robert L. Honadle, Detachment 30, 2nd Weather Squadron, Vandenberg AFB, CA
1991 SrA Greg Cobb, Detachment 1, 5th Weather Wing, Bangor, ME
1992 SrA Johanna S. Mosser, Weather Flight, 673rd Operations Support Squadron, Elmendorf AFB, AK
1993 SrA Robert M. Pucci, Weather Flight, 375th Airlift Wing, Scott AFB IL
1994 SrA Gregory S. Schmidt, Weather Flight, 18th Operations Support Squadron, Kadena AB, JP
1995 SrA timothy K. Schwader, Weather Flight 71st Operations Support Squadron, Vance AFB, OK
1996 SrA Brian P. Hakey, Weather Flight, 52nd Operations Support Squadron, Spangdahlem AB, DE
1997 SrA Lisa M. Blackerby, Weather Flight, 100th Operations Support Squadron, RAF Mildenhall, GB
1998 SrA William M. Barnwell IV, Detachment 5, 10th Combat Weather Squadron, Ft Bragg, NC
1999 No Award Presented

DODSON AWARD

2000 A1C John Snodgrass, Weather Flight, 3rd Air Support Operations Squadron, Ft. Wainwright AIN, AK
2001 SrA Matthew T. Insko, Air Force Weather Agency, Offutt AFB, NE
2002 SrA Amy Acker, Air Force Weather Agency, Offutt AFB, NE
2003 SrA Kylee S. Reynolds, 3rd Air Support Operations Group, Fort Hood, TX
2004 SSgt timothy J. Faircloth, 45th Weather Squadron, Patrick AFB, FL
2005 SrA John T. Radovan, Weather Flight, 52nd Operations Support Squadron, Spangdahlem AB, DE

AIR FORCE WEATHER AIRMAN OF THE YEAR AWARD

2006 SrA Lawrence L. Harris II, Weather Flight, 1st Operations Support Squadron, Hurlburt Field, FL
2007 SrA Leon Keochanthanivong, 15th Operational Weather Squadron, Scott AFB, IL
2008 SrA Bradley T. Martin, 28th Operational Weather Squadron, Shaw AFB, SC
2009 A1C Cody B. Nichols, 26th Operational Weather Squadron, Barksdale AFB, LA
2010 SrA Carey Bowman, 26th Operational Weather Squadron, Barksdale AFB, LA
2011 SrA Heath Litchfield, 15th Operational Weather Squadron, Scott AFB, IL

JENNER AWARD
AIR FORCE CIVILIAN OF THE YEAR AWARD



The Air Force Weather Civilian of the Year award (established in 1982) was renamed the Jenner Award in 1985 in honor of Mr. William A. Jenner, whose career with Air Weather Service spanned 42 years. This award is given yearly to recognize the most outstanding individual conducting any aspect of weather operations (i.e., characterizing the environment or exploiting environmental information).

- 1982 Mr. Donald G. Caviness, Air Force Global Weather Central (AFGWC), Offutt AFB, NE
- 1983 Mr. Clarence B. Elam, Jr., USAF Environmental Technical Applications Center (ETAC), Scott AFB, IL
- 1984 Mr. John T. Pacek, Jr., Detachment 12, 15th Weather Squadron, Selfridge ANGB, MI
- 1985 Mr. Edward L. Carr, AFGWC, Offutt AFB, NE
- 1986 Mr. Frank W. Jenks III, Detachment 1, 2d Weather Squadron, Wright-Patterson AFB, OH
- 1987 Mr. Joseph Boyte, Operating Location A, USAFETAC, Asheville, NC
- 1988 Mr. Robert E. Miller, 26th Weather Squadron, Barksdale AFB, LA
- 1989 No Award Presented
- 1990 Mr. Johnny W. Weems, Detachment 11, 2nd Weather Squadron, Patrick AFB, FL
- 1991 Mr. Billie F. Boyd, 45th Weather Squadron, Patrick AFB, FL
- 1992 Mr. Harold E. Witsman, 46th Weather Squadron, Eglin AFB, FL
- 1993 Mr. Johnny W. Weems, 45th Space Wing, Patrick AFB, FL
- 1994 Mr. Kim J. Runk, AFGWC, Offutt AFB, NE
- 1995 Mr. George N. Coleman III, Air Weather Service, Scott AFB, IL
- 1996 Dr. Christy L. Croiser, 30th Weather Squadron, Vandenberg AFB, CA
- 1997 Mr. James Wainwright, Jr., Weather Flight, 9th Operations Support Squadron, Beale AFB,
- 1998 Dr. Christy L. Croiser, 30th Weather Squadron, Vandenberg AFB, CA
- 1999 Herr Harald Strauss, USAFE Operational Weather Squadron, Sembach AB, DE
- 2000 Mr. Michael Fietek, Weather Flight, 92nd Operations Support Squadron, Fairchild AFB, WA
- 2001 Mr. Robert E. Monroe, Air Force Weather Agency (AFWA), Offutt AFB, NE
- 2002 Dr. Christy L. Croiser, 30th Weather Squadron, Vandenberg AFB, CA
- 2003 Mr. Louis J. Riva, AFWA, Offutt AFB, NE
- 2004 Mr. Daniel J. Sheldon, Weather Flight, 325th Operations Support Squadron, Tyndall AFB, FL
- 2005 Mr. Roddy E. Nixon, Jr., Weather Flight, 78th Operations Support Squadron, Robins AFB, GA

AIR FORCE CIVILIAN OF THE YEAR AWARD

- 2006 Mr. Robert T. Williams, Jr., AFWA, Offutt AFB, NE
- 2007 Mr. Todd M. McNamara, 45th Weather Squadron, Patrick AFB, FL
- 2008 Mr. Richard D. Zentz, Weather Flight, 14th Operations Support Squadron, Columbus AFB, MS
- 2009 Mr. Harold D. Eifert, 618th Tanker/Airlift Control Center, Scott AFB, IL
- 2010 Mr. Milton Kooyman, 15th Operational Weather Squadron, Scott AFB, IL
- 2011 Mr. Scott Copeland, 17th Operational Weather Squadron, Joint Base Pearl Harbor – Hickam, HI

BEST AWARD



The Best Award was established in 1973 in honor of Brigadier General William H. Best, Jr., Commander, Air Weather Service, 1970-1973. It was awarded each year to recognize individual excellence in performing environmental service support at staff level. In 1991 additional categories were added for officer, enlisted, and civilian. The award was further refined in 2007 to reflect changing missions.

- 1972 Maj Hans-Joachim E. Fischer, Detachment 6, 6th Weather Wing, L.G. Hanscom Field, MA
- 1973 Lt Col William O. Breedlove, 12th Weather Squadron, 3d Weather Wing, Ent AFB, CO
- 1974 Lt Col Eichi Shibata, Detachment 8, 20th Weather Squadron, 1st Weather Wing, Kadena AB, JP
- 1975 Lt Col James C. Owens, Operating Location A, 16th Weather Squadron, 5th Weather Wing, Fort Huachuca AI, AZ
- 1976 Lt Col Robert W. Smith, Detachment 1, Headquarters Air Weather Service, Pentagon, Washington, DC
- 1977 Maj David K. Douglas, 5th Weather Wing, Langley AFB, VA
- 1978 Maj Charles H. Tracy, 2d Weather Wing, Kapaun Barracks, DE
- 1979 Maj William S. Weaving, 7th Weather Wing, Scott AFB, IL
- 1980 Lt Col Robert W. Endlich, Operating Location B, 7th Weather Squadron, 2d Weather Wing, Moehringen City, DE
- 1981 Maj Michael R. Snapp, Detachment 1, 2d Weather Squadron, Headquarters Air Weather Service, Wright-Patterson AFB, OH
- 1982 Cap Thomas C. Adang, Detachment 7, Headquarters Air Weather Service, Mercury, NV
- 1983 Maj Donald G. Buchanan, 3d Weather Wing, Offutt AFB, NE
- 1984 Maj Charles W. French, Detachment 25, 5th Weather Wing, Howard AFB, PA
- 1985 Capt Gregory J. Donovan, Detachment 13, 20th Weather Squadron, 1st Weather Wing, Misawa AB, JP
- 1986 Capt William Collins, 7th Weather Squadron, 2d Weather Wing, Heidelberg AI, DE
- 1987 Capt Springer M Timothy Detachment 5, 20th Wx Sq Clark AB, PH
- 1988 Maj Thomas c Adang Detachment 1, AWS Washington, DC
- 1989 Maj Norman E. Buss Detachment 11, 2d Weather Sq Patrick AFB, FL
- 1990 Capt Charles M. Davenport, Headquarters, 5th Weather Wing, Langley AFB, VA

OUTSTANDING STAFF AWARD OFFICER/ENLISTED/CIVILIAN

- 1991 Maj. Laura S Kennedy, Space Systems, Secretary of the Air Force, Pentagon, Washington, DC
- 1991 MSgt William Boyle, Headquarters, 5th Weather Wing, Langley AFB, VA
- 1991 Mr. Jay A. Albrecht, AF Global Weather Central Offutt AFB, NE
- 1992 Lt Col John R. Roadcap, P1/WE, Kirtland AFB, NM
- 1992 SMSgt Ronald C. Mueller, Headquarters, 7th Weather Squadron, Heidelberg, DE
- 1992 Mr. Lawrence E. Baker, Headquarters, Directorate of Weather, Air Mobility Command, Scott AFB, IL
- 1993 Capt Carolyn M. Vadnais, 645th Air Base Wing, Wright-Patterson AFB, OH
- 1993 SMSgt Ronald W. Pagitt AF Global Weather Central Offutt AFB, NE
- 1993 Ms. Sandra K. Weaver, 645th Air Base Wing, Wright-Patterson AFB, OH
- 1994 Capt Richard T. Twigg Air Weather Service Scott AFB, IL
- 1994 TSgt Ronnie P, Caldwell, Weather Flight, 18th Operations Support Squadron, Kadena AB, JP
- 1994 Mr. Michael Howland, AF Global Weather Central Offutt AFB, NE
- 1995 Capt Donald H. Berchoff, AF Global Weather Central Offutt AFB, NE

1995 MSgt Patrick R. Coyle, Jr., Headquarters, Air Weather Service Scott AFB, IL
 1995 Mr. Billie F. Boyd, 45th Weather Squadron, Patrick AFB, FL
 1996 Maj Ralph O. Stoffler, Headquarters, US Air Forces in Europe Ramstein AB, DE
 1996 SMSgt Michael A. Zimmer, Headquarters AF Global Weather Center Offutt AFB, NE
 1996 Mr. Stanley W. Tkach, Directorate of Weather, Air Combat Command, Langley AFB, VA
 1997 Maj Kenneth S Smith, 7th Weather Squadron, Heidelberg, DE
 1997 Mr. Mark T. Surmeier Headquarters, Headquarters, Air Weather Service, Scott AFB, IL
 1997 No Enlisted Category Presented
 1998 Maj Jeffrey R. Linskens, Headquarters, US Air Forces in Europe, Ramstein AB, DE
 1998 MSgt William H. Dennis Jr. 7th Weather Sq Heidelberg AIN, DE
 1998 Mr. Stanley W. Tkach, Headquarters, Directorate of Weather, Air Combat Command, Langley AFB, VA
 1999 Maj Carolyn M. Vadnais Headquarters, Directorate of Weather, US Air Forces in Europe, Ramstein AB,
 1999 SSgt Ian S. Phillips, Headquarters, Directorate of Weather, Air Combat Command, Langley AFB, VA
 1999 SMSgt Charles G. Vinson, Directorate of Weather, AF Materiel Command, Wright-Patterson AFB, OH
 1999 Mr. Mark T. Surmeier, Headquarters, AF Weather Agency Offutt AFB, NE
 2000 Capt Lee A. Byerle, Headquarters, US Air Forces in Europe Ramstein AB, DE
 2000 SMSgt Paul A. Rano, 15th Operational Weather Squadron, Scott AFB, IL
 2000 Mr. Thomas E. Kotz, AF Combat Climatology Center, Asheville, NC
 2001 Maj Ricardo C. Davila, Headquarters, US Air Forces in Europe Ramstein AB, DE
 2001 SMSgt Christopher Rambali, Directorate of Weather, Air Combat Command, Langley AFB, VA
 2001 Mr. Philip O. Harvey, 412th Operational Support Squadron, Edwards AFB, CA
 2002 Maj Peter C. Clement, 18th Weather Squadron, Pope AFB, NC
 2002 SMSgt Ralph Getzandanner, U.S. Special Operations Command, McDill AFB, FL
 2002 Mr. Stan Tkach, Directorate of Weather, Headquarters Air Combat Command, Langley AFB, VA
 2003 Maj Mark R. Lajoie, Directorate of Weather, HQ Air Education and Training Command, Randolph AFB, TX
 2003 MSgt James M. Moffitt, Requirements Branch, 45th Weather Squadron, Patrick AFB, FL
 2003 Mr. Kirk E. Lehneis, 88ES, Wright-Patterson AFB, OH
 2004 Capt Stephan K. Johnson, Directorate of Weather, HQ Air Combat Command, Langley AFB, VA
 2004 SSgt Miguel A. Rosado, 18th Weather Squadron, Pope AFB, NC
 2004 Mr. Stanley W. Tkach, Directorate of Weather, HQ Air Combat Command, Langley AFB, VA
 2005 Maj De Leon C. Narcisse, Detachment 3, Air Force Weather Agency, Wright-Patterson AFB, OH
 2005 SMSgt Shawn D. Dahl, Air Force Reserve Center/DOVA, Robins AFB, GA
 2005 Mr. Robert W. Troastle, Directorate of Weather, Air Combat Command, Langley AFB, VA
 2006 Capt Deborah J. Danyluk, Directorate of Weather, U.S. Air Forces in Europe, Ramstein AB, DE
 2006 SMSgt James Vinson, Operating Location K, HQ Air Combat Command, Fort McPherson, GA
 2006 Mr. Stanley W. Tkach, Directorate of Weather, HQ Air Combat Command, Langley AFB, VA

**AIR FORCE WEATHER STAFF
 (Officer/Enlisted Member/Civilian)
 OF THE YEAR**

Outstanding Weather Staff Officer/Enlisted Member/Civilian of the Year recognizes the most outstanding individual performing staff weather duties on an A-staff (or J-staff) at a NAF, a MAJCOM, a FOA/DRU, HQ Air Force, a Combatant Command, or the Joint Staff. The award also recognizes outstanding contributions by weather staff members conducting any aspect of weather operations while deployed during the award period.

2007 Maj. Juan M. Hidalgo, AFWA, Offutt AFB, NE
 2007 MSgt Brady L. Armistead, Directorate of Weather, AF Special Operations Command, Hurlburt Field, FL

2007 Mr. John S. Galliano, Directorate of Weather, Pacific Air Forces Command, Hickam AFB, HI
 2008 Maj Robert A. Stenger, 2nd Weather Group, Offutt AFB, NE
 2008 SMSgt Stephen W. Dombek, Directorate of Weather, Pacific Air Forces, Hickam AFB, HI
 2008 Mr. Ronald S. Kommer, Directorate of Weather, Air Combat Command, Langley AFB, VA
 2009 Maj Geoffrey D. Dawson, Directorate of Weather, US Air Forces in Europe, Ramstein AB, GE
 2009 MSgt David M. Mckinney, Directorate of Weather AF Special Operations Command, Hurlburt Field, FL
 2009 Mr. Evan L. Kuchera, 16th Weather Squadron, Offutt AFB, NE
 2010 Maj Geoffrey D. Dawson, Directorate of Weather, US Air Forces in Europe, Ramstein AB, GE
 2010 MSgt Jerrod Webb, Directorate of Weather, Air Mobility Command, Scott AFB, IL
 2010 Mr. Hoover Hodge, Directorate of Weather, AF Special Operations Command, Hurlburt Field, FL
 2011 Mr. Stephen Rosemier, Headquarters United States Air Forces in Europe/A3W, Ramstein AB, DE

AIR FORCE BATTLEFIELD WEATHER (AFBW)

OUTSTANDING AFBW WEATHER (Company Grade Officer, Senior Noncommissioned Officer, Noncommissioned Officer, Airman) OF THE YEAR

Air Force Outstanding Battlefield Weather Officer/SNCO/NCO/Airman of the Year was initiated in 2006. The award recognizes the most outstanding individual conducting weather operations in direct support to Army or United States Special Operations Command units..

OUTSTANDING AFBW COMPANY GRADE OFFICER OF THE YEAR

2006 Capt Steven C. Lipinski, Weather Flight, 25th Air Support Operations Squadron, Wheeler AAF, HI
 2007 Capt Jeffrey A. Goddard, Jr., 3rd Weather Squadron, Fort Hood AIN, TX
 2008 Capt Jonathan D. Sawtelle, Detachment 5, 10th Combat Weather Squadron, Fort Bragg AIN, NC
 2009 Capt Jeffrey A. Gipson, 7th Weather Squadron (USAFE), Heidelberg, DE
 2010 Capt James Caldwell, Detachment 2, 10th Combat Weather Squadron (AFSOC), Fort Campbell AIN, KY
 2011 Capt Matthew Sampson, Detachment 2, 10th Combat Weather Squadron (AFSOC), Fort Campbell AIN, KY

OUTSTANDING AFBW

SENIOR NONCOMMISSIONED OFFICER OF THE YEAR

2006 MSgt Todd A. Grebel, Weather Flight, 25 Air Support Operations Squadron, Wheeler AAF, HI
 2007 MSgt Jason P. Colon, 18th Weather Squadron, Pope AFB, NC
 2008 MSgt Shane R. Wagner, Aviation Tactics Evaluation Group (USSOCOM), Fort Bragg AIN, NC
 2009 MSgt Davie L. Lewis, 7 WS (USAFE), Heidelberg, DE
 2010 MSgt Scott McCormick, Detachment 5, 7th Weather Squadron (USAFE), Illesheim, DE
 2011 SMSgt William Anders, 7th Weather Squadron, Heidelberg, DE

OUTSTANDING AFBW NONCOMMISSIONED OFFICER

2006 SSgt Gregory D. Spiker, Air Support Flight, 1st Weather Squadron, Fort Lewis AIN, WA
 2007 TSgt Lisa M. Smith, 25th Air Support Operations Squadron, Wheeler AAF, HI
 2008 SSgt Daniel J. Mike, Detachment 5, 7th Weather Squadron (USAFE), Illesheim AIN, DE
 2009 SSgt Thomas B. Howser, 10th Combat Weather Squadron (AFSOC), Hurlburt Field, FL
 2010 SSgt Robert Schlichtenmyer, Aviation Tactics Evaluation Group (USOCOM), Fort Bragg, NC
 2011 TSgt Elijah Edwards, Special Operations Weather Team-B, 10th Combat Weather Squadron, Hurlburt Field, FL

OUTSTANDING AFBW AIRMAN

- 2006 SrA Deanna E. Marks, Air Support Flight, 1st Weather Squadron, Fort Lewis AIN, WA
- 2007 SrA Kenneth S. Malawey, 10th Combat Weather Squadron, Hurlburt Field, FL
- 2008 SrA Joshua S. Leggitt, Detachment 2, 607th Weather Squadron (PACAF), Camp Humphreys AIN, KR
- 2009 SrA Christopher L. Watts, Operating Location A, 7th Weather Squadron (USAFE) Coleman AAF, DE
- 2010 SrA Joey Cedillo, 10th Combat Weather Squadron (AFSCO), Hurlburt Field, FL
- 2011 SrA Sarah Woehl, Detachment 2, 7th Weather Squadron, Grafenwoehr Army Air Field, DE

SPACE WEATHER

OUTSTANDING SPACE WEATHER ORGANIZATION

The Outstanding Space Weather Organization award was established in 2010 to recognize an Air Force Weather unit involved in the characterization and/or exploitation of space weather data or information.

- 2010 2nd Weather Squadron, Offutt AFB, NE
- 2011 Space Weather Flight, 2nd Weather Squadron, Offutt AFB, NE

OUTSTANDING SPACE WEATHER (Company Grade Officer (CGO), SNCO, and NCO) OF THE YEAR

The Outstanding Space Weather award was established in 2010 to recognize the most outstanding Air Force Weather individuals involved in the characterization and/or exploitation of space weather data or information.

OUTSTANDING SPACE WEATHER CGO

- 2010 Capt Tom Blum, 21st Operations Support Squadron, Peterson AFB, CO
- 2011 Capt Joshua Werner, Headquarters Air Force Space Command/A5CS, Peterson AFB, CO

OUTSTANDING SPACE WEATHER SNCO

- 2010 MSgt Shane Siebert, Detachment 4, 2nd Weather Squadron, Holloman AFB, NM

OUTSTANDING SPACE WEATHER NCO

- 2010 TSgt Donald Milliman, Detachment 2, 2nd Weather Squadron, Hamilton, MA
- 2011 TSgt Thomas Correnti, Space Weather Flight, 2nd Weather Squadron, Offutt AFB, NE

AIR RESERVE COMPONENT (ARC) WEATHER

SPENGLER AWARD



The Spengler Award was established in 1975 in honor of Brigadier General Kenneth C. Spengler (Air Force Reserve) who served as Special Assistant to the Commander, Air Weather Service, 1961-1975. It is presented yearly to the most outstanding weather mobilization augmentee of the year. In 2002 the award was expanded to recognize enlisted augmentees. In 2008 the award was redesignated as Air Reserve Component Weather Outstanding Weather Officer of the Year to include both Reserve and air National Guard officers.

1975 Col Paul W. Kadlec, Headquarters Air Weather Service (AWS), Scott AFB, IL
1976 Lt Col Paul Twitchell, Headquarters AWS, Scott AFB, IL
1977 Lt Col Charles M. Umpenhour, Denver, CO
1978 Maj Roger C. Clapp, Detachment 2, 24th Weather Squadron, 5th Weather Wing, Columbus AFB, MS
1979 Capt Kerry A. Bartels, Detachment 6, 26th Weather Squadron, 3d Weather Wing, Pease AFB, NH
1980 Lt Col Douglas L. Jonas, Headquarters AWS, Scott AFB, IL
1981 Maj Thomas H. Kyle, Detachment 2, 2d Weather Squadron, L.G. Hanscom AFB, MA
1982 Maj James R. Allen, 17th Weather Squadron, 7th Weather Wing, Travis AFB, CA
1983 Maj John T. Sigmon, Detachment 5, 15th Weather Squadron, 7th Weather Wing, Dover, DE
1984 Lt Col Herbert T. Sherrow, 25th Weather Squadron, 5th Weather Wing, Bergstrom AFB, TX
1985 Maj Charles R. Holliday, Air Force Global Weather Central (AFGWC), Offutt AFB, NE
1986 Maj Brian E. Heckman, Denver Weather Service Forecast Office, Denver, CO
1987 Capt Jeannette M. Baker, 5th Weather Wing, Langley AFB, VA
1988 Maj Kenneth E. Mitchell, AFGWC, Offutt AFB, NE
1989 No Award Presented
1990 Lt Col Charles R. Holiday, AFGWC, Offutt AFB, NE
1991-1996 No Award Presented
1997 Capt Warren J. Madden, 88th Weather Squadron, Wright-Patterson AFB, OH
1998 Maj Ann S. Hollis, 355th Operations Support Squadron, Davis-Monthan AFB, AZ
1999 Lt Col David I. Knapp, AFGWC, Offutt AFB NE
2000 Maj Michael W. Heathfield, 2nd Weather Flight, Fort McPherson, GA
2001 Lt Col Beth B. McNulty, Air Force Weather Agency (AFWA), Offutt AFB NE
2002 Maj Brent Shaw, AFWA, Offutt AFB, NE
2002 SMSgt Thomas Needham, Directorate of Weather, Air Combat Command, Langley AFB, VA
2003 Lt Col Michael A. Kelly, HQ Air Force Weather Agency, Offutt AFB, NE
2004 Maj Sean M. Nolan, ACC Weather Flight, 1st US Army, G2 AFIN SWO, Forest Park, GA
2005 Maj Tracy L. Scott, Air Force Space Command/A3FW, Peterson AFB, CO
2006 1stLt Christopher T. Higgins, 12th Operational Weather Flight (AFRC), Scott AFB, IL
2006 MSgt Paul Montas, Directorate of Weather, Air Combat Command, Langley AFB, VA
2007 1stLt Julia M. Coppola, Headquarters Air Combat Command/AOS/OSW, Langley AFB, VA
2007 TSgt Mark R. Gilley, 105th Weather Flight (ANG), Nashville, TN

**OUT STANDING ARC WEATHER
WEATHER OFFICER OF THE YEAR**

Recognizes an Air Force Reserve Individual Mobilization Augmentee (IMA), Traditional Reservist, or Air National Guard member who: (1) makes an outstanding contribution to AF weather operations, (2) displays self-improvement through off-duty programs, and (3) displays leadership in the military and/or civilian community.

2008 Capt Christopher T. Higgins, 12th Operational Weather Flight (AFRC), Scott AFB, IL
2009 Capt Ashley N. Lovett, Headquarters Air Force Reserve Command, Robins AFB, GA
2010 Maj Laura Maddin, 12th Operational Weather Flight (AFRC), Scott AFB, IL
2011 Capt Julia Coppola, ACC, Air Operations Squadron, Weather Flight, Langley AFB, VA.

**OUT STANDING ARC WEATHER
(Senior Non-Commissioned Officer, Non-Commissioned Officer, Airman)
OF THE YEAR**

Recognizes an Air Force Reserve Individual Mobilization Augmentee (IMA), Traditional Reservist, or Air National Guard member who: (1) makes an outstanding contribution to AF weather operations, (2) displays self-improvement through off-duty programs, and (3) displays leadership in the military and/or civilian community.

**OUTSTANDING ARC WEATHER
SENIOR NON-COMMISSIONED OFFICER OF THE YEAR**

2008 SMSgt Paul F. Montas, HQ ACC/A3W (AFRC), Langley AFB, VA
2009 MSgt Jason R. Bowry, 5 OWF (AFRC), Shaw AFB, SC
2010 MSgt Melissa Arbisi, 12th Operational Weather Flight (AFRC), Scott AFB, Illinois
2011 MSgt Robert Rock, 5th Operational Weather Flight, Shaw AFB, SC

OUTSTANDING ARC WEATHER NON-COMMISSIONED OFFICER

2008 TSgt Thomas J. Mahan, Weather Readiness Training Center (AFRC), Camp Blanding, FL
2009 TSgt Marvin L. White, 5th Operational Weather Flight (AFRC), Shaw AFB, SC
2010 TSgt Ernesto Ruiz, 214th Operations Support Squadron (ANG), Davis-Monthan AFB, AZ
2011 TSgt Michael Griesemer, 12th Operational Weather Flight, Scott AFB, IL

OUTSTANDING ARC WEATHER AIRMAN

2010 SrA Michael Draper, 12th Operational Weather Flight (AFRC), Scott AFB, IL
2011 No Award Presented

OUTSTANDING ARC WEATHER CIVILIAN

2011 Mr. Ronald L. Hoover, 440th Operational Support Squadron, Weather Flight, Pope Field, NC

**AIR RESERVE COMPONENT (ARC)
BATTLE FIELD WEATHER (BFW)**

**OUTSTANDING WEATHER
(Company Grade Officer, Senior Non-Commissioned Officer,
Non-Commissioned Officer, Airman)
OF THE YEAR**

Recognizes an Air Force Reserve Individual Mobilization Augmentee (IMA), Traditional Reservist, or Air National Guard member who: (1) makes an outstanding contribution to AF weather operations, (2) displays self-improvement through off-duty programs, and (3) displays leadership in the military and/or civilian community.

**OUTSTANDING ARCBFW
COMPANY GRADE OFFICER OF THE YEAR**

2011 Capt Abilene Gonzaga, 209th Weather Flight (ANG), Camp Mabry, Austin, TX

**OUTSTANDING (ARCBFW)
SENIOR NON-COMMISSIONED OFFICER OF THE YEAR**

2008 MSgt David J. Ward, 208th Weather Flight (ANG), Saint Paul, MN
2009 MSgt Daniel K. Gardner, 208th Weather Flight (ANG), Saint Paul, MN
2010 MSgt Kenneth Campbell, 123rd Weather Flight (ANG), Portland, OR
2011 MSgt Joshua Stowers, 209th Weather Flight (ANG), Camp Mabry, Austin, TX

OUTSTANDING ARCBFW NON-COMMISSIONED OFFICER

2008 TSgt Christopher Drye, 209th Weather Flight (ANG), Camp Mabry, TX
2009 TSgt Kevin T. Phipps, 202nd Weather Flight (ANG), Otis ANGB, MA
2010 TSgt Joshua Uhl, 208th weather Flight (ANG), St Paul, MN
2011 TSgt Matthew Staton, 209th Weather Flight (ANG), Camp Mabry, Austin, TX

OUTSTANDING ARCBFW AIRMAN

2008 No Award Presented
2009 SrA Ryan Keefer, 208 WF, Saint Paul, MN (ANG)
2010 SrA Daniel Hicks, 123rd Operations Support Squadron (ANG), Portland, Oregon
2011 SrA John Richmond, 123 Weather Flight (ANG), Portland, OR

LEGACY AWARDS

BASSETT AWARD



The Bassett Award was established in 1956 in honor of Major General Harold H. Bassett, Chief of the Weather Division, Army Air Forces, 1943-1945. It was given yearly to the AWS Rawinsonde section compiling the most outstanding record of upper air observations during the year. Nominations were limited to one per wing or independent group. This award was discontinued in 1975 due to a decrease in the Rawinsonde requirement and a resultant lack of qualified contenders.

- 1956 Detachment 1, 15th Weather Squadron, 10th Weather Group, 1st Weather Wing, Clark AB, PH
- 1957 Detachment 4, 15th Weather Squadron, 10th Weather Group, 1st Weather Wing, Kadena AB, Okinawa
- 1958 Detachment 4, 15th Weather Squadron, 10th Weather Group, 1st Weather Wing, Kadena AB, Okinawa
- 1959 Detachment 21, 4th Weather Group, Edwards AFB, CA
- 1960 Detachment 17, 21st Weather Squadron, 2d Weather Wing, Zaragoza AB, ES
- 1961 Detachment 5, 1st Weather Wing, Clark AB, PH
- 1962 Flight C, 6th Weather Squadron (Mobile), 4th Weather Group, Johnson Island, Pacific
- 1963 Detachment 17, 21st Weather Squadron, 2d Weather Wing, Zaragoza AB, ES
- 1964 Detachment 17, 21st Weather Squadron, 2d Weather Wing, Zaragoza AB, ES
- 1965 Operating Location 1, Detachment 4, 21st Weather Squadron, 2d Weather Wing, Iraklion AS, Crete
- 1966 Detachment 10, 6th Weather Wing, Eglin AFB, FL
- 1967 Detachment 19, 15th Weather Squadron, 7th Weather Wing, Lajes Field, Azores
- 1968 Detachment 19, 15th Weather Squadron, 7th Weather Wing, Lajes Field, Azores
- 1969 Detachment 48, 11th Weather Squadron, 4th Weather Wing, Thule AB, GL
- 1970 Operating Location A (Formerly OL-1), Detachment 4, 21st Weather Squadron, 2d Weather Wing, Iraklion AB, Crete
- 1971 Detachment 19, 15th Weather Squadron, 7th Weather Wing, Lajes Field, Azores
- 1972 Detachment 25, 5th Weather Wing, Howard AFB, Canal Zone
- 1973 Detachment 25, 5th Weather Wing, Howard AFB, Canal Zone
- 1974 No Award Presented
- 1975 Detachment 3, 11th Weather Squadron, 3d Weather Wing, Shemya AFB, AK

PIERCE AWARD Prior to 2000



The Pierce Award was established in 1968 in honor of Major General Russell K. Pierce, Jr., Commander, Air Weather Service, 1965-1970. This annual award recognizes individual excellence in weather forecasting in a noncentralized facility. In 2000 this category was retired and the name was moved to NCO of the Year Award.

- 1968 MSgt Lorenzo A. Corpus, Jr., Detachment 5, 15th Weather Squadron, 7th Weather Wing, Griffiss AFB, NY
- 1969 MSgt Donald R. Jones, Chief Forecaster, Detachment 13, 16th Weather Squadron, Fort Eustis AI, VA
- 1970 CMSgt Robert E. Clark, Detachment 11, 21st Weather Squadron, 2nd Weather Wing, Torrejon AB, ES
- 1971 Mr. Milton M. Rasmussen, Detachment 3, 17th Weather Squadron, 7th Weather Wing, Norton AFB, CA
- 1972 MSgt William A. Crawford, 3rd Weather Wing, Offutt AFB, NE
- 1973 TSgt Robert H. Cook, Detachment 17, 31st Weather Squadron, 2nd Weather Wing, Upper Heyford RAF, GB
- 1974 SMSgt Kenneth R. Walters, Detachment 7, 15th Weather Squadron, 5th Weather Wing, Kelly AFB, TX
- 1975 1st Lt John C. Karsk, Detachment 9, 16th Weather Squadron, 5th Weather Wing, Fort Rucker AI, AL
- 1976 SSgt Danny J. Meade, Detachment 14, 25th Weather Squadron, 5th Weather Wing, Holloman AFB, NM
- 1977 SMSgt Darrel L. McClung, Detachment 3, 9th Weather Squadron, 3rd Weather Wing, Fairchild AFB, WA
- 1978 CMSgt Alvin C. Wiens, Detachment 2, 9th Weather Squadron, 3rd Weather Wing, Castle AFB, CA
- 1979 Mr. Lee Dixon, Detachment 13, 15th Weather Squadron, 7th Weather Wing, Robins AFB, GA
- 1980 MSgt Billy W. Brown, Detachment 20, 17th Weather Squadron, 7th Weather Wing, Little Rock AFB, AR
- 1981 TSgt Randolph C. Settje, Detachment 21, 7th Weather Squadron, 2nd Weather Wing, Kapaun AS, DE
- 1982 TSgt Mark Hamberger, Detachment 5, 7th Weather Squadron, 2nd Weather Wing, Katterbach City, DE
- 1983 TSgt Lee R. Bruce, Detachment 1, 3rd Weather Squadron, 5th Weather Wing, Shaw AFB, SC
- 1984 TSgt Earl J. Simon, Detachment 30, 2nd Weather Squadron, 4th Weather Wing, Vandenberg AFB, CA
- 1985 SSgt Jacob R. Lee, Jr., Detachment 8, 26th Weather Squadron, 3rd Weather Wing, Griffiss AFB, NY
- 1986 TSgt Luke D. Whitney, Detachment 9, Headquarters Air Weather Service, Las Vegas, NV
- 1987 TSgt Gordon H. Fesenger, Detachment 11 17th Weather Squadron, McChord AFB, WA
- 1988 SSgt Matthew Cornell, Detachment 21, 15th Weather Squadron, Pope AFB, NC
- 1989 TSgt Jeffrey P. Cunningham, Detachment 18, 30th Weather Squadron, Yongsan AIN, KR
- 1990 SSgt Bruce W. Perkins, Detachment 75, 6th Weather Squadron, Hurlburt Field, FL
- 1991 Capt John G. Fassell, AF Global Weather Central (GWC), Offutt AFB, NE
- 1992 SSgt Mike McAleenan, Weather Flight, 437th Operational Support Squadron, Charleston AFB, SC
- 1993 TSgt James J. Rouiller, AFGWC, Offutt AFB, NE
- 1994 TSgt Paul A. Strickler, Air Support Operations Squadron, AF Special Operations Command, Hurlburt Field, FL
- 1995 SSgt Shawn D. Dahl, Weather Flight, 319th Operational Support Squadron, Grand Forks AFB, North Dakota
- 1996 TSgt Gary L. Stevenson, Weather Flight, 48th Operational Support Squadron, RAF Lakenheath, United Kingdom
- 1997 SSgt Kurt R. Rohl, Weather Flight, 47th Operational Support Squadron, Laughlin AFB, Texas
- 1998 SrA Michele L. Alexander, Weather Flight, 16th Operational Support Squadron, Hurlburt Field, Florida
- 1999 SSgt Valerie A. Smith, Weather Flight, 92nd Operational Support Squadron, Fairchild AFB, Washington

ZIMMERMAN AWARD



The Zimmerman Award was established in 1956 in honor of Brigadier General Don Z. Zimmerman, Director of Weather, Army Air Forces, 1942. The award was given to the Air Weather Service individual (or team) who has demonstrated the best application of climatology during the year or who has developed a device or technique which has proved of greatest value in furthering the Air Weather Service climatology program. In 2006 the criteria for this award was combined with the Merewether Award.

- 1956 Warrant Officer Whitmal W. Hill, Jr., 1st Weather Wing, Fuchu AS, Japan
- 1957 MSgt James L. Rosenberry, 3d Weather Group, Colorado Springs, CO
- 1958 Maj Russell G. McGrew, Headquarters 3d Weather Wing, Offutt AFB, NE
- 1959 No Award Presented
- 1960 Maj Clarence E. Everson, Headquarters 4th Weather Wing, Colorado Springs, CO
- 1961 Mr. Milo J. Andre, GS-13, USAF Climatic Center, Suitland, MD
- 1962 Capt Richard E. Cale, Detachment 10, 4th Weather Group, Eglin AFB, FL
- 1963 Capt Joseph K. Lambert and 1st Lt John A. Dutton, 1210th Weather Squadron, Washington, DC
- 1964 TSgt Warren L. Hatch, 8th Weather Group, Scott AFB, IL
- 1965 Lt Col John T. McCabe, 1210th Weather Squadron, Washington, DC
- 1966 Capt Gary D. Atkinson, Detachment 1, 1st Weather Wing, Fuchu AS, JP
- 1967 Mr. Joe S. Restivo, Headquarters 4th Weather Wing, Ent AFB, CO
- 1968 Maj James S. Kennedy and Capt Dennis L. Quick, 2d Weather Squadron, Offutt AFB, NE
- 1969 Lt Col Robert C. Sabin, Headquarters 4th Weather Wing, Ent AFB, CO
- 1970 Maj Paul Janota, Detachment 1, Headquarters Air Weather Service, Springfield, VA
- 1971 MSgt Charles Ronan, Headquarters 2d Weather Wing, Wiesbaden AB, DE
- 1972 Capt Albert R. Boehm, 20th Weather Squadron, Fuchu AS, JP
- 1973 Lt Col Robert C. Sabin, Capts Richard L. Nieman and Hal W. Wold, 12th Weather Squadron, Ent AFB, CO
- 1974 Maj Dell V. McDonald, Operating Location (OL) E, 16th Weather Squadron, Fort Leavenworth AI, KA
- 1975 Maj Robert E. Dettling, USAF Environmental Technical Applications Center (USAFETAC), Scott AFB, IL
- 1976 Maj Roger H. Schauss, Study and Analysis Staff, Headquarters Air Force
- 1977 Capt Harry A. Chary, Headquarters 2d Weather Wing, Kapaun Barracks, Germany
- 1978 Maj Robert D. Smith, Detachment 11, 2d Weather Squadron, Offutt AFB, NE
- 1979 No Award Presented
- 1980 Maj Laurence D. Mendenhall, Headquarters 2d Weather Wing, Kapaun Barracks, DE
- 1981 Maj Edward M. Tomlinson, William C. Smith, and Mr Frank W. Jenks III; Detachment 1, 2d Weather Squadron, Wright-Patterson AFB, Ohio
- 1982 Capt James K. Woessner, OL-G, 2d Weather Squadron, Tyndall AFB, FL
- 1983 Messrs. Robert M. Rubendall, Mark T. Surmeier, and Robert D. Davy; OL-A, USAFETAC, Asheville, NC
- 1984 Maj Eugene S. Barnes, Detachment 14, 25th Weather Squadron, Holloman AFB, NM
- 1985 Capt Christopher G. Konze, First Lieutenant Phillip A. Zuzolo, and Mr. Charles J. Glauber; USAFETAC, Scott AFB, IL
- 1986 1st Lt Robert L. Haase, Jr., USAFETAC, Scott AFB, IL
- 1987 Lt Col Donald L. Best and Mr. Herr Harald Strauss, 2nd Weather Wing, Kapaun Barracks, DE
- 1988 Messrs. Robert D. Davy, OL-A USAFETAC, Asheville, NC and Dudley J. Foster, Jr., USAFETAC, Scott AFB IL

- 1989 Capt Mark J. Andrews.
- 1990 Capt Robert Farrell, Jr. USAFETAC, Scott AFB, IL
- 1991 Mr. Kenneth R. Walters, USAFETAC, Scott AFB, IL
- 1992 Capt Anthony J. Warren, USAFETAC, Scott AFB IL
- 1993 1st Lt David C. Runge, Staff Met, Electronic Systems Center (AFMC), Hanscom AFB, MA
- 1994 Capts Chan W. Smith and Thomas J. Smith, USAFETAC, Scott AFB, IL
- 1995 Capt Brian A. Beitler, 2nd Lt Kenneth P. Cloys, and 1st Lt Joseph P. Richards, AF Combat Climatology Center (AFCCC), Scott AFB, IL
- 1996 Capt Steven T. Fiorino, Messrs. Chris E. Leak and Michael F. Squires, SrA Kenneth J. Kreidall, Jr., AFCCC, Scott AFB, IL
- 1997 Ms. Melody L. Higdon, AFCCC, Scott AFB, IL
- 1998 Mr. William P. Roder, 45th Weather Squadron, Patrick AFB, FL
- 1999 Capts David A. McDaniel and Matthew K. Doggett, Mr. Michael A. Squires, AFCCC, Scott AFB, IL
- 2000 Mr. William P. Roeder, 45 Weather Squadron, Patrick AFB, FL.
- 2001 Capt Jeffrey Budai, 1st Lt Edward Amrhein, and Mr. Michael Squires, Air Force Combat Climatology Center, Asheville, NC
- 2002 Capts Schrumph and Seaman, Herren Strauss and Bundenthal, USAFE Operational Weather Squadron, Sembach, DE
- 2003 88th Weather Squadron, Wright-Patterson AFB, OH
- 2004 Web Team, Air Force Combat Climatology Center, Asheville, NC
- 2005 25th Operational Weather Squadron, Davis-Monthan AFB, AZ

TECHNICAL SUPERVISOR AWARD

Established in 1968, this award recognized individual excellence in technical supervisory functions. Mission changes within Air Force Weather led to the retirement of this award in 1991.

- 1968 Sgt Ronald W. Bray, Detachment 14, 31st Weather Squadron, Hahn AB, DE
- 1969 MSgt Harry J. Kohler, Headquarters Air Weather Service (AWS), Scott AFB, IL
- 1970 SSgt Celestino G. Martinez, Detachment 30, 6th Weather Wing, Vandenberg AFB, CA
- 1971 MSgt Gerald E. Daugherty, Deputy Chief of Staff, Operations, AWS, Scott AFB, IL
- 1972 MSgt Concepcion V. Armenta, Detachment 25, 5th Weather Wing, Howard AFB, Canal Zone
- 1973 MSgt John H. Dansby, Detachment 21, 6th Weather Wing, Edwards AFB, CA
- 1974 MSgt Fortunato Moreno, Jr., Air Force Global Weather Central (AFGWC), Offutt AFB, NE
- 1975 MSgt John E. Steffan, Detachment 7, 31st Weather Squadron, Aviano AB, IT
- 1976 MSgt John W. Cheatham, Headquarters, 7th Weather Wing, Scott AFB, IL
- 1977 MSgt Duane E. Chilton, AFGWC, Offutt AFB, NE
- 1978 SMSgt John L. Williams, Detachment 10, 2d Weather Squadron, Eglin AFB, FL
- 1979 SMSgt John L. Williams, Detachment 10, 2d Weather Squadron, Eglin AFB, FL
- 1980 MSgt John J. Hewitt, Detachment 2, 7th Weather Squadron, Hanau AI, DE
- 1981 MSgt Billy W. Harless, Detachment 2, 3d Weather Squadron, Seymour-Johnson AFB, NC
- 1982 SMSgt Earl W. Rook, Detachment 15, 30th Weather Squadron, Osan AFB, KR
- 1983 MSgt Robert H. Hinson, Detachment 3, 28th Weather Squadron, RAF Lakenheath, GB
- 1984 MSgt Edmund D. Wallace, Detachment 4, 17th Weather Squadron, Altus AFB, OK
- 1985 MSgt Johnny W. Kicklighter, Detachment 20, 24th Weather Squadron, Laughlin AFB, TX
- 1986 MSgt Jerry B. Heath, Detachment 8, 31st Weather Squadron, Zweibrucken AB, DE
- 1987 SMSgt John A. Behnke, Detachment 16, 25th Weather Squadron, Nellis AFB, NV

- 1988 SMSgt Michael H. Springer, Detachment 17, 28th Weather Squadron, RAF Upper Heyford, GB
- 1989 MSgt Richard A. Fiske, Detachment 13, 7th Weather Squadron, Illesheim AIN, DE
- 1990 MSgt Neal L. Triplett, Detachment 9, 5th Weather Wing

FORECASTER AWARD (CENTRALIZED FACILITY)

Established in 1968, this award recognizes individual excellence in weather forecasting at a centralized forecast unit. The “centralized” forecaster is responsible for large areas of the earth or specialized programs. Air Force Weather mission changes led to the retirement of this award in 1991.

- 1968 SMSgt Eugene A. Murdock, Detachment 21, 31st Weather Squadron, 2nd Weather Wing, Kindsbach Combined Meteorological Facility (CMF), DE
- 1969 Capt James K. Lavin, Detachment 14, 1st Weather Group, Tan Son Nhut Airfield, VN
- 1970 Mr. Robert C. Miller, Air Force Global Weather Central (AFWC), Offutt AFB, NE
- 1971 MSgt Edward D. Beard, 4th Weather Wing, Ent AFB, CO
- 1972 Capt Leon F. Albrecht, Detachment 21, USAFE Forecast Center, 2nd Weather Wing, Kindsbach, CMF, DE
- 1973 Capt Arthur T. Safford III, AFGWC, Offutt AFB, NE
- 1974 Capt Charles R. Holliday, Joint Typhoon Warning Center (JTWC), GU
- 1975 MSgt Clyde A. Cook, Detachment 21, 2nd Weather Wing, Kindsbach CMF, DE
- 1976 TSgt Charlie A. Crisp, AFGWC, Offutt AFB, NE
- 1977 No Award Presented
- 1978 SSgt Leslie O. Taylor, AFGWC, Offutt AFB, NE
- 1979 Capt John D. Shewchuk, Detachment 1, 1st Weather Wing, JTWC, GU
- 1980 TSgt Terry F. Landsvork, AFGWC, Offutt AFB, NE
- 1981 Mr. Donald W. Messecar, AFGWC, Offutt AFB, NE
- 1982 TSgt Kenneth R. Chesson, 11th Weather Squadron, Weather Support Unit, Elmendorf AFB, AK
- 1983 Capt Richard H. Blackmon, AFGWC, Offutt AFB, NE
- 1984 Capt Boyce R. Columbus, Detachment 1, 1st Weather Wing, JTWC, GU
- 1985 TSgt Albert J. Yunt III, AFGWC, Offutt AFB, NE
- 1986 1stLt Steven J. Higley, AFGWC, Offutt AFB, NE
- 1987 Mr. Kim J. Runk, AFGWC, Offutt AFB, NE
- 1988 Capt Linda L. McMillan, Weather Support Unit, 21st AF, McGuire AFB, NJ
- 1989 SSgt James J. Rouiller, AFGWC, Offutt AFB, NE
- 1990 1st Lt William J. Callahan, Weather Support Unit, 1st AF, Tyndall AFB, FL

OBSERVER AWARD (SPECIALIZED SUPPORT)

Established in 1968, this award recognizes individual excellence in a specialized observer function which includes observers assigned to duties other than surface observing. Air Force Weather mission changes led to the retirement of this award in 1991.

- 1968 Sgt Andrew I. Watson, 6th Weather Squadron, 6th Weather Wing, Tinker AFB, OK
- 1969 SSgt Edward M. Cloutier, Detachment 8, 20th Weather Squadron, 1st Weather Wing, Kadena AB, JP
- 1970 TSgt Clarence C. Chamberlain, DCS Operations, Headquarters Air Weather Service, Scott AFB, IL
- 1971 Sgt Edward J. Kasten, Detachment 30, 6th Weather Wing, Vandenberg AFB, CA
- 1972 SSgt Tommy M. Pelley, Detachment 30, 6th Weather Wing, Vandenberg AFB, CA

1973 SSgt Earl W. Schneider, Detachment 1, 1st Weather Wing, Nimitz Hill, GU
1974 SSgt Albert H. Mongeon, Detachment 7, 6th Weather Wing, Carswell AFB, TX
1975 SSgt Tommy M. Pelley, Detachment 3, 11th Weather Squadron, Shemya AFB, AK
1976 TSgt Ronald H. Adsit, 7th Weather Squadron, 2nd Weather Wing, Heidelberg AI, DE
1977 SMSgt Horace L. Maxwell, Detachment 1, 30th Weather Squadron, 1st Weather Wing, Fuchu AS, JP
1978 MSgt Harley O. Sunsdahl, Detachment 1, 2nd Weather Squadron, Air Force Global Weather Central, Wright-Patterson AFB, OH
1979 TSgt George R.N. Hanohano, 6th Weather Squadron (Mobile), 7th Weather Wing, Tinker AFB, OK
1980 TSgt Michael H.A. Springer, Detachment 9, 1st Weather Wing, Learmonth Solar Observatory, AU
1981 Sgt Richard W. Korich, Detachment 3, 11th Weather Squadron, 3rd Weather Wing, Shemya AFB, AK
1982 SSgt Nancy J. Hester, Detachment 11, 1st Weather Wing, Hickam AFB, HI
1983 MSgt Marvin L. Freimund, Detachment 11, 1st Weather Wing, Hickam AFB, HI
1984 TSgt Gerald D. Rugg, Operating Location A, Detachment 6, 2nd Weather Wing, Bad Toelz City, DE
1985 TSgt Stephen A. Lord, Detachment 8, 20th Weather Squadron, 1st Weather Wing, Kadena AB, JP
1986 TSgt Wayne A. Chapman, Operating Location H, 7th Weather Squadron, 2d Weather Wing, Schwaebisch Gmuend AI, DE
1987 TSgt Charles C. Cobb, Detachment 11, 1st Weather Wing, Hickam AFB, HI
1988 No Award Presented
1989 SrA John P. baker, Detachment 3, 5th Weather Squadron, 5th Weather Wing, Fort Bragg, NC
1990 MSgt Gary H. Tryon, USAF Environmental Technical Applications Center, Scott AFB, IL

OBSERVER AWARD (OBSERVING)

Established in 1968, this award recognizes the top observer assigned to a unit making surface observations and providing base weather or operating location forecasting support (excluding supervisors) dedicated to airfield, range, or tactical operations.

1968 Sgt Lawrence J. Wocjik, Detachment 21, 6th Weather Wing, Edwards AFB, CA
1969 SSgt James F. Robinson, Detachment 2, 30th Weather Squadron, 1st Weather Wing, Ton San Nhut AB, VN
1970 Sgt David Eatwell, Detachment 21, 9th Weather Squadron, 3d Weather Wing, Minot AFB, ND
1971 SSgt Randolph C. Murphy, Headquarters 6th Weather Wing, Andrews AFB, MD
1972 SSgt Kenneth G. Bennekamper, Detachment 17, 31st Weather Squadron, 2d Weather Wing, Upper Heyford RAF, GB
1973 Sgt William E. Adams, Detachment 15, 24th Weather Squadron, 3d Weather Wing, Vance AFB, OK
1974 SSgt Paul C. Ferris, 10th Weather Squadron, 1st Weather Wing, Nakhon Phanom Airport, TH
1975 Sgt Penny L. Decker, Detachment 2, 1st Weather Wing, Nimitz Hill, GU
1976 SrA Dan H. Vial, Jr., Detachment 1, 15th Weather Squadron, 7th Weather Wing, Tinker AFB, OK
1977 SrA Donnie R. Galarowics, Detachment 10, 30th Weather Squadron, 1st Weather Wing, Kunsan AB, KR
1978 SrA Charles R. Pierce, Detachment 2, 3rd Weather Squadron, 5th Weather Wing, Seymour-Johnson AFB, NC
1979 Sgt Paul J. Angel, Detachment 12, 7th Weather Squadron, 2d Weather Wing, Finthen AI, DE
1980 SrA Timothy J. Smith, Detachment 6, 26th Weather Squadron, 3d Weather Wing, Pease AFB, NH
1981 SrA Mark A. Seigel, Detachment 7, 9th Weather Squadron, 3d Weather Wing, March AFB, CA
1982 SSgt Franklin E. Henry, Detachment 10, 2d Weather Squadron, AWS, Eglin AFB, FL
1983 SrA Harry L. Druckenmiller, Detachment 12, 7th Weather Squadron, 2d Weather Wing, Finthen AI, DE
1984 SrA Mark R. Christensen, Detachment 7, 5th Weather Squadron, 5th Weather Wing, Fort Ord, CA
1985 Sgt Brian P. Bergmann, Detachment 10, 15th Weather Squadron, 7th Weather Wing, McGuire AFB, NJ
1986 SrA Barry C. West, Detachment 24, 26th Weather Squadron, 3d Weather Wing, K.I. Sawyer AFB, MI

- 1987 SSgt Salinda A. Larabee, Detachment 13, 15th Weather Squadron, Robins AFB, GA
 1988 SrA Keith A. Johnson, Detachment 18, 26th Weather Squadron, Whiteman AFB, MO

DODSON

The Dodson award was established in 1986 to honor staff sergeant Robert A. Dodson who, during World War II, set up an observing site to supplement the weather data base for the Allied D-Day Invasion forces after parachuting behind enemy lines. It recognizes individual excellence by an AWS NCO or airman assigned to detachment or operating location performing weather observer duties in support of airfields or ranges. In 2000 this category of award was discontinued due to the changing nature of AFW functions. The name was moved to the Airman of the Year Award.

- 1986 TSgt Wayne A. Chapman, Operating Location H, 7th Weather Squadron, Schwaebisch Gmuend, DE
 1987 TSgt Charles C. Cobb, Detachment 11, 1st Weather Wing, Hickam AFB, HI
 1988 TSgt Michael P. Childress, Detachment 9 Air Weather Service, Las Vegas, NV
 1989 A1C Rhoda Y. Carr, Detachment 17, 28th Weather Squadron, RAF Upper Heyford, GB
 1990 Sgt William B. Anders, Detachment 8, 20th Weather Squadron, Kadena AB, JP
 1991 Sgt Dale L. Payne, OL -B, Detachment 17, 20th Weather Squadron, Camp Zama, JP
 1992 SrA Melissa M. Cozad, Weather Flight, 48th Operations Support Squadron, RAF Lakenheath, GB
 1993 A1C James A. Heinrich, Weather Flight, 412th Test Wing, Edwards AFB, CA
 1994 SrA Lisa R. O'Connor, Weather Flight, 100th Operations Support Squadron, RAF Mildenhall, GB
 1995 SrA James w. Niel, Weather Flight, 48th Operations Support Squadron, RAF Lakenheath, GB
 1996 SrA Carmen A. Dominguez, Weather Flight, 86th Operational Support Squadron, Ramstein AB, DE
 1997 SrA Stephen E. Kochel, 3rd Weather Squadron, Fort Hood AIN, TX
 1998 SrA Martha B. Exum, 3rd Weather Squadron, Fort Hood AIN, TX
 1999 SrA Tomika N. Redmond, OL-A, 607th Weather Squadron, Yongsan AIN, KR

WEATHER RECONNAISSANCE

SENER AWARD



The Senter Award was established in 1956 in honor of Major General William O. Senter, Commander, Air Weather Service, from 1950-1954. This award was presented yearly to the weather reconnaissance squadron (WRS) with the highest overall effectiveness rating. Responsibility for presenting the award passed to Aerospace Rescue and Recovery Service in 1975 along with the weather reconnaissance mission.

1956	57 th Weather Reconnaissance Squadron, 1 st Weather Wing, Hickam AFB, HI
1957	53d Weather Reconnaissance Squadron, 1 st Weather Wing, Burtonwood RAF Station, GB
1958	55 th Weather Reconnaissance Squadron, 9 th Weather Group, McClellan AFB, CA
1959	55 th Weather Reconnaissance Squadron, 9 th Weather Group, McClellan AFB, CA
1960	Detachment 3, 55 th Weather Reconnaissance Squadron, 9 th Weather Group, Kindley AFB, BM
1961	55 th Weather Reconnaissance Squadron, 9 th Weather Group, McClellan AFB, CA
1962	55 th Weather Reconnaissance Squadron, 9 th Weather Group, McClellan AFB, CA
1963	53d Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Group, Hunter AFB, GA
1964	56 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Group, Yokota AB, JP
1965	53d Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Group, Hunter AFB, GA
1966	56 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Yokota AB, JP
1967	58 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Kirtland AFB, NM
1968	58 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Kirtland AFB, NM
1969	56 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Yokota AB, JP
1970	55 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, McClellan AFB, CA
1971	54 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Andersen AFB, GU
1972	53d Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Ramey AFB, PR
1973	54 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Andersen AFB, GU
1974	54 th Weather Reconnaissance Squadron, 9 th Weather Reconnaissance Wing, Andersen AFB, GU

YATES AWARD



The Yates Award was established in 1956 in honor of Major General Donald N. Yates, Commander, Air Weather Service, 1945-1950. This award was given yearly to the AWS reconnaissance aircrew with the most consistent record of excellence in the performance of weather reconnaissance flights. Responsibility for presenting the award passed to Aerospace Rescue and Recovery Service in 1975 along with the weather reconnaissance mission.

- 1956 Aircrew 10, 55th Weather Reconnaissance Squadron, 9th Weather Group, McClellan AFB, CA
- 1957 Aircrew B-3, 57th Weather Reconnaissance Squadron, 1st Weather Wing, Hickam AFB, HI
- 1958 Aircrew 5, 53rd Weather Reconnaissance Squadron, 2d Weather Wing, Burtonwood RAF Station, GB
- 1959 Aircrew B-1, 54th Weather Reconnaissance Squadron, 1st Weather Wing, Andersen AFB, GU
- 1960 Aircrew B-10, 55th Weather Reconnaissance Squadron, 9th Weather Group, McClellan AFB, CA
- 1961 Aircrew 2, 53rd Weather Reconnaissance Squadron, 2d Weather Wing, Kindley AFB, Bermuda
- 1962 Aircrew 5, 55th Weather Reconnaissance Squadron, 9 Weather Group, McClellan AFB, CA
- 1963 Aircrew 2, 53rd Weather Reconnaissance Squadron, 9th Weather Group, Hunter AFB, GA
- 1964 Aircrew 7, 54th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Group, Andersen AFB, GU
- 1965 Aircrew 7, 53rd Weather Reconnaissance Squadron, 9th Weather Reconnaissance Group, Hunter AFB, GA
- 1966 Major Richard K. McNab, 57th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, Hickam AFB, HI
- 1967 Captain Charles F. Blount, 54th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, Andersen AFB, GU
- 1968 Major Charles A. Erni, 55th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, McClellan AFB, CA
- 1969 Captain Lawrence B. Dillehay, 56th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, Yokota AB, JP
- 1970 Captain John W. Pavone, 55th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, McClellan AFB, CA
- 1971 Captain Edgar A. Gideon, 55th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, McClellan AFB, CA
- 1972 Major John E. Bugge, 58th Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, Kirtland AFB, NM
- 1973 Captain Gary F. Sanderson, 53rd Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, Keesler AFB, MS
- 1974 Crew B-1, 53d Weather Reconnaissance Squadron, 9th Weather Reconnaissance Wing, Keesler AFB, MS

CHAPTER 12—AIR FORCE WEATHER EMBLEMS AND INSIGNIA

HERADLRY

HISTORICAL BACKGROUND: Heraldry, the art and science of symbols, has its origins in antiquity. The twelve tribes of Israel had distinctive emblems as did the emperors and legions of the Roman Empire and most other civilizations throughout history. However, it was 12th century



Figure 12-1: A medieval knight in full regalia.

warfare that stimulated growth of the heraldic system as we know it today. The advent of the closed visor helmet in the Middle Ages forced the guardians of chivalry to develop markings to help identify their comrades. The well-defined formations of two opposing forces rapidly collapsed after initial engagement into sword-wielding melees rendering the process of identifying allies and enemies to guesswork. In all that armor it was difficult to tell who was who. Consequently, knights began to paint their shields with symbols and geometric patterns in bright colors so they might be readily distinguishable to their own armies and allies. These emblems soon began to appear on the surcoats, lance-pennants, and horse armor.

This concept of medieval identification spread rapidly throughout Europe and led inevitably to unintentional duplication. The task

of preventing this sort of duplication

fell upon the household officers of knights¹ and noblemen known as heralds. It became their duty to devise new coats of arms and officially document those in use as well as who had the legal right to bear them. One of the ways a person or family might obtain this legal right, called hereditary right, was through relationship to the original person granted the coat of arms. Throughout the 15th century use of coats of arms was primarily for functional purposes of identification in battle. Today heraldry

¹ Note: The medieval knight in full regalia was downloaded 11 May 2012 from <http://karenswhimsy.com/medieval-knight-costume.shtm>.

still lives, perpetuated by modern military organizations that have never forgotten these badges of honor.

AVIATION HERALDRY: We see some of the earliest uses of emblems in aviation on the biplanes of World War I pilots. For much the same reason that medieval warriors adorned their shields with colorful emblems, these “knights of the air” emblazoned the fuselages of their canvas-covered aircraft with a variety of insignia. These ranged from the infamous skull and crossbones used by some of the Kaiser’s Jagdstaffeln to the famous “hat in the ring” adorning aircraft flown by America’s top World War I ace, Captain Eddie Rickenbacker. By the end of the war, most countries had adopted standardized wing, fuselage, and rudder insignia to identify their aircraft. Unit and personal aircraft emblems abounded. New emblems for the aviation branch of the U.S. Army continued to be designed between the two World Wars. The United States’ entrance into World War II in 1941, expansion of the U.S. Army Air Corps, and formation of the U.S. Army Air Forces, resulted in an unprecedented growth in the number and variety of unit emblems designed and adopted. Numbering in the thousands, they



Figure 12-2: Classic "nose art" on a B-24 assigned to the 655th WRS during WW II.

fell into four general categories: unit emblems approved for use prior to the war; unit emblems that had been granted for use in World War I, rescinded at a later date, and then reinstated during World War II based on lineage; newly formed units that submitted designs or requested an emblem be developed and officially approved (Walt Disney designed a large number of these); and unit insignia designed and used (mostly in combat theaters) but not submitted for approval. Much of the “nose art” on World War II aircraft falls into this category.

USAF HERALDRY: Since the end of the Korean War, the guidelines for developing official Air Force emblems have become increasingly stringent. There are two primary reasons for this. The first is maintenance of “Air Force image.” To that end, cartoon and macabre designs are no longer approved except where they have been maintained from early days as a traditional emblem. Secondly, approved emblems must represent the unit and its mission without showing specific geographic locations, aircraft types, or equipment. All of these may change during the life of a unit, rendering an emblem’s significance obsolete. The purpose of Air Force guidance here is to reduce the number of times a unit’s emblem must be altered to accurately reflect its mission. The significance that accompanies an approved Air Force emblem may be updated without altering the actual design as long as its elements are of an abstract nature. The use of color once was more or less arbitrary, depending on the whims of the designer. Now, unit emblems may incorporate no more than six colors, including black, white, and the Air Force colors of ultramarine blue and golden yellow. Our traditional emblems still in service are not affected by the rules. Only when a unit submits a new design for approval must they be considered. This brief developmental history of aviation emblems sets the background for the discussion of our own weather emblems.

AIR FORCE WEATHER HERALDRY: The earliest known authorized weather emblem is the Air Weather Service Distinctive Badge approved for all uses in 1942 (see square 2). As the number of weather squadrons proliferated during the war years of 1942-45, so did weather squadron emblems. For various reasons not all squadrons adopted emblems. In many cases this was simply because the squadron commander or personnel on his staff did not request one. In other cases squadrons designed and used emblems but never bothered submitting them for approval (for example, the 10th Weather Squadron, square 44). Detachments, and operating locations were not (and still are not) authorized unit emblems. Weather groups and wings began submitting designs for approval during the late 1950s and early 1960s. Many weather group emblems served (unofficially) as interim or transitional emblems as certain groups were inactivated and wings activated in their place during the 1960s. These unapproved “transitional” emblems were later replaced by permanent, approved weather wing designs. Few of the weather wings, groups, or squadrons altered their emblems during the course of their existence; however, several have gone through as many as three or four completely new designs to reflect changing missions. It is interesting to note, however, that many have chosen to retain their original World War II designs for the sake of tradition, regardless of changes in mission.

Weather unit emblems normally symbolize one or more of the following: type of service provided, mission or theater of operations (older emblems), numerical designation of unit, historical tradition, and to whom weather support is provided. Generally, the more recent an emblem’s origin the more specific its significance. One should note there is not always a specific significance attributed to a unit’s emblem, especially during World War II.

The most prevalent elements in weather emblems are symbols used to represent weather, such as cumulonimbus clouds with rain or lightning. Weather equipment is also frequently included. By far the most commonly used equipment symbols are the old weather vane and the anemometer. The fleur-de-lis, denoting U.S. Army Weather Service’s World War I service in France, is also common and, like the anemometer, influenced the design of the Air Weather Service badge.

WEATHER BADGES AND INSIGNIA

Since 1942 Air Force Weather has had some distinctive weather insignia and badges approved for wear on the uniform. The purpose of this section is to identify those insignia, when, and how they were worn, and who was authorized to wear them.

WEATHER DISTINCTIVE BADGE: This enameled gold-colored metal badge was approved for wear on the service uniform of all U.S. Army Air Forces weather personnel on 8 September 1942 (see square 2). Period source documents indicate a government contract for production of these badges was not let. However, some weather units had them produced and authorized their wear. This 1-1/16-inch round pin back badge was worn in the center of both shoulder straps on the officer’s service blouse; enlisted men wore it centered on both of the lower lapels of their service uniform and on the left front side of their overseas cap (officers wore only rank insignia on this cap). Its use continued through the transition to the new blue Air Force uniform. In 1950 Air Weather Service requested approval to alter the background from gold to silver, “in order to conform better with the new Air Force uniform.” The request, however, went unanswered. Existing insignia with silver backgrounds are most likely manufacturers samples.

ARMY AIR FORCES TECHNICIAN BADGE (square 99): Approved on 11 January 1943 for award to enlisted personnel not necessarily on flying status. This badge was manufactured in antiqued sterling silver with a pin back for attachment to the uniform blouse. It was worn centered on the left breast pocket just below service ribbons. Enlisted weather specialists qualified for this badge with a suspension bar for either weather observer or weather forecaster. It was awarded through World War II and the immediate post war years .

WEATHER SPECIALIST SLEEVE TRIANGLE (see square 101): A golden yellow weather vane embroidered on an inverted triangle of ultramarine blue cloth was authorized for wear by all U.S. Army Air Forces weather specialists on 25 January 1943. This insignia was worn on the lower right cuff of the uniform blouse, four inches up from the cuff. Its use was rescinded on 24 November 1947.

ARMY AIR FORCES WEATHER SERVICE ARC TAB (see square 100): An ultramarine blue cloth arc embroidered with the words “AAF Weather Service” in golden yellow was authorized for wear by weather personnel on 28 July 1945. This tab was worn on the left sleeve of the service uniform over the Numbered Air Force or other Air Force formation patch to which a weatherman was assigned, through the transition to the blue uniform

AIR WEATHER SERVICE PATCH (see square 3): A full color embroidered patch was authorized for wear on the right breast pocket of utility uniforms and on the sleeves of flight suits for a period of time during the 1960s (same as Air Weather Service shield pictured in square 3). It was reintroduced for wear on 12 September 1978. The full color patch was replaced with a subdued version when the Air Force transitioned to subdued insignia. It is interesting to note that three versions of this subdued emblem have been approved for wear since it was first introduced. When the Air Force Weather Agency was activated its emblem and patch retained the same design and only the name was changed.

COMBAT WEATHER TEAM BERET FLASH (Unofficial) (See Square 102): During the Vietnam War, a distinctive rectangular-shaped patch was worn on a black beret by combat weather team members stationed at Phu Loi (Det 26, 30WS) and Bear Cat Base Camp (OL 2, Det 32, 5WS), Vietnam. The black patch is depicted in yellow embroidery with the three-cup anemometer surmounted by a fleur-de-lis with the words “Combat Weather” on either side of the lower arm of the anemometer. There is no documentation verifying this to be an approved insignia. It is described here because of its historical significance and the fact that it was actually worn.

AIR COMMANDO TAB (see square 103): In 1963, AFW personnel of Detachment (Det) 75, 2nd Weather Group, supported the 1st Air Commando Wing at Hurlburt Field, FL.² Airman wore a “Jungle-Jim” style hat or gray beret with an “Air Commando” tab over top of their rank and jump wings [see figure 4-17].³

² Bates, *Op. cit.*, pp. 225-226

³ PP, DeCorte, Christopher, SMSgt, USAF, AFSOC/A3WV, *Beret History of Weather Parachutists*, 18 Apr 2012. [Note: The information in the point paper was compiled from AWS: Our Heritage, 1937-1987 and personal reflection of current and retired AFW parachutists.] [For more info on the “Jungle-Jim” hat refer to *Slouch hat*, Wikipedia, the free encyclopedia, downloaded 14 Jun 2012 from http://en.wikipedia.org/wiki/Slouch_hat]

SPECIAL OPERATIONS WEATHER TEAM (SOWT) BERET FLASH (square 104):

This cloth insignia was authorized for wear on the dark blue beret in the spring of 1979. It was shield-shaped with the field divided diagonally from upper right to lower left (upper left in ultramarine blue, lower right in black). The insignia was bordered in golden yellow. Officers wore their rank insignia centered on the flash. Enlisted members wore their parachute qualification badges centered on the flash. In 1986 the light gray beret was approved for wear by Special Operations Weather Team personnel. The old flash was initially worn on this beret until the introduction of the new Special Operations Weather Team beret crest.⁴

SPECIAL OPERATIONS WEATHER TEAM BERET CREST (see square 105): This gilt enameled crest was approved on 8 July 1986 for wear by all ranks on the Air Weather Service parachutists' gray beret (in lieu of the SOWT flash). The field of the crest is equally divided by a diagonal yellow line with the upper left in light blue and the lower right in black. A white parachute with the letters USAF, a dagger with a brown grip, and lightning bolts in medium yellow (crossed over the parachute and under the dagger) are centered on the field. The scroll at the base of the crest is brown with the gilt letters "Air Weather Service." The crest is surrounded by a medium yellow band with the words "Special Operations Weather Team," in gilt. On 1 Jun 1992 AF redesignated Tactical Air Command as Air Combat Command and aligned all weather parachutists under this single command. This version of the grey beret combined the flash of the 70s with the crest of the 80s and was worn by all AFW parachutists.⁵

COMBAT WEATHER TEAM (ACC) (see square 106): AF approved the redesign of the 1986 SOWT crest in 2002 for wear by ACC weather parachutists. The design remained the same except the parachute, crossed lightning bolts, dagger, and banned arches stood alone. "Combat Weather Team" was on the top arch and "Airborne" was on the bottom arch. The crest was included into the Institute of Heraldry 2 April 2003.⁶

COMBAT WEATHER TEAM (AFSOC) FLASH (see square 107): The 10th Combat Weather Squadron stood up June 1996 under the 720 Special Tactics Group, Air Force Special Operations Command (AFSOC). A formalized crest had not been made yet so special operation weather parachutists were authorized to wear jump wings or officer rank on the new AFSOC flash. The cloth AFSOC flash had a red border representing the blood shed by their predecessors, the black background represented special operations, and the three diagonal lines represented the forces they were attached to: Army green, Joint purple, and AF blue.⁷

SOWT CREST(see square 107A): On 1 Oct 2008, the Special Operations Weather Team stood up as the Air Forces smallest career field. The Special Operations Weather crest was approved

⁴ *Ibid.*, slide 5.

⁵ *Ibid.*, slide 6.

⁶ *Ibid.*, slide 10

⁷ *Ibid.*, slide 8

for wear 1 Jan 2009 but took over a year to create. Officers wear their rank centered under the crest. The crest was included into the Institute of Heraldry 7 Sep 2010.⁸

METEOROLOGIST BADGE (108-110): This badge was approved by the Air Force Chief of Staff on 6 April 1987. It depicts the Air Weather Service shield in the center. The anemometer represents the weather career field while the fleur-de-lis represents U.S. Army weather personnel's combat experience during WWI. The badge, in antiqued silver or shiny platinum finish, is awarded in three grades; basic, senior (with star), and master (with star and wreath).

EMBLEM AND BADGES

This section emphasizes official emblems. The four plates from *Air Weather Service, Our Heritage 1937-1987* were scanned into an electronic portable data file. The individual emblems were then copied into a Microsoft® Word document using the table function. Each square was numbered to allow for referencing in the individual unit lineage. This arrangement permitted the addition of new emblems in the appropriate numerical order, e.g., 15th Operational Weather Squadron (OWS) before 15th Weather Squadron (WS). A few unofficial ones were included either because of distinct historical significance or the lack of any approved insignia to represent a major weather unit, i.e., squadron equivalent or higher. Unofficial weather emblems that represented detachments, operating locations, or specific events were not covered.

We attempted to illustrate as many weather emblems and insignias as possible. Colors in some cases are somewhat faded due to the condition of archival negatives and prints. The authors of the original document were able to copy original renderings of some emblems from the USAF Historical Research Center archives. These are illustrated without unit designation or motto in the scroll. Little standardization in color was possible due to the variety of illustrated material available. When original color photos or drawings were not available, emblems were accomplished in color, using old black and white line drawings and documentation. For this edition, electronic files of documents available from various sources were used to add the newer emblems, e.g., Operational Weather Squadrons. Note: Emblems for the 652nd, 653rd, and 655th Bombardment Squadrons (weather reconnaissance unit from World War II) (see squares 129-131) are included because of their specific weather oriented designs, even though they were never assigned to Air Weather Service. The lineages of the 652nd and 653rd are not covered in this study. The 655th was a part of the 55th WRS lineage.

One may refer to the color emblems, insignia, badges, and head gear at this [hyperlinked location](#).

⁸ *Ibid.*, slide 13

AIR FORCE WEATHER EMBLEMS/BADGES

1



USAF Directorate of Weather

2



Air Weather Service Headquarters

3



Air Weather Service & Air Force Weather Agency

4



1st Weather Wing

5



2nd Weather Wing

6



2nd Weather Wing

7



3rd Weather Wing

8



4th Weather Wing

9



4th Weather Wing

10



5th Weather Wing

11



6th Weather Wing

12



7th Weather Wing

13



9th Weather Recon Wing

14



AFGWC

15



1st Weather Group

16



2nd Weather Group

17



3rd Weather Group

18



4th Weather Group

19



5th Weather Group

20



6th Weather Group

21



7th Weather Group

25



1110th Air Support Group

29



2nd Systems Operation Squadron

33



3rd Weather Squadron

37



6th WS (Mobile)

22



8th Weather Group

26



1st Weather Squadron

30



2nd Weather Squadron

34



4th Weather Squadron

38



7th Weather Squadron

23



9th Weather Recon Group

27



1st Weather Squadron

31



2nd Weather Squadron

35



5th Weather Squadron

39



8th Weather Squadron

24



10th Weather Group

28



2nd Combat Weather Systems Squadron

32



3rd Weather Squadron

36



6th WS (Regional)

40



8th Weather Squadron

41



9th Operational WS

42



9th Weather Squadron

43



9th Weather Squadron

44



10th Weather Squadron

45



10th Weather Squadron

46



10th Combat Weather Sq

47



11th Operational WS

48



11th Weather Squadron

49



11th Weather Squadron

50



12th Weather Squadron

51



13th Weather Squadron

52



14th Weather Squadron

53



15th Operational WS

54



15th Weather Squadron

55



16th Weather Squadron

56



16th Weather Squadron

57



16th Weather Squadron

58



17th Operational WS

59



17th Weather Squadron

60



17th Weather Squadron

61



18th Weather Squadron
65

62



18th Weather Squadron
66

63



19th Expeditionary WS
67

64



19th Weather Squadron
68



19th Weather Squadron
69



20th Operational WS
70



20th Weather Squadron
71



20th Weather Squadron
72



20th Weather Squadron
73



21st Operational WS
74



21st Weather Squadron
75



22nd Expeditionary WS
76



23rd Weather Squadron
77



23rd Weather Squadron
78



24th Weather Squadron
79



24th Weather Squadron
80



25th Operational WS



25th Weather Squadron



26th Operational WS



26th Weather Squadron

81



26th Weather Squadron

82



28th Operational WS

83



28th Weather Squadron

84



29th Weather Squadron

85



30th Weather Squadron

86



30th Weather Squadron

87



31st Weather Squadron

88



32nd Weather Squadron

89



33rd Weather Squadron

90



35th Weather Squadron

91



45th Weather Squadron

92



46th Weather Squadron

93



55th Space WS
(Space Fcst Ctr)

94



88th Weather Squadron

95



607th Weather Squadron

96



2150th Air Weather Sq

97



USAFETAC

98



1690th Weather Group
(Provisional)

99



WW II AAF Tech Badge

100



AAF Weather Svc Tab

101



Weather Spec Sleeve Triangle

102



Combat Wea Team Beret Insignia

103



Air Commando Tab

104



SOWT Beret Flash

105



SOWT Beret Crest

106



Wea Parachutist Crest

107



AFSOC Flash and Wea Parachutist Crest

107A



SOWT Beret Crest

108



Basic Meteorologist Badge

109



Senior Meteorologist Badge

110



Master Meteorologist Badge

111



28th WS 1945 (unofficial)

WEATHER RECONNIASSANCE SQUADRONS

112



Wea Recon Sq (Test) No 1
116

113



2nd Weather Recon Sq
117

114



53rd Recon Sq (LR) Wea
118

115



53rd Weather Recon Sq
119

116



53RD Weather Recon Sq
120

117



54th SRS (M) Weather
121

118



54th Weather Recon Sq
122

119



54th Weather Recon Sq
123

120



55th Weather Recon Sq
124

121



56th SRS (M) Weather
125

122



57th SRS (M) Weather &
57th Weather Recon SQ
126

123



57th Weather Recon Sq
127

124



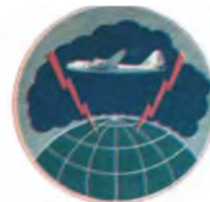
58th SRS (M) Weather
128

125



58th Weather Recon Sq
129

126



59th SRS (VLR) Weather
130

127



59th RS (VLR) Weather
131

128



59th Weather Recon Sq

129



652nd Bomb Sq (HWR)

130



653rd Bomb Sq (LWR)

131



655th BSq HV (W Rcn HV)

THE DISTINCTIVE HEADGEAR OF AFW'S PARACHUTISTS, COMBAT WEATHER TEAMS, and SPECIAL OPERATIONS WEATHER TEAMS

[Note: Refer to footnote 3 on page 12-4 for source of below information]



The black beret worn by Combat Weather Team Personnel assigned to 30WS, and later the 5WS (after 8 Jul 1966) in Vietnam.



The first grey beret worn by Captain Keith Grimes and his men during the Vietnam Era.



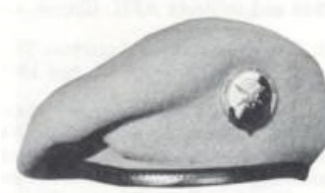
"Jungle Jim" style bush hat with Air Commando tab worn by members of Det 75, 2WG who supported the 1st Air Commando Wing (1960s)



The blue beret and flash authorized for paraweather personnel in the 1970s.



Maroon Army Airborne beret with jump wings affixed to a cloth flash of the 5th Weather Squadron colors (1970-80s)



The new grey beret and distinctive crest authorized for Special Operations Weather Team personnel in 1986.



1 Jun 1992, all weather parachutists were aligned under ACC. The grey beret combined the flash of the 70s with the crest of the 80s and was worn by all weather parachutists.



Jun 1996, AFSOC parachutists began wearing officer or jump wings on the new AFSOC flash. ACC parachutists continued to wear the 1992 version.



2002 CWT (ACC)



2002 CWT (AFSOC)



2007 CWT (AFSOC)



2010 SOWT (AFSOC)

CHAPTER 13—LINEAGE AND HONORS

Lineage Terms

Each unit and establishment of the Air Force possesses a separate identity along with its own lineage and history. The War Department and, later, the Department of the Air Force, have sought to preserve these separate organizational identities. In recent years, however, the Department of the Air Force introduced two changes in this basic policy. In a major adjustment, the service temporarily bestowed, under certain conditions, the history and honors of combat groups on similarly numbered combat wings. This practice began in 1954 and continues today. A second, minor adjustment substituted the Table of Organization (T/O) units and establishments created in 1948 for the Table of Distribution (T/D) organizations using in the 1947-48 service test of the wing-base plan. This volume treats these initial T/D and subsequent T/O organizations as single entities instead of separate establishments and units.

Between 1947 and 1977 the Air Force was composed of primary elements called units and establishments. The units divide among three primary *categories*: squadrons (later, the numbered flight was added as a “small” squadron), *miscellaneous* (a category including such organizations as bands, infirmaries, hospitals, etc.), and *headquarters*. The headquarters units served as headquarters for establishments. Establishments are Air Force organizations at group echelon or higher, having a headquarters unit as their primary component.

Headquarters units were “designated and organized” for the wings included in the 1947-1948 service test of the wing-base plan, and discontinued when the service test concluded in 1948. Headquarters units for the wings subsequently were “constituted and activated” (1948-1959 and 1968-current), or were “constituted, activated, and organized” (1959-1968). The units were “inactivated” (1948-1959 and 1968-current), or “discontinued and inactivated” (1959-1968), when no longer needed. The establishments, to which the headquarters units belonged, however, were “established” concurrently with the designation or constitution of their headquarters unit. If the Air Force disbanded a wing’s headquarters unit, the wing was “disestablished,” and, when the headquarters unit was reconstituted, the wing was “reestablished.” Otherwise, the lineage terms for establishments parallel those of the units.

The lineage of each wing establishment contained in this book is ultimately determined by the language employed in the War Department and Department of the Air Force letters and command orders relating to organizational actions. For a complete understanding of lineage and honors terms used in this document one should to refer to Air Force Historical Research Agency’s [*“A Guide to United States Air Force Lineage and Honors”*](#)

Headquarters Lineage

AIR FORCE WEATHER AGENCY, OFFUTT AFB, NEBRASKA

MISSION: Air Force Weather Agency manages and directs two weather groups tasked with providing operational support to active and reserve components of the U.S. Air Force, U.S. Army, and other Department of Defense agencies as directed by the Chief of Staff, U.S. Air Force. This support includes providing the oversight, direction, and control of the programs and operations within the AFWA commander’s responsibility. Headquarters AFWA also provides the professional, technical, administrative, and logistic support necessary for the operations of the headquarters.

LINEAGE: Constituted on 13 April in 1943 it was activated on 14 April 1943 as the Weather Wing and assigned to the Flight Control Command at Washington, D.C. The wing moved to Asheville, North Carolina, on 3 May 1943 and was redesignated as the Army Air Forces Weather Wing and reassigned to the Headquarters, Army Air Forces on 6 July 1943. It was redesignated as the Army Air Forces Weather Service on 1 July 1945 and moved to Langley Field, Virginia, on 7 January 1946. It was redesignated Air Weather Service and reassigned to Air Transport Command on 13 March 1946. It moved to Gravelly Point, Virginia, on 14 June 1946 and was reassigned to the Military Airlift Transport Service (later Military Airlift Command) on 1 June 1948. Air Weather Service moved to Andrews AFB, Maryland, on 1 December 1948 and to Scott AFB, Illinois, on 23 June 1958. Air Weather

Service was redesignated Air Weather Service a field operating agency and reassigned to Directorate of Air and Space Operations, Headquarters Air Force 1 April 1991. Air Weather Service was redesignated Air Force Weather Agency and moved to Offutt AFB, Nebraska, 17 October 1997.

AWARDS: Service streamer, American Theater, World War II, 7 December 1941-2 March 1946. Air Force Organizational Excellence Award for 1 May 1984-30 April 1986; 1 May 86-30 Apr 88; 1 Jan 91 – 30 Apr 92; 1 Sep 93–30 Sep 95; 1 Oct 95–30 Sep 96; 1 Sep 96–30 Sep 98; 1 Oct 98–30 Sep 99 ; 1 Oct 99–30 Sep 01; 1 Oct 01–30 Sep 03; 1 Apr 2007 – 31 Dec 2009.

FIRST EMBLEM (see square 2): Approved on 8 September 1942. The first Air Weather Service emblem was a distinctive, disc-shaped badge. **SIGNIFICANCE:** Performance of Air Weather Service day and night was indicated by light blue (left inside) and black (right inside) of the disc. The white anemometer cups, bordered in golden yellow, are the principal instruments used in weather forecasting and are symbolic of the performance. The golden yellow fleur-de-lis represents participation of the weather service (American Expeditionary Forces) in France during World War I. **MOTTO:** COELUM AD PROELIUM ELIGE translates from Latin as “CHOOSE THE WEATHER FOR ACTION.”

SECOND EMBLEM (see square 3): The Air Weather Service Shield emblem was approved for use on Air Weather Service headquarters, group, and wing flags with the appropriate unit designation in the scroll on 24 July 1952. On 31 January 1961 the shield emblem was approved for all uses. Two weeks later, on 13 February, the old disc emblem and motto were retired. The significance was updated in 1963 to read as follows: First participation in combat by U.S. Army Weather Service took place in France during World War I and is commemorated in the Air Weather Service emblem by the golden yellow fleur-de-lis. Performance of weather duties both day and night is indicated on the gold-bordered shield by light blue, to the viewer's left, and black backgrounds, which divide the shield vertically. Three white (gold trimmed) anemometer cups representing the continual collection of weather data serve to identify the round-the-clock, round-the-world functions of the U.S. Air Force Air Weather Service, a technical service of the Military Air Transport Service (later Military Airlift Command). In 1998 Air Force Historical Agency approved the name change from Air Weather Service to Air Force Weather Agency.

WEATHER WING LINEAGES

This section gives the official lineage of each weather wing (WW). Also included, when available, is the historical background, which should not be confused with each wing's official lineage. The lineage is followed by awards, emblems, and a chronological list of wing commanders. Dates for Service and Campaign Streamers are as listed in Air Force Instruction 34-1201. The last commander listed for a given unit is the last commander that held that position. Data was extracted from *Air Weather Service Our Heritage 1937-1987* and from histories on file in the Air Force Weather Agency archives.

1st WEATHER WING INACTIVE

MISSION: The 1st Weather Wing provided or arranged staff and operational meteorological and aerospace environmental support to the Pacific Air Forces, U.S. Forces Japan, United Nations Command, Combined Forces Command, U.S. Forces Korea, Eighth U.S. Army, U.S. Army Western Command, 3d Air Division and other SAC units in the Pacific Theater, Pacific Information Systems Division, 834th Airlift Division, Pacific Airlift Control Center, and elements of other Air Force and Army major commands assigned to the Pacific Theater.

HISTORICAL BACKGROUND: Known informally as the "Weather Watchdog of the Pacific," the 1st Weather Wing can trace its roots to 19 May 1948 with the designation of the 43d Weather Wing (later the 2043d Weather Wing and then the 2143d Air Weather Wing [MAJCOM]). The 2143d was replaced by the 1st Weather Wing.

LINEAGE: Established as the 1st Weather Wing on 24 November 1953, it was activated at Tokyo, Japan, assigned to Air Weather Service, and attached to Far East Air Forces, on 8 February 1954. On 19 May 1956 the 1st Weather Wing moved to Fuchu Air Station, Japan, and on 1 July 1957 it moved to Wheeler AFB, Hawaii, in conjunction with the formation of the Pacific Air Forces. On 1 July 1961, Headquarters 1st Weather Wing relocated to Fuchu AS, Japan, and on 8 June 1964 it moved to Hickam AFB, Hawaii. It was inactivated on 30 Sep 1991.

AWARDS: The Air Force Outstanding Unit Award for Mar-Oct 1956; 2 Jul 1967-30 Jun 1969; 1 Jul 1970-30 Jun 1972; 1 Jul 1972-30 Jun 1973; 1 Jul 1974-30 Jun 1976; and 1 Jul 1981-30 Jun 1983; 1 Jul 86-30 Jun 88.

EMBLEM (see square 4): Approved on 15 September 1961. **SIGNIFICANCE:** The divided background of dark blue and black indicates the weatherwatch carried on day and night. The lighter blue diagonal band symbolizes the Pacific area for which the wing is responsible. The typhoon symbol, in the lower left-hand portion, represents the turbulent weather encountered in the Pacific area and it also symbolizes the mission of weather service. The fleur-de-lis, in the upper right-hand portion, commemorates the first participation of a weather service unit in combat in France during World War I.

Commanders and Date of Assignment

8 Feb 54	Col James W. Twaddell	30 Jul 71	Col Morris H. Newhouse
30 Jun 54	Col Karl T. Rauk	3 Jun 74	Col William E. Cummins, II
Dec 54	Col Anthony T. Shtogren	29 Jul 75	Col Alphonse Gargiulo, Jr.
1 Jul 57	Col Maxwell W. Roman (temporary)	3 May 76	Col Joseph E. Tucker
24 Sep 57	Col Nicholas H. Chavasse	30 Jun 78	Col Norman F. Rauscher
18 Jul 60	Col John J. Jones	17 Dec 82	Col Robert E. Julian
5 Aug 61	Col William S. Barney	12 Jul 85	Col Paul D. Try
17 Jul 63	Col Robert L. Sorey	3 May 87	Col Floyd F. Hauth
27 Jun 66	Col Ralph G. Suggs	14 Jul 89	Col Thomas K. Klein
14 Jul 67	Col Lowell A. Stiles	19 Jul 91	Col Robert P. Wright
30 Nov 70	Col Hubert E. Harvey		

2d WEATHER WING INACTIVE

MISSION: The 2d Weather Wing provided or arranged staff and operational meteorological aerospace environmental support to the U.S. European Command, U.S. Air Forces Europe, U.S. Army Europe, European Information Systems Division, elements of other Air Force and Army major commands assigned to the European theater, North Atlantic Treaty Organization (NATO). It also provided staff meteorological officers to the following NATO organizations: Allied Air forces Central Europe, Fourth Allied Tactical Air Force, and the Central Army Group. A staff meteorological officer served as the U.S. representative on the following NATO committees: Supreme Headquarters Allied Powers Europe Meteorological Committee, Allied Command Europe Chief and Staff Meteorological Officer Committee, Allied Forces Central Europe Meteorological Committee, Allied Forces Southern Europe Meteorological Committee, Subgroups of the Military Committee Meteorological Group as directed by the Joint Chiefs of Staff, and AFCENT Meteorological Committee Subgroup on common meteorological support to Electro-Optical weapons systems.

HISTORICAL BACKGROUND: The 2d Weather Wing can trace its roots to 20 January 1949 when the 2105th Air Weather Group (later 2058th Air Weather Wing) was designated at Wiesbaden, Germany. The 2058th Air Weather Wing was discontinued and replaced by the 2d Weather Wing on 8 February 1954.

LINEAGE: Established as the 2d Weather Wing on 24 November 1953, it was activated at Furstenfeldbruck AB, Germany, and assigned to Air Weather Service on 8 February 1954. It moved to Bitburg AB on 6 December 1955. Three years later, in March 1958, it moved to Lindsey AS and on 10 July 1973 it relocated to Wiesbaden AB. On 8 May 1973 it moved back to Lindsey and on 15 August 1973 the wing relocated to Ramstein AB. On 15 September 1975 it moved to Kapaun Barracks, Germany. It was inactivated on 30 Sep 1991

AWARDS: The Air Force Outstanding Unit Award for 1 Jan 1968-31 Dec 1969; 1 Jul 1972-30 Jun 1974; 1 Jun 1975-30 Jun 1977; 1 Jul 1982-30 Jun 1984; 1 Jul 1990 – 30 Sep 1991.

EMBLEM (see square 5 & 6): Approved on 11 December 1957. **SIGNIFICANCE:** The emblem symbolizes its primary mission. The shield signifies protection while its colors represent the sky. The outline of Europe indicates the wing's wide area of responsibility and the stars represent its squadrons. The Air Weather Service emblem in the lower part of the shield indicates that 2d Weather Wing is a part of Air Weather Service. **MOTTO:** NULLA AEQUALIS SECUNDAE translates to THE SECOND IS EQUAL TO NONE (motto no longer used). The shield's shape was later changed to conform to the U.S. Air Force standard. A second modification changed the background color on the shield from blue to black.

Commanders and Date of Assignment

8 Feb 54 Col Norman J. Peterson	9 Jul 75 Col Wilson J. Boaz
2 Jul 54 Col James T. Seaver, Jr.	16 Aug 76 Col Charles O. Jenista, Jr.
2 Feb 57 Col Roy W. Nelson, Jr.	15 Sep 79 Col Lynn L. LeBlanc
3 Jul 60 Col Frederick J. Cole	3 Jul 80 Col Billy L. Moore
22 Jul 60 Col Richard M. Gill	24 Jul 80 Col James W. Hall
5 Jul 63 Col Arthur W. Anderson	12 Aug 82 Col Tommy D. Guest
8 Jul 63 Col George E. Rath	17 Jun 83 Col James O. Ivory
7 Jul 66 Col Thomas J. Arbogast	28 Jun 85 Col Gary S. Zeigler
10 Jun 70 Col James M. Burkhart	10 Jun 88 ¹ Col Ronald R. Brown
2 Jul 73 Col Joseph M. Tyndall	20 Jul 90 Col Robert P. Wright
15 Oct 73 Col Robert S. Wood (temporary)	3 Jul 91 Col Richard J. Vogt
12 Dec 73 Col Robert S. Wood	

¹ E-mail, Ronald Brown, Col, USAF Ret, to Mr. George Coleman, *2WW Change of Command*, 2 Nov 2011. Note the 1988 2WW History did not identify when the change of command occurred.

3d WEATHER WING INACTIVE

MISSION: The 3d Weather Wing provided or arranged staff operational meteorological and aerospace environmental support to the Strategic Air Command, the Joint Strategic Target Planning Staff, the Alaskan Air Command, Air Training Command, Alaskan NORAD Region, 172d Infantry Brigade U.S. Army, SAC Information Systems Division, and the Air University.

HISTORICAL BACKGROUND: The 3d Weather Wing can trace its roots to 20 September 1945 with the activation of the 1st Weather Group at Manila, Philippines. The 1st Weather Group was inactivated at Offutt AFB, Nebraska, and replaced by the 3d Weather Wing on 8 October 1956.

LINEAGE: Established as the 3d Weather Wing on 25 September 1956, it was activated at Offutt AFB, Nebraska, and assigned to Air Weather Service on 8 October of that year. It was inactivated on 31 Jul 1991.²

AWARDS: The Air Force Outstanding Unit Award for 1 Oct 1960-31 Jan 1963; 1 Jul 1976-30 Jun 1978.

EMBLEM (see square 7): Approved on 11 December 1957. **SIGNIFICANCE:** The anemometer and fleur-de-lis are symbolic of 3d Weather Wing's mission and are taken from the Air Weather Service emblem. The white stars on the blue band are representative of the Strategic Air Command. The colors on the emblem are used by Air Weather Service and the Strategic Air Command. Ultramarine blue and golden yellow are the official colors of the Air Force. **MOTTO:** WE SUPPORT THE DEFENDER

Commanders and Date of Assignment

8 Oct 56	Col Frederick J. Cole	16 Jul 75	Col Albert J. Kaehn, Jr.
23 Aug 57	Col Anthony T. Shtogren	2 Aug 78	Col Alfred C. Molla, Jr.
1 Jul 63	Col Russell K. Pierce, Jr.	1 Jul 80	Col Robert M. Gottuso
5 Oct 65	Col Ralph G. Suggs	26 Aug 82	Col James W. Hall
27 Jun 66	Col Robert L. Sorey	7 Jun 83	Col Billy L. Moore
1 Sep 70	Col Eugene C. St. Clair	31 Jul 86	Col John H. Taylor
1 Jun 73	Col James H. Gillard	22 Jul 88	Col George L. Frederick, Jr.
7 Feb 74	Col Berry W. Rowe	22 Jun 90	Col John W. Oliver

4th WEATHER WING INACTIVE

MISSION: The 4th Weather Wing provided or arranged for aerospace environmental services and for technical advice on the effects of the environment on military systems and provide staff and operational support to North American Aerospace Defense Command, U.S. Space Command, Air Force Space Command, Air Force Systems Command, and U.S. Element NORAD. It will manage the operation of worldwide solar observatories and insure that data are provided, as required, to supported agencies and to other Air Weather Service agencies as necessary. It will provide procedural and technical guidance for all solar geophysical observing functions. It identified requirements for space environmental support to all Air Force, Army, and other agencies as directed by Air Weather Service.

HISTORICAL BACKGROUND: The 4th Weather Wing can trace its roots to 1 August 1951 with the activation of the 2103d Air Weather Group [MAJCOM] at Ent AFB, Colorado. The 2103d was replaced by the 3d Weather Group. It, in turn, was replaced by the 4th Weather Wing.

² Hist., 3rd WW History 1991. Note: This date conflicts with the date stated in *History of the AWS, 1 Jan 1990 – 31 Dec 1995*, which stated inactivation occurred on 30 Sep 91. A review of the source documents revealed that the 31 Jul 91 is correct.

LINEAGE: Established as the 4th Weather Wing on 1 June 1959, it was activated at Colorado Springs, Colorado, and assigned to Air Weather Service on 8 August 1959. The 4th Weather Wing moved to Ent AFB on 26 February 1963. It was inactivated on 30 June 1972 and replaced by the 3d Weather Wing's 12th Weather Squadron. The 4th Weather Wing was activated on 1 October 1983 at Peterson AFB, Colorado. It was inactivated on 30 Sep 1991

AWARDS: The Air Force Outstanding Unit Award for 1 May 1966-30 Apr 1968.

FIRST EMBLEM (see square 8): Approved on 4 January 1959. **SIGNIFICANCE:** The emblem is symbolic of its mission to provide weather support for air defense activities. Against a background of deep blue to indicate the atmosphere and vast space (primary theater of Air Force operations and weather phenomena), the North American continent is displayed to represent the North American Air Defense Command to which the wing provides staff meteorological support and service. The sword pointing upward toward the potential enemy and the area of concern in weather support represents the armed defense force, which is supported by the wing. The sun, the cloud, and the lightning bolt represent the basic natural forces considered in providing weather support. The sun's rays, associated with fair weather, also represent the peaceful goal of the air defense force, while the lightning, a symbol of foul weather, also represents the awesome and instantaneous striking power of the force, which this wing supports. The emblem bears the Air Force colors of ultramarine blue and golden yellow, and the national colors of red, white, and blue.

SECOND EMBLEM (see square 9): A modification was approved on 18 March 1984. **SIGNIFICANCE:** The emblem is symbolic of the primary mission to provide atmospheric and solar weather support to air defense and space activities. The blue background indicates earth's atmosphere and deep space, the medium of the Air Force. The satellite represents the wing's mission to support the Space Command. The deltoids symbolize the wing's support to the broad range of research and development activities of the Air Force Systems Command. The sword is symbolic of the armed defense force supported by the wing and points to the sky, the shortest direct approach of a potential aggressor and the area of concern in providing weather support. The sun, cloud, and lightning bolt are symbolic of the natural forces considered when providing weather support. The Air Force colors of ultramarine blue and golden yellow and the national colors of red, white, and blue are used.

Commanders and Date of Assignment

8 Aug 59	Col Kenneth A. Linder	1 Oct 83	Col Serhij Pilipowskyj
Jun 63	Col Robert L. Sorey	1 Aug 86	Col James K. Lavin
16 Jul 63	Col Robert T. Osborn	Jun 87	Col Gene J. Pfeffer
1 Aug 63	Col Richard M. Gill	16 Jun 89	Col Charles H. Tracy
10 Aug 67	Col Paul E. McAnally	30 Jan 91	Col William B. Freeman, Jr.
22 Jan 71	Col Lewis J. Neyland	21 Jun 91	Col James W. Overall

**5th WEATHER WING
INACTIVE**

MISSION: The 5th Weather Wing provided or arranged staff operational meteorological and aerospace environmental support to the Tactical Air Command, U.S. Readiness Command, U.S. Central Command, Joint Deployment Agency, U.S. Army Forces Command, U.S. Army Training and Doctrine Command, Military District of Washington, U.S. Southern Command, Air Force Atlantic Command, Army Atlantic Command, U.S. Air Force Southern Air Division, Caribbean Contingency Task Force, 1st Air Force (Air Defense), and the U.S. Navy Atlantic Command.

HISTORICAL BACKGROUND: The 5th Weather Wing can trace its roots to 1 August 1951 with the organization of the 2102d Air Weather Group. It, in turn, was replaced by the 2d Weather Group, which was replaced by the 5th Weather Wing.

LINEAGE: Established as the 5th Weather Wing, it was activated at Langley AFB, Virginia, on 17 September 1965. It was organized and assigned to Air Weather Service on 8 October of that year. It was inactivated on 30 Sep 1991.

AWARDS: The Outstanding Unit Award for 1 Jul 1971-30 Jun 1973; 1 Jul 1973-31 Dec 1974; 1 Apr 1978-31 Mar 1980; 1 Jul 1983-30 Jun 1985.

EMBLEM (see square 10): Approved on 18 October 1966. **SIGNIFICANCE:** Against the field of blue representing the sky, the primary theater of Air Force operations, the anemometer, with the lower arm tilted and extended to form a sword, denotes a needle measuring weather changes, and also identifies the unit as a part of the Air Weather Service. The fess engrailed and the base dancette represent cold and warm fronts, and in the colors blue and gold signify day and night forecasting. The red circle represents the world and, charged with a five-pointed star, alludes to the worldwide support provided by the 5th Weather Wing. The emblem bears the national colors of red, white, and blue and the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment

8 Oct 65	Col Kenneth A. Linder	18 Jun 81	Col Salvatore R. LeMole
15 Apr 66	Col Milton M. Hause	14 Oct 83	Col John A. Lasley, Jr.
8 Jul 66	Col George E. Rath	21 Jun 85	Col John J. Kelly, Jr.
2 Feb 70	Col Walter A. Keils	24 Jul 87	Col Ernie r. Dash
1 Oct 73	Col Leonard E. Zapinski	22 Jun 89	Col William S. Koenemann
1 Aug 76	Col Joseph D. Saccone	2 Aug 91	Col Thomas K. Klein, Sr.
15 Jul 78	Col Joe R. O'Neil		

6th WEATHER WING INACTIVE

MISSION: The 6th Weather Wing originally supported Air Force Systems Command, headquarters elements of the Departments of the Army and the Air Force in the Washington area, the Air Force Technical Applications Center, Army Materiel Command, and Headquarters Command, U.S. Air Force.

HISTORICAL BACKGROUND: The 6th Weather Wing can trace its roots to 1 March 1952 with the organization of the 2104th Air Weather Group at Baltimore, Maryland. It was replaced by the 4th Weather Group, which, in turn, was replaced by the 6th Weather Wing.

LINEAGE: Established as the 6th Weather Wing, it was activated at Andrews AFB, Maryland, on 17 September 1965. It was organized and assigned to Air Weather Service on 8 October 1965. It was inactivated on 1 August 1975.

AWARDS: The Air Force Outstanding Unit Award for 1 Oct 1967-30 Jun 1969.

EMBLEM (see square 11): Approved on 28 October 1966. **SIGNIFICANCE:** The background of blue represents the sky, the primary theater of Air Force operations. The division of the shield represents the three levels of atmosphere and space research through the use of rawinsonde; the rocket, symbolized by the inferno which denotes the action occurring in the propulsion chamber; and the star, representing space. The fess engrailed and the base dancette represent the cold and warm fronts and allude to the continued interest of the wing in conventional weather activities. The six points of the star indicate the numerical designation of the wing. The emblem bears the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment

29 Jul 61	Col Robert F. Long	30 Oct 70	Col Joseph M. Bird
15 Oct 65	Col Clifford A. Spohn	1 Dec 72	Col Hyko Gayikian
13 May 66	Col Kenneth A. Linder	20 Jun 74	Col Herbert A. Million
1 Feb 67	Col Arnold R. Hull		

7th WEATHER WING INACTIVE

MISSION: The 7th Weather Wing provided or arranged staff operational meteorological and aerospace environmental support to the Military Airlift Command, Air Force Logistics Command, U.S. Forces Azores, Air Force Communications Command, Air Force Intelligence Service, Air Force Military Training Center, Air Force Reserve, 23d Air Force (Aerospace Rescue and Recovery Service, Special Operations Forces, Aeromedical Airlift, Operational Support Aircraft), Aerospace Audiovisual Service, Air Force Inspector General Activities Center, Electronic Security Command, and the Airlift Information Systems Division.

HISTORICAL BACKGROUND: The 7th Weather Wing can trace its roots to the activation of the [AFCON] 8th Weather Group (later 8th Weather Group [MAJCOM]) on 12 December 1945 at Grenier Field, New Hampshire. The 8th Weather Group was replaced by the 7th Weather Wing.

LINEAGE: Established as the 7th Weather Wing, it was activated at Scott AFB, Illinois, on 17 September 1965. It was organized and assigned to Air Weather Service on 8 October 1965. The 7th Weather Wing was inactivated on 30 June 1972 and activated at Scott on 1 January 1976. It was inactivated on 30 Sep 1991.

AWARDS: The Air Force Outstanding Unit Award for 1 Jul 1977-30 Jun 1979.

EMBLEM (see square 12): Approved on 1 March 1967. **SIGNIFICANCE:** The dark and light blue background represents the sky, the primary theater of Air Force operations. The division of the shield into light and dark blue represents day and night operations and indicates the around-the-clock performance of the wing. The three orbits in light blue at the top of the shield also represent the three missile ranges supported with weather maintenance. The crescents and the double bevel symbolize radar and communications so vital to the successful completion of the wing mission. The severe weather warning for the continental United States is symbolized by the fess engrailed and dancette which also represent cold and warm fronts and signify the wing's primary mission of weather observing and forecasting. The red circle orbiting a stylized globe represents the wing's participation in the weather satellite program and computer flight plans of high altitude winds for the worldwide Military Airlift Command fleet, and also indicates the worldwide capability of the organization. The seven stars indicate its numerical designation. The emblem bears the national colors of red, white, and blue and the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment

8 Oct 65	Col Arthur W. Anderson	18 Jun 80	Col John J. Elliff
14 Jun 66	Col Walton L. Hogan, Sr.	1 Jun 83	Col Thomas L. Harris
23 Jun 66	Col William H. Best, Jr.	31 Jan 84	Col John R. Sweeney
4 Aug 67	Col Douglas C. Purdy	5 Jun 85	Col John W. Diercks
6 Feb 70	Col Robert L. Kane	19 Jun 86	Col Thomas O. Proffitt
1 Jan 76	Col Charles O. Jenista, Jr.	2 May 88	Col John P. Upchurch
26 Jul 76	Col David L. Roberts	3 Aug 90	Col Melvin L. Turner
16 Aug 76	Col Robert W. Fanning		

43d WEATHER WING [AFCON] INACTIVE

MISSION: The 43d Weather Wing was responsible for weather service in U.S. Army and U.S. Army Air Forces units located in the Pacific, and for post World War II rehabilitation of weather services in Japan, Korea, and the Philippines.

LINEAGE: Constituted the 43d Weather Wing on 29 August 1945, it was activated at Fort McKinley, Manila, Philippines, and assigned to the U.S. Army Forces, Pacific on 20 September 1945. Its subordinate units included the 1st, 2d, and 3d Weather Groups, and the 15th, 20th, 29th, 30th, and 31st Weather Squadrons. It was

reassigned to Army Air Forces Weather Service on 12 October 1945. All weather reconnaissance squadrons in the Pacific were assigned to the 43d Weather Wing, but by the close of 1945, with demobilization, most weather reconnaissance squadrons were paper organizations, and the Air Force's only weather reconnaissance aircraft flew out of Atsugi, Japan. On 16 May 1946 the 43d Weather Wing moved to Tokyo, Japan. Its units supported Operation Crossroad, the atomic bomb test at Bikini Atoll in June 1946, and Operation Pacusan Dreamboat, the record-setting, 10,000 mile non-stop flight in October 1946 of a specially modified B-29 from Hawaii to Cairo, Egypt, via the Great Circle route. On 3 June 1948 it was inactivated and replaced by the 43d Air Weather Wing [MAJCOM].

AWARDS: Service Streamer, Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

24 Sep 45 Col William O. Senter

**43d/2043d/2143d AIR WEATHER WING [MAJCON]
INACTIVE**

MISSION: The 2143d Air Weather Wing units supported Allied operations during the Korean War.

LINEAGE: Designated the 43d Air Weather Wing on 19 May 1948, it was organized at Tokyo, Japan, by Air Weather Service on 1 June 1948. It was redesignated the 2043d Air Weather Wing on 1 October 1948 and the 2143d Air Weather Wing on 1 January 1949. It was discontinued on 8 February 1954 and replaced by the 1st Weather Wing.

AWARDS: Service Streamer, Korean War, Korean Theater, 27 Jun 1950-27 Jun 1953.

Commanders and Date of Assignment

1 Jun 48 Col Roy W. Nelson, Jr.
1 Jan 49 Col Thomas S. Moorman, Jr.
21 Jun 51 Col Arthur W. Kellond
22 Jun 51 Col James W. Twaddell, Jr.

**59th WEATHER WING [AFCON]
INACTIVE**

MISSION: The 59th Weather Wing's mission was to support all Air Force and Army organizations in continental Europe.

LINEAGE: Constituted the 59th Weather Wing on 9 November 1945, it was activated at Wiesbaden, Germany, and assigned to the Army Air Forces Weather Service on 23 November 1945 with 10 officers, one warrant officer, and 42 enlisted personnel authorized. Assigned units included the 12th, 18th and 21st Weather Squadrons, under the 5th Weather Group (located at Wiesbaden, Germany), and the 19th and 35th Weather Squadrons under the 6th Weather Group (located at Cairo, Egypt). The wing helped rehabilitate the meteorological services of Allied nations and Germany after World War II. On 2 August 1946 the 59th Weather Wing transferred without personnel and equipment to Headquarters Air Weather Service, Washington, D.C., and was inactivated on 3 October 1947.

AWARDS: None.

Commanders and Date of Assignment

11 Dec 45 Col Wilson H. Neal
24 Jan 46 Col Harold H. Bassett

59th WEATHER WING/2059th AIR WEATHER WING [MAJCON] INACTIVE

MISSION: Its mission was to support all Air Force and Army organizations in the continental United States, exercise technical supervision over all other Army weather services, and conduct weather forecasting research.

LINEAGE: Designated the 59th Weather Wing by the Air Transport Command on 19 May 1948. It was organized by Air Weather Service on 1 June 1948 at Tinker AFB, Oklahoma, and assumed the resources and mission of the former Continental Weather Wing, including the 101st, 102d, 103d, and 104th Weather Groups, and the 21st Mobile Weather Squadron. The 59th Weather Wing was redesignated as the 2059th Air Weather Wing on 1 October 1948. The 2059th Air Weather Wing was discontinued 1 June 1952.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48	Col Lewis L. Mundell
13 Dec 48	Col Archie J. Knight
31 Jan 49	Col Harold L. Smith
Feb 50	Col James W. Twaddell, Jr. ³

2058th AIR WEATHER WING INACTIVE

MISSION: The 2058th Air Weather Wing was responsible for weather service to U.S. Army and the Air Force organizations in continental Europe.

LINEAGE: Designated the 2105th Air Weather Group, it was organized at Wiesbaden, Germany, on 20 January 1949. It was redesignated the 2058th Air Weather Wing on 12 October 1951. It moved to Furstenfeldbruck AB on 26 June 1953. It was discontinued on 8 February 1954 and replaced by the 2d Weather Wing.

AWARDS: None.

Commanders and Date of Assignment

1 2 Oct 51	Col Norman L. Peterson
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AIR FORCE GLOBAL WEATHER CENTER INACTIVE

MISSION: The Air Force Global Weather Center provided U.S. Air Force and U.S. Army with global information and products relating to past, present, and future states of the aerospace environment. It was the Air Weather Service manager for the collection and dissemination of aerospace environmental data and provided and arranged for meteorological aerospace environmental support to Air Weather Service units, and other Department of Defense and government agencies as directed by the Chief of Staff, U.S. Air Force.

HISTORICAL BACKGROUND: Global Weather Central (Detachment 16-12U, 16WS) began at Offutt AFB, Nebraska, on 15 March 1949, under the command of the 2103d Air Weather Group. It was reassigned in

³ E-mail, James W. Twaddell III, Lt Col, USAF, Ret., to Jerry White, AFWA/HO, *Re: James W. Twaddell, Jr.*, 29 Aug 2002 [Note: Feb 50 date is estimated. Document indicated he was Deputy Commander and then Commander unit Jul 51]

place to the 2059th Air Weather Wing on 31 January 1950 and began operations as Detachment 2059-6U on 1 February 1950 at Offutt. It was reassigned on 6 August 1951 as Detachment 2101 of the 2101st Air Weather Group. On 20 April 1952 it became Detachment 1, Offutt Weather Central, 1st Weather Group, and was replaced on 8 October 1956 by Detachment 1, Offutt Weather Central, 3d Weather Wing. Detachment 1, 3d Weather Wing was replaced by Air Force Global Weather Central, 2d Weather Squadron, on 8 July 1967. It was inactivated on 8 July 1969.

LINEAGE: Established on 18 March 1969, it was activated at Offutt AFB, Nebraska, by Air Weather Service as the Air Force Global Weather Central on 8 July 1969. It was assigned to the 6th Weather Wing on 30 June 1972 and on 1 August 1975 it was reassigned directly to Air Weather Service. It was redesignated as Air Force Global Weather Center on 1 Oct 1996 and remained assigned to Air Weather Service. It was inactivated on 15 Oct 1997.

AWARDS: The Air Force Outstanding Unit Award for 8 Jul 1969-30 Jun 1970; 1 Jul 1971-31 May 1973; 1 Jul 1980-30 Jun 1982; 1 Jul 86-30 Jun 88; 1 Sep 1993 – 30 Sep 1995; 1 Oct 1995 – 30 Sep 1996.

EMBLEM (see square 14): Approved in July 1976. **SIGNIFICANCE:** The globe symbolizes Air Force Global Weather Central's worldwide interests, the two colors indicate 24-hour-a-day, around-the-clock support. The latitude and longitude lines symbolize its ability to provide tailored support to specific areas or points worldwide. The electric signals symbolize its central role in tying everything together, as well as the speed and efficiency with which weather support is provided to all users. The satellite is used to gather meteorological and solar data and to communicate weather data worldwide. Computers are used to process raw environmental data and to produce meteorological analysis and forecasts. The anemometer symbolizes the collection of conventional weather data, which is still the heart of meteorology. The three stylized aircraft symbolize the support provided to the aerospace forces of today and tomorrow. The general color scheme is designed to resemble the Air Weather Service shield. The colors used represent the following: ultramarine blue for daylight operations as well as the sky, the primary theater of Air Force operations; dark gray for nighttime operations; and golden yellow for the sun and the excellence of Air Force personnel.

Commanders and Date of Assignment

15 Mar 49	Col James T. Seaver, Jr.	Jan 73	Col John C. Ball (temporary)
Apr 49	Maj Lowell A. Schuknecht (temporary)	Feb 73	Col Richard A. Johnston
Jul 49	Col James T. Seaver, Jr.	31 Aug 75	Col Herbert A. Million
Jan 52	Lt Col Guy N. Gosewisch	28 May 76	Col Alphonse Gargiulo, Jr.
May 54	Lt Col Lowell A. Schuknecht	15 Jun 78	Col Arthur Bidner
1 May 55	Lt Col Fred A. Martin	22 Jun 81	Col George E. Chapman
1 Aug 55	Col Ralph G. Suggs	23 Jul 82	Col Dale C. Barnum
Jul 56	Lt Col Fred A. Martin (Histories for 1957 do not list commanders)	20 Jul 84	Col David L. Donley
		3 Jul 86	Col John W. Diercks
Jan 58	Lt Col Lowell A. Schuknecht	7 Jun 89	Col Adrian A. Ritchie, Jr.
Jul 60	Lt Col Clifford A. Spohn	26 Jul 91	Col Thomas E. Sieland
Jan 64	Col Robert D. Johnston	16 Jul 93	Col Joseph D. Dushan
Jan 65	Col Ralph J. Steele	12 May 95	Col John L. Hayes
Jun 70	Col Daniel B. Mitchell		

CONTINENTAL WEATHER WING INACTIVE

MISSION: The Continental Weather Wing's mission was to support all Air Force and Army organizations in the continental United States and exercise technical supervision over all other Army weather services.

LINEAGE: Established as the Continental Weather Wing, it was activated at Asheville, North Carolina, on 1 October 1945 with a complement of 26 officers, three warrant officers, and 16 enlisted personnel. The 67th Army Air Forces Base Unit was assigned to it. The Continental Weather Wing moved to Tinker Field, Oklahoma, on 16 November 1945. On 3 June 1948 it was discontinued and its mission and resources were absorbed by the 59th Weather (later the 2059th Air Weather) Wing.

AWARDS: None.

Commanders and Date of Assignment

1 Oct 45	Col James W. Twaddell, Jr.
15 Nov 45	Col Harold L. Smith
22 Aug 46	Col Cordes F. Tiemann
8 Aug 47	Col Norman L. Peterson
27 Aug 47	Col Lewis L. Mundell

GROUP LINEAGES

This section gives the official lineage of selected groups. Due to space limitations, all provisional and reconnaissance groups were not covered. Also included, if active, is the unit's mission. The lineage is followed by awards, emblems, and a chronological list of commanders. Dates for Service and Campaign Streamers are as listed in Air Force Instruction 34-1201. Data was extracted from histories on file in the Air Force Weather Agency archives and the archives of the U.S. Air Force Historical Research Center. The [AFCON] and [MAJCON] designations following the title are not part of its official title but are used to identify the type of unit.

1st AIR WEATHER GROUP (PROVISIONAL) INACTIVE

LINEAGE: Activated at Morrison Field, Florida, it was assigned to Air Weather Service on 13 July 1946. It was inactivated on 17 October 1946 when the 308th Reconnaissance Group (Weather) assumed its mission.

AWARDS: None.

Commanders and Date of Assignment

15 Jul 46 Lt Col Robert G. David
3 Sep 46 Col Richard E. Ellsworth

1st WEATHER GROUP Offutt AFB, NE

HISTORICAL BACKGROUND: The Far East Air Forces Weather Group (Provisional) was formed on 25 October 1944 and later replaced by the 1st Weather Group.

During the Southeast Asia (SEA) conflict the Group was assigned to 1st Weather Wing (WWg) and stationed at Ton Son Nhut Air Base (AB), Republic of Vietnam. The Group assumed responsibility for weather support of U.S. and allied forces formerly provided by 30th Weather Squadron (WS). The Group's mission was to fulfill meteorological requirements established by Commander, 1st WWg; provide or arrange for meteorological services required to support Military Assistance Command, Vietnam (MACV), Military Assistance Command, Thailand (MACTHAI), 7th Air Force (AF), Deputy Commander 7AF/13AF in Thailand, United States Army Vietnam (USARV), United States Army Logistics Command Vietnam and Deputy Chief, JUSMAG (Joint United States Military Assistance Group); assist air force advisory groups in Vietnam and Thailand in development, training and support of in-country weather organizations; monitor meteorological potential of other countries in SEA; provide or arrange for meteorological/aerospace environmental services to satisfy requirements of other agencies and activities as directed by commander, 1st WWg. Upon its activation in 1966, Col Lewis J. Neyland, previously commander 30WS, assumed command of 1st Weather Group. Units and resources of 30WS were assigned to 1st Weather Group. Detachments (Det) in Thailand were reassigned to 10 WS. Detachments supporting 7AF remained in 30WS. Detachments with primary mission to support army were reassigned from 30WS to 5WS.

LINEAGE: Constituted as the 1st Weather Group on 29 August 1945, it was activated in the Far East Air Service Command Area adjacent to Fort William McKinley, Manila, Philippines, on 20 September 1945 with a complement of 14 officers and 23 enlisted men. It was assigned to the 43d Weather Wing on 29 September 1945 and assigned to Headquarters Army Air Forces Weather Service on 15 October 1945. The group became inoperative (a paper organization) on 1 January 1946. The 1st Weather Group (still inoperative) moved to Tokyo, Japan, on 16 May 1946 and was inactivated there on 31 May 1948. It was activated at Offutt AFB, Nebraska, and assigned to Air Weather Service through the Military Air Transport Service on 20 April 1952. The 1st Weather Group was inactivated on 8 October 1956 with the 3d Weather Wing assuming its mission. The 1st Weather Group was activated on 16 June 1966 and organized and assigned to the 1st Weather Wing on 8 July 1966 at Tan Son Nhut AB,

Vietnam. The group was inactivated on 30 June 1972. The 1st Weather Group was activated on 15 June 1992, assigned to Air Combat Command, and stationed at Fort McPherson, GA. It was inactivated on 1 July 1994. On 3 May 2006 the Group was activated at Offutt AFB, NE and assigned to Air Force Weather Agency.

AWARDS: Service Streamer, Asiatic-Pacific Theater, World War II, 7 Dec 1942-2 Mar 1946. Campaign Streamers for Vietnam Air Offensive, 29 Jun 1966-8 Mar 1967 (but 1WGp participation started 8 Jul 1966); Vietnam Air Offensive, Phase II, 9 Mar 1967-31 Mar 1968; Vietnam Air Offensive, Phase III, 1 Apr-31 Oct 1968; Vietnam Air/Ground, 22 Jan-7 Jul 1968; Vietnam Air Offensive, Phase IV, 1 Nov 1968-22 Feb 1969; TET 69/Counteroffensive, 23 Feb-8 Jun 1969; Vietnam Summer-Fall, 1969, 9 Jun-31 Oct 1969; Vietnam Winter-Spring, 1970, 1 Nov 1969-30 Apr 1970; Sanctuary Counteroffensive, 1 May-30 Jun 1970; Southwest Monsoon, 1 Jul-30 Nov 1970; Commando Hunt V, 1 Dec 1970-14 May 1971; Commando Hunt VI, 15 May-31 Oct 1971; Commando Hunt VII, 1 Nov 1971-29 Mar 1972. Air Force Outstanding Unit Award for 8 Jul 1966-1 Jul 1967; 2 Jul 1967-30 Jun 1969; with "V" Device, 1 Jan-31 Dec 1971; 1 Jul 1970-30 Jun 1972; Republic of Vietnam Gallantry Cross, with Palm, 8 Jul 1966-30 Jun 1972; 1 Apr 2007 – 31 Dec 2008.

FIRST EMBLEM: Approved on 5 January 1967 (authorized use of the parent 1st Weather Wing's emblem with 1st Weather Group designation on emblem scroll). **SIGNIFICANCE:** The same as for 1st Weather Wing.

SECOND EMBLEM (see square 15): Approved on 12 November 1993. **SIGNIFICANCE:** None available.

Commanders and Date of Assignment

24 Sep 45	Lt Col Morrill E. Marston	12 Jan 69	Col Daniel B. Mitchell
20 Apr 52	Col James T. Seaver, Jr.	7 Jan 70	Col Leonard E. Zapinski
Jun 53	Col Frederick J. Cole	16 Dec 70	Col Wilson V. Palmore
23 May 55	Col David L. Hopkins (temporary)	10 Mar 71	Col Mortimer F. Bennet
11 Aug 55	Col Frederick J. Cole	2 Dec 71	Col Boyce M. Smith
Jan 56	Col David L. Hopkins (temporary)	22 Jan 72	Col Berry W. Rowe
28 Jan 56	Col Frederick J. Cole	15 Jun 92	Col William S. Weaving
8 Jul 66	Col Lewis J. Neyland	3 May 06	Col Thomas B. Froninckx
1 Mar 67	Col Robert B. Hughes	Jun 08	Col Louis V. Zuccarello
22 Jul 67	Col Edwin E. Carmell	Jul 10	Col Kay A. Smith
14 Jan 68	Col Griffin H. Wood	25 Jun 12	Col William Carle

2d WEATHER GROUP Offutt AFB, NE

HISTORICAL BACKGROUND: The Army Air Forces Weather Service, Pacific Ocean Areas, was disbanded on 20 September 1945 and replaced by the 2d Weather Group.

LINEAGE: Constituted as the 2nd Air Weather Group on 29 August 1945, it was activated at Hickam Army Air Base, Territory of Hawaii, assigned to the 43d Weather Wing, and attached to the Far East Air Forces on 20 September 1945. It was assigned to the Provisional Headquarters, Army Air Forces, Middle Pacific, on 4 October 1945, and to the Army Air Forces Weather Service (Asheville, North Carolina) on 15 October 1945. The group became a paper organization on 1 January 1946 and was inactivated on 1 August 1946. The 2d Weather Group was activated at Langley AFB, Virginia, replacing the 2102d Air Weather Group [MAJCON] on 20 April 1952. It was discontinued and inactivated on 7 October 1965 and replaced by the 5th Weather Wing. It was activated on 19 September 2007, assigned to Air Force Weather Agency, and stationed at Offutt AFB, NE.

AWARDS: Service Streamer, Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946. Air Force Outstanding Unit Award (AFOUA): 19 Sep 2007 – 31 Dec 2008; 1 Jan 2009 to 31 Dec 2010.

EMBLEM (see square 16): approved on 8 August 1961. **SIGNIFICANCE:** The emblem is symbolic of the mission of protecting pilots through accurate weather observations and forecasts. Against a background of blue and red (representing respectively the Air Force and the Army, both being supported by this unit), divided by the weather symbols for warm and cold fronts, a cumulonimbus cloud or thunderhead indicates all kinds of weather. The three stars represent the three major commands supported by this group, the anemometer indicates the weather support mission and the globe symbolizes the global aspect of the mission in support of CSAF and STRACOM forces. The emblem displays the Air Force colors of ultramarine blue and golden yellow, and the national colors of red, white, and blue.

Commanders and Date of Assignment

20 Sep 45	Col John J. Murphy	mid 1963	Col Kenneth A. Linder
8 Dec 45	Maj Wilbur B. Sherman	19 Sep 07	Col Richard Twigg
20 Apr 52	Col Anthony T. Shtogren	2 Jun 08	Col John M. Egentowich
20 Aug 54	Lt Col George E. Rath	May 10	Col Steven P. DeSordi
Jun 60	Col Nicholas M. Chavasse	12 Jul 12	Col David Bacot
29 Jun 61	Col Robert F. Long		

**3d WEATHER GROUP
INACTIVE**

LINEAGE: Constituted as the 3d Weather Group on 31 March 1952. It was activated at Ent AFB, Colorado, replacing the 2103d Air Weather Group [MAJCON], assigned to Air Weather Service, and attached to the Air Defense Command on 20 April 1952. It was inactivated on 8 August 1959 when it was replaced by the 4th Weather Wing.

AWARDS: None.

EMBLEM (see square 17): Approved on 15 May 1959. **SIGNIFICANCE:** The emblem is symbolic of the group's primary mission of providing weather support for air defense activities. The background of ultramarine blue indicates vast space. The North American continent represents the unified North American Air Defense Command to which the 3d Weather Group provides staff meteorological support and service, as is required by its United States components. The anemometer represents weather activities and the lightning bolts, ejected from the North American continent into space, are symbolic of weather's contribution to the effectiveness of the North American Air Defense Command's mission. The emblem bears the Air Force colors of ultramarine blue and golden yellow, as well as the national colors of red, white, and blue.

Commanders and Date of Assignment

20 Apr 52	Col Arthur a. McCartan
11 Jul 54	Col Russell K. Pierce, Jr.
28 Mar 58	Col Kenneth A. Linder

**4th WEATHER GROUP
INACTIVE**

LINEAGE: Constituted the 4th Weather Group on 31 March 1952, it was activated at Baltimore, Maryland, replacing the 2104th Air Weather Group [MAJCON], and assigned to Air Weather Service on 20 April 1952. It moved to Andrews AFB, Maryland, on 1 November 1957. It was discontinued and inactivated on 8 October 1965 when it was replaced by the 6th Weather Wing.

AWARDS: None.

EMBLEM (see square 18): Approved on 6 May 1959. **SIGNIFICANCE:** The emblem with its background of atmosphere and space is symbolic of its primary mission. The rocket represents research and development of atmosphere and space vehicles. The radar echo indicates a radarscope presentation of a hurricane, one of nature's most violent weather phenomena. The balloon and rawinsonde are symbols of the group's responsibility for monitoring the AWS upper air-observing program. The emblem bears the Air Force colors of ultramarine blue and golden yellow, and the national colors of red, white, and blue.

Commanders and Date of Assignment

20 Apr 52	Col George F. Taylor
21 Sep 53	Col John J. Jones
1 Apr 58	Col Hazen H. Bedke
29 Jun 61	Col Robert F. Long

**5th WEATHER GROUP
INACTIVE**

LINEAGE: Constituted the 5th Weather Group on 9 November 1945, it was activated at Wiesbaden, Germany, and assigned to 59th Weather Wing on 23 November 1945. It was assigned to Air Weather Service on 2 October 1946 and inactivated on 1 June 1948 when its mission was assumed by the 18th Weather Squadron. Activated at Pepperell AFB, Newfoundland, on 8 February 1954, the 5th Weather Group was assigned to Air Weather Service and attached to the Northeast Air Command. The 5th moved to Westover AFB, Massachusetts, and was assigned to the 3d Weather Wing on 8 October 1956. It was discontinued and inactivated on 18 October 1960 when it was replaced by the 8th Weather Squadron.

AWARDS: None.

EMBLEM (see square 19): Approved on 3 May 1956. **SIGNIFICANCE:** The emblem symbolizes the mission of the weather group with 24-hours-a-day operation to support the command and to provide meteorological service.

Commanders and Date of Assignment

Dec 45	Col Wilson H. Neal	8 Feb 54	Col Virgil E. Sandifer
4 Jun 46	Lt Col Diran Arakelian	late 1956	Lt Col Robert L. Sorey (temporary)
8 Jul 46	Col Harold H. Bassett	1 Jul 57	Col Guy N. Gosewisch
16 Jul 47	Col Edward W. Maschmeyer	7 Aug 59	Col Ralph G. Suggs

**6th WEATHER GROUP
INACTIVE**

LINEAGE: Constituted the 6th Weather Group on 9 November 1945, it was activated at John H. Payne Field, Cairo, Egypt, and assigned to the 59th Weather Wing on 23 November 1945. It moved to Cazes Army Air Base, Casablanca, French Morocco, on 16 March 1946 and then to Wiesbaden AB, Germany, on 11 June 1946. At that time the 6th became inoperative (a paper organization). It was assigned to Headquarters Air Weather Service on 2 August 1946 (still inoperative) and inactivated on 3 October 1947. It was activated at Wright-Patterson AFB, Ohio, and assigned to Air Weather Service on 20 April 1952. The group was inactivated on 18 June 1958.

AWARDS: None.

EMBLEM (see square 20): Approved on 19 July 1955. **SIGNIFICANCE:** The anemometer, cloud formation, and bolt of lightning signifies the meteorological service requirement of the mission while the wrench signifies the maintenance requirement. The eagle symbolizes flight and striking power, the essence of the Air Force.

Commanders and Date of Assignment

15 Dec 45 Col Oscar A. Heinlein
20 Apr 52 Maj Ellis C. Luck
12 May 52 Lt Col Ernest R. Miller
16 Jul 54 Lt Col Harvey P. Hall
16 Aug 56 Lt Col Robert C. Ross
7 Nov 56 Col Oliver K. Jones

7th WEATHER GROUP (AFCON) INACTIVE

LINEAGE: Constituted the 7th Weather Group on 17 November 1945, it was activated at Elmendorf AAB, Alaska, and assigned to Headquarters Army Air Forces Weather Service on 4 December 1945. It was inactivated on 3 June 1948 and replaced by the 7th Weather Group [MAJCON]. The 7th Weather Group [AFCON] was activated at Elmendorf AFB, Alaska, on 20 April 1952. The 7th Weather Group [AFCON] was inactivated on 18 June 1958 and replaced by the 11th Weather Squadron.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

EMBLEM (see square 21): Approved on 25 April 1956. **SIGNIFICANCE:** The lamp of knowledge signifies meteorological ability necessary to perform the mission; the moon symbol, from an ancient emblem of Byzantium, connected with its presiding goddess, who had saved the city from night assault by Phillip of Macedonia by causing the moon to shine with unexpected brightness, is appropriate since a primary mission of this organization is to provide weather service as a vital necessity in the defense of Alaska; the top triangle is a symbol of a squadron subordinate to this group which flies weather reconnaissance over the Arctic Ocean. The aurora borealis is common to that area; the middle triangle signifies the weather eye over this part of the hemisphere for which they are responsible; the lower Dexter triangle depicts one of their 14 weather detachments strategically placed in this theater to provide weather reports and observations; the lower sinister triangle signifies the worldwide transmission of completed weather data; the fleur-de-lis, a symbol of the Air Weather Service, is used to indicate its association with that agency.

Commanders and Date of Assignment

12 Dec 45	Col Carl W. Carlmark	6 Jun 54	Lt Col Robert B. Hughes
1 Apr 46	Maj William A. Pope	15 Jul 54	Col Lawrence A. Atwell
26 Sep 46	Col Carl W. Carlmark	11 Aug 56	Col Robert F. Long
20 Apr 52	Col Richard M. Gill	16 May 58	Lt Col James M. Fahey

8th WEATHER GROUP INACTIVE

LINEAGE: Constituted the 8th Weather Group on 12 December 1945, it was activated at Grenier Field, New Hampshire, on 14 January 1946. The 8th moved to Fort Totten, Long Island, New York, on 9 March 1946 and to Westover Field, Massachusetts, on 25 October 1947. It was inactivated there on 3 June 1948 and was replaced by the 8th Weather Group [MAJCON]. The 8th Weather Group was activated at Scott AFB, Illinois, on 20 April 1952 and moved to Randolph AFB, Texas, on 16 September 1957. It returned to Scott AFB on 1 July 1961 and was discontinued and inactivated there on 8 October 1965 when it was replaced by the 7th Weather Wing.

AWARDS: None.

EMBLEM (see square 22): Approved on 4 June 1959. **SIGNIFICANCE:** The cloud represents turbulent and unstable weather, while the strands of wheat personify serene, peaceful weather. The free form design

represents modern times. The background of sky and stars indicates the unit is looking into the future. The emblem bears the Air Force colors of ultramarine blue and golden yellow. **MOTTO:** VIGILANCE, SKILL, INTEGRITY.

Commanders and Date of Assignment

14 Jan 46	Col Arthur F. Merewether	18 Jul 58	Col Oliver K. Jones
12 Feb 46	Maj Robert B. Sykes, Jr.	10 Jan 61	Lt Col James M. Fahey
22 May 46	Col Lewis L. Mundell	20 Mar 61	Col John C. Scales
22 Jul 47	Col James W. Twaddell, Jr.	1 Jul 61	Col John J. Jones
20 Apr 52	Col Diran Arakelian	23 Jun 64	Col Louis Bertoni
5 May 54	Col Wray B. Bartling	20 Jul 64	Col Arthur W. Anderson

10th WEATHER GROUP INACTIVE

LINEAGE: Constituted the 10th Weather Group on 24 January 1957, it was activated at Moriyama AS, Japan, and assigned to the 1st Weather Wing on 18 February 1957. The group moved to Fuchu AS on 1 July 1957 where it was discontinued and inactivated on 3 October 1960.

AWARDS: None.

EMBLEM (see square 24): Approved on 16 March 1959. **SIGNIFICANCE:** The divided background of blue and yellow signifies the group's meteorological duties are carried on day and night. The triangle with its proverbial stability indicates firmness of purpose and is symbolic of the three-way meteorological association of land, sea, and air. The circle indicates continuous endeavor and the fleur-de-lis commemorates the first participation of a United States Army weather service in combat in France during World War I. The emblem bears the official Air Force colors of ultramarine blue and golden yellow.

Commanders and Date of Assignment

18 Feb 57	Col Donald W. Roberts
24 Jul 59	Col Russell K. Pierce, Jr.
10 Jun 60	Lt Col Paul M. Huber

1110th BALLOON ACTIVITIES GROUP INACTIVE

HISTORICAL BACKGROUND: designated the 1300th Air Resupply and Communications Squadron, Special, it was organized at Mountain Home AFB, Idaho, and assigned to the 1300th Air Base Wing (ARCS-MATS) on 1 November 1952. It moved to Great Falls AFB, Montana, on 1 May 1953.

LINEAGE: Redesignated as the 1110th Air Support Group, it was assigned to Headquarters Command, U.S. Air Force, on 15 November 1953. It moved to Lowry AFB, Colorado, on 18 April 1954, to High Wycombe, England, in October 1955, and back to Lowry AFB in May 1956. It was redesignated 1110th Balloon Activities Group on 1 March 1958 and discontinued on 1 January 1960.

AWARDS: Air Force Outstanding Unit Award for 1 Apr 1955-26 Mar 1956.

EMBLEM (see square 25): Approved on 3 December 1956. **SIGNIFICANCE:** The group's mission is the launching of high altitude weather balloons for the purpose of collecting data on upper atmospheric weather conditions. This history of the organization has supported this mission, as many hundreds of weather balloons have been launched from all corners of the world. The 1110th Air Support Group is preparing itself for further research into these weather phenomena. The lightning bolt is for mobility and tactical quality. The balloons are the vehicles for carrying out the mission. The cloud symbolizes the varying atmospheric and weather conditions explored by the

1110th Air Support Group in performing its mission. The motto verbally expresses the research and development aspects obtained from the use of high altitude weather balloons. **MOTTO:** VIDERE FIRMAMENTUM translates to TO SEE THE SKY (broad translation: EXPLORERS OF THE UPPER ATMOSPHERE).

Commanders and Date of Assignment

13 Nov 53 Lt Col Russell L. Redman
1 Jul 56 Lt Col John A. Buckley
4 May 59 Lt Col Arnold J. Daly

**1690th WEATHER GROUP (PROVISIONAL)⁴
INACTIVE**

HISTORICAL BACKGROUND: To manage the Weather Support Force (WSF) for Operation DESERT SHIELD/DESERT STORM, AWS envisioned a structure similar to the one used in South East Asia 25 years earlier. On 20 Sep 1990, Headquarters MAC announced it would establish a number of provisional units, including weather units. On 28 Sep, AWS/CC, formally directed the formation of a provisional weather group, and 3 days later approved an organizational structure incorporating a two deputy commander concept (one for air operations and the other for land operations), and setting up a number of detachments and operating locations under a provisional group. CINCMAC, approved the creation of the 1690th Weather Group (Provisional) (WGP) on 9 Oct; on 20 Oct, the CENTAF Commander, concurred with its establishment. On 31 Oct, Headquarters MAC issued a special order activating the 1690th WGP at Riyadh, and another activating 20 provisional weather detachments and eight provisional operating locations at various locations in or near the DESERT SHIELD theater, all effective 1 Nov. Acting through its 1610th Airlift Division (Provisional), MAC also issued another special order on 11 Nov which appointed Colonel Goldey the commander of the 1690th WGP.

The special order establishing the 1690th WGP attached the group to the 5th Weather Wing for command, but to USCENTCOM for operational control and the host unit at Riyadh for logistical support. Operational control of the 1690th's Air Force support units rested with CENTAF, its Army support units with ARCENT. A 1690th detachment created specifically to provide weather support to special operations forces was under the operational control of SOCCENT. The two deputy commanders technically functioned as directors of operations for the 1690th WGP's commander, but also continued to serve in their respective capacities as staff weather officer (SWO) to the CENTAF commander and officer-in-charge (OIC) of the AFCENT weather support element, and SWO to the ARCENT commander and OIC of the ARCENT weather support element. In addition to the 20 detachments and eight operating locations, the 1690th WGP also had four work centers, all located in Riyadh. Three – the Tactical Air Control Center, Airlift Control Center, and Base Weather Operations – were under the supervision of the CENTAF's Deputy Commander for Operations, the other, the DESERT SHIELD Tactical Forecast Unit, operated directly under the 1690th WGP commander.'

By 31 October 1990, the U.S. had deployed over 200,000 personnel to DESERT SHIELD and total coalition forces numbered approximately 240,000. But Saddam Hussein still showed no signs of pulling his army out of Kuwait. On 8 November President Bush ordered the U.S. military to deploy more than 150,000 additional troops to the Persian Gulf. Up to this time the deployed forces had adopted a purely defensive posture; the additional manpower would give the coalition an offensive capability. By 17 January US strength had reached 454,000, including 49,000 Air Force personnel and more than 1,100 aircraft. Most of the additional personnel came from Army forces stationed in West Germany. The 1690th WGP grew commensurately with the increase in the DESERT SHIELD combat forces and reached peak strength of 455 people.⁵

DESERT STORM hostilities began with the start of the air campaign on 17 Jan 1991 and concluded with the cessation of the 4-day ground campaign on 28 Feb. When the air war began, the 1690th operated from 35 locations – 20 in Saudi Arabia (including all of the Army weather teams), seven in the United Arab Emirates, three in Oman, and one each in Qatar and Bahrain. On 1 Mar, the CENTAF Commander issued a redeployment concept of operations which called for a "first in, first out" as the general redeployment principle for units to follow.

⁴ Nawyn, *Op. cit.*, pp. 33-35.

⁵ *Ibid.*, [Note. Total weather support force numbered 475. The SAC weather support units numbered 20 and were subtracted to reach 455.]

Basically, 1690th WGP weather teams redeployed when their customers did – Army weather teams redeployed with the units they supported; Air Force weather teams redeployed after the last aircraft stationed at their base returned to its home station.

The redeployment of the DESERT STORM WSF began on 7 March. Once begun, the WSF's redeployment, like that of all the other DESERT STORM forces, went extremely fast. By 1 June, less than 50 AWS personnel remained in the Persian Gulf theater. Command of the 1690th Weather Group and what remained of the WSF now devolved upon several officers in rapid succession. Lieutenant Colonel Weaving, the 1690th's Deputy Commander, took Colonel Goldey's place. Three weeks later, when he redeployed with the main body of Headquarters ARCENT, Lieutenant Colonel Campbell, the OIC of ARCENT Weather and the ARCENT weather support element, replaced him. Upon Colonel Campbell's departure with part of Headquarters ARCENT on 1 May, Lieutenant Colonel Thornberry, the VII Corps SWO, took over until 12 May, when he, too, left. At this point, Major Reutner became the Commander of the 1690th WGP and OIC of the small residual WSF set up to remain in the Persian Gulf indefinitely, a position he kept until he returned to the U.S. on 3 October 1991.

By early June only nine AWS units remained in operation; a month later only four were left – Headquarters, 1690th WGP, and three detachments. The detachments became part of the sustaining WSF left in the former DESERT STORM theater. The 1690th WGP officially inactivated on 1 October 1991.

LINEAGE: Constituted on 9 Oct 1990 and activated on 31 Oct 1990 and assigned to 5th Weather Wing with location at Riyadh, Saudi Arabia. It was inactivated on 1 Oct 1991.

AWARDS: Battle campaign streamer: Southwest Asia Service, Defense of Saudi Arabia 1990-1991, Liberation and Defense of Kuwait 1991, and Southwest Asia Cease-Fire 1991-1995. Air Force Outstanding Unit Award with Valor: 8 Aug 1990 – 28 Feb 1991. National Weather Association Special Award, 1991.

EMBLEM (see square 98): Not formally approved. **SIGNIFICANCE:** The central tri-color disk is symbolic of AWS support to the three USCENTCOM components: yellow for the desert sand of ARCENT; blue for the skies of CENTAF; black for the special operations of SOCENT. The three-cup anemometer is the traditional AWS symbol. The crossed scimitars and palm are the symbol of the kingdom of Saudi Arabia. The palm itself symbolizes health, wellbeing, and sustenance; the color green, lushness. The crossed scimitars symbolize the justice of the kingdom. The red letters and outer band are symbolic of the courage of weather personnel deployed to support U.S. objectives in DESERT SHIELD/DESERT STORM. The white background of the letters symbolizes the unity of effort of the joint support, as white is the union of all colors. The three white stars in the blue background commemorate our three comrades who perished in the C-5 accident at Ramstein AB, DE, 29 Aug 1990.

Commanders and Date of Assignment

31 Oct 1990	Col James W. Goldey
28 Mar 1991	Lt Col William S. Weaving
20 Apr 1991	Lt Col William H. Campbell
1 May 1991	Lt Col Jerry R. Thornberry
12 May 1991	Maj Curtis A. Reutner

1st WEATHER/2100th AIR WEATHER GROUP INACTIVE

LINEAGE: Designated the 1st Weather Group [MAJCON] on 19 May 1948, it was activated and assigned to the 43d Weather Wing [MAJCON] on 1 June 1948. It replaced the 1st Weather Group [AFCON] and was redesignated as the 2100th Air Weather Group on 1 October 1948. The 2100th was discontinued on 23 October 1949.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48	Lt Col Roy W. Nelson, Jr.
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**101st WEATHER/2101st AIR WEATHER GROUP [AFCON]
INACTIVE**

LINEAGE: Designated the 101st Weather Group on 19 May 1948, it was organized at McClellan AFB, California, and assigned to the 59th Weather (later 2059th Air Weather) Wing on 1 June 1948. It replaced the 68th Army Air Forces Base Unit (101st Weather Group) on 3 June 1948. It was redesignated the 2101st Air Weather Group on 1 October 1948 and discontinued on 24 October 1950.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48	Lt Col Martin F.C. Sebode
22 Jul 49	Lt Col Jerome A. Pryber
9 Mar 50	Maj Frank Arietta
28 Apr 50	Lt Col John A. Hass

**2101st AIR WEATHER GROUP
INACTIVE**

LINEAGE: Designated the 2101st Air Weather Group, it was organized at Offutt AFB, Nebraska, and assigned to Air Weather Service on 1 August 1951. It was discontinued on 20 April 1952.

AWARDS: None.

Commanders and Date of Assignment

1 Aug 51	Col James T. Seaver, Jr.
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**102d WEATHER/2102d AIR WEATHER GROUP [AFCON]
INACTIVE**

LINEAGE: Designated the 102d Air Weather Group on 19 May 1948, it was organized at Mitchel AFB, New York, and assigned to the 59th Weather (later 2059th Air Weather) Wing on 1 June 1948. It replaced the 74th Army Air Forces Base Unit (102d Weather Group) on 3 June 1948. It was redesignated the 2102d Air Weather Group on 1 October 1948 and was discontinued on 24 October 1950.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48	Lt Col James B. Baker
18 Feb 50	Lt Col Edward F. Sustrick
24 Mar 50	Col James B. Baker
26 Jun 50	Lt Col Edward F. Sustrick

**2102d AIR WEATHER GROUP [MAJCON]
INACTIVE**

LINEAGE: Designated 2102d Air Weather Group, it was organized at Langley AFB, Virginia, and assigned to Air Weather Service on 1 August 1951. It was discontinued on 20 April 1952 and replaced by the 2d Weather Group.

AWARDS: None.

Commanders and Date of Assignment

1 Aug 51 Lt Col Frank S. Savage
16 Aug 51 Col Anthony T. Shtogren

**103d WEATHER/2103d AIR WEATHER GROUP [AFCON]
INACTIVE**

LINEAGE: Designated the 103d Weather Group on 19 May 1948, it was organized at Kelly AFB, Texas, and assigned to the 59th Weather (later 2059th Air Weather) Wing on 1 June 1948. It replaced the 70th Army Air Forces Base Unit (103d Weather Group) and was redesignated the 2103d Air Weather Group on 1 October 1948. It was discontinued on 24 October 1950.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48 Lt Col Lawrence A. Atwell

**2103d AIR WEATHER GROUP [MAJCON]
INACTIVE**

LINEAGE: Designated the 2103d Air Weather Group, it was organized at Ent AFB, Colorado, and assigned to Air Weather Service on 1 August 1951. It was discontinued on 20 April 1952 and replaced by the 3d Weather Group.

AWARDS: None.

Commanders and Date of Assignment

1 Aug 51 Col Arthur A. McCartan

**104th WEATHER/2104th AIR WEATHER GROUP [AFCON]
INACTIVE**

LINEAGE: Designated the 104th Weather Group on 19 May 1948, it was organized at Robins AFB, Georgia, and assigned to the 59th Weather (later 2059th Air Weather) Wing on 1 June 1948. It replaced the 71st Army Air Forces Base Unit (104th Weather Group). Redesignated the 2104th Air Weather Group on 1 October 1948, it was discontinued on 24 October 1950.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48 Lt Col Archie J. Knight
1 Nov 48 Lt Col Jerome A. Prybar
7 Feb 49 Lt Col Archie J. Knight
8 Aug 50 Lt Col Devon F. Maurer

**2104th AIR WEATHER GROUP [MAJCON]
INACTIVE**

LINEAGE: Designated the 2104th Air Weather Group, it was organized at Baltimore, Maryland, and assigned to Air Weather Service on 1 March 1952. It was discontinued on 20 April 1952 and replaced by the 4th Weather Group.

AWARDS: None.

Commanders and Date of Assignment

1 Mar 52 Col George F. Taylor

**2105th AIR WEATHER GROUP
INACTIVE**

LINEAGE: Designated the 2105th Air Weather Group, it was organized at Wiesbaden, Germany, on 20 January 1949. It was redesignated as the 2058th Air Weather Wing on 12 October 1951.

AWARDS: None.

Commanders and Date of Assignment

20 Jan 49 Col Nicholas H. Chavasse
11 Apr 49 Maj Lewis R. Rile
19 Apr 49 Col Nicholas H. Chavasse
2 Jun 49 Maj William F. Bernheisel
4 Jun 49 Col Nicholas H. Chavasse

**7th WEATHER/2107th AIR WEATHER GROUP [MAJCON]
INACTIVE**

LINEAGE: Designated the 7th Weather Group on 19 May 1948, it was organized at Elmendorf AFB, Alaska, and assigned to Air Weather Service on 1 June 1948. It replaced the 7th Weather Group [AFCON]. Redesignated the 2107th Air Weather Group on 1 October 1948, it was discontinued and replaced by the 7th Weather Group [AFCON] on 20 April 1952.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48	Col Carl W. Carlmark	22 Jul 50	Lt Col Martin F.C. Sebode
13 Jul 49	Col Marcellus Duffy	29 Jul 50	Col Marcellus Duffy
21 Jan 50	Maj John E. Barnard	2 Aug 51	Col Richard M. Gill
28 Jan 50	Col Marcellus Duffy		

**8th WEATHER/2108th AIR WEATHER GROUP [MAJCON]
INACTIVE**

LINEAGE: Designated the 8th Weather Group on 19 May 1948, it was organized at Westover AFB, Massachusetts, and assigned to Air Weather Service on 1 June 1948 when it replaced the 8th Weather Group [AFCON]. It was redesignated the 2108th Air Weather Group on 1 October 1948 and discontinued on 25 May 1951.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48	Col James W. Twaddell, Jr.	15 Jun 49	Lt Col Morrill E. Marston
4 Oct 48	Lt Col Clyde A. Ray	25 Jul 49	Col Norman L. Peterson
4 Nov 48	Col James W. Twaddell, Jr.	8 May 51	Lt Col Jerome a. Pryber

SQUADRON LINEAGES

This section gives the official lineage of each squadron. Included, when available, is an historical background which should not be confused with each squadron's official lineage. The lineage is followed by awards, emblems, and a chronological list of squadron commanders. Dates for Service and Campaign Streamers are as listed in Air Force Instruction 34-1201. The last commander listed for a given unit is either the current commander or the last commander to hold that position. Data was extracted from *AWS Our Heritage, 1937-1987*, histories on file in the Air Force Weather Agency archives, and the archives of the U.S. Air Force Historical Research Center. [Note: the number following EMBLEM refers to the square that contains the colorized emblem located in Chapter 12.]

1st AERIAL CARTOGRAPHIC AND GEODETIC SQUADRON INACTIVE

LINEAGE: Active since 8 October 1968, the 1st Aerial Cartographic and Geodetic Squadron was relieved from assignment to the Aerospace Cartographic and Geodetic Service and assigned in place at Forbes AFB, Kansas, to Air Weather Service's 9th Weather Reconnaissance Wing on 30 June 1972. On 19 July 1973 it moved to Keesler AFB, Mississippi, where it was inactivated on 31 March 1974.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 72	Lt Col Randall A. Johnston
3 Aug 72	Lt Col Jack W. Gentry
28 Feb 73	Lt Col Charles K. Lansdale

1st WEATHER SQUADRON Ft Lewis, Washington

LINEAGE: Constituted as the First Weather Squadron on 24 June 1937, it was activated at March Field, Riverside, California, and assigned to the Office of the Chief of the Air Corps on 1 July 1937. The First was one of three original squadrons organized when the weather function transferred from the Signal Corps to the Air Corps. It moved on 3 February 1941 to McClellan Field, California, and on 29 March 1942 was assigned to Headquarters Army Air Forces. It was redesignated 1st Weather Squadron, Regional, on 16 June 1942. It was assigned to the Flight Control Command on 14 April 1943 and assigned a month later to the Weather Wing, Flight Control Command (later Army Air Forces Weather Wing). Redesignated the 1st Weather Squadron on 1 November 1943, it moved from McClellan to Santa Monica, California, on 25 November 1943. It was disbanded there on 7 September 1944 and replaced by the 68th Army Air Forces Base Unit (1st Weather Region). The 1st was reconstituted on 21 April 1949 under the command of the 2102d Air Weather Group, and was activated on 20 May 1949 at Wright-Patterson AFB, Ohio. On 24 October 1950 it was assigned in place to the 2059th Air Weather Wing and inactivated on 20 May 1952. The 1st was activated by the Military Air Transport Service on 24 September 1965, organized at MacDill AFB, Florida, and assigned to the 5th Weather Wing on 8 January 1966. The 1st was inactivated at MacDill on 15 Jun 1992 and activated at Langley AFB, VA on the same date with assignment to Air Combat Command. It was inactivated on 29 Apr 1994. Air Combat Command activated the 1st on 1 Jul 1994 at Ft Lewis, Washington and assigned it to the 1st Air Support Operations Group. On 1 Oct 2008, the 1st Weather Squadron was assigned to PACAF's 13th Air Force along with the 1st Air Support Operations Group.⁶

⁶ Art., Jackson, Kerry, TSgt, *1st ASOG Airmen Excel as PACAF's Newest Combat Team*, AF Print News Today, 26 May 2009

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941 – 2 Mar 1946; Air Force Outstanding Unit Award for 1 Jul 1971 – 30 Jun 1972; 1 Jul 1973 – 31 Dec 1974; 1 Apr 1978 – 31 Mar 1980; 1 Jul 1983 – 30 Jun 1985; 1 Jul 1988 – 30 Jun 1990; 1 May 1992 – 30 Apr 1994; 1 Jun 1996 – 31 May 1998; 1 Jun 1999 – 31 May 2001. 1 Jun 2001 - 31 May 2003 with Valor.

FIRST EMBLEM (see square 26): Approved on 21 December 1943. **SIGNIFICANCE:** The lightning flash indicates the numerical designation of the squadron. The elements depicted in the insignia are symbolic of all the conditions met by a weather squadron in its attempt to make accurate weather forecasts.

SECOND EMBLEM (see square 27): Approved on 26 May 1967. **SIGNIFICANCE:** Against the sphere shape which simulates the globe, the flaunches, alluding to support, form the figure “one” and indicate the unit’s numerical designation while suggesting worldwide support capabilities both day and night (denoted by the light and deep blues). The U.S. Strike Command is represented by the red embattled base strewn with gold arrowheads symbolizing the combined strength and courage of ground and air forces. The sun and the rainbow refer to various weather conditions and the fleur-de-lis commemorates Air Weather Service and its accomplishments in serving the military of our nation. The emblem bears the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment:

1 Jun 37	Lt Harold H. Bassett	1 Aug 75	Col James M. Dunn (temporary)
1 Apr 40	Capt Ivan L. Farman	28 Sep 76	Col John A. Samotis
Fall 41	Maj E. Loyal Eaton	1 Jun 79	Col Juri V. Nou
unknown	Maj Oscar E. Wente	10 Nov 83	Col Roland E. Barth
Nov 43	Maj Greenup B. Patterson	1 Jul 85	Col William S. Culver
Mar 44	Maj James R. Reynolds	1 Apr 88	Col John H. Wylie
20 May 49	Lt Col Edward F. Sustrick	3 Jul 90	Col James W. Goldey
11 Jun 49	Maj Thomas F. Kelly	15 Jul 92	Unknown
1 Jul 51	Maj Clarence L. Beaudrot (temporary)	29 Apr 94	Maj Kenneth J. DeMoysel
20 Jul 51	Lt Col Bernard L. Beaudoin	96	Maj Steven Carr
8 Jan 66	Col Louis A. Gazzaniga	00	Lt Col Eugene Dobry
Aug 67	Col David M. Sweeney	02	Lt Col Matthew Williams
29 Jul 69	Col Robert S. Wood	o/a Sep 04	Lt Col Thomas Guinn
16 Jun 71	Col William G. French, Jr.	05	Lt Col Bruce Lambert
21 Aug 71	Col Earl J. Barrows	22 Jun 07	Lt Col Mark R. LaJoie
28 May 75	Lt Col Robert E. Bagwell	17 Jun 09	Lt Col James B. Mackey
24 Jul 75	Col Robert S. Wood	27 Jun 11	Lt Col William E. Courtemanche

2nd COMBAT WEATHER SYSTEMS SQUADRON
Hurlburt Field, Florida

Lineage. Constituted as Combat Weather Facility, activated on 19 Jan 1995, assigned to Air Weather Service (later Air Force Weather Agency), and stationed at Hurlburt Field, Florida. Redesignated as Air Force Combat Weather Center on 1 Oct 1996. It was assigned to 2nd Weather Group on 9 April 2009. The Center was redesignated as the 2nd Combat Weather Systems Squadron on 2 Feb 2010, with assignment and station remaining the same.

AWARDS: Air Force Organizational Unit Award: 2 Feb 2010 – 31 Dec 2010. Air Force Organizational Excellence Awards: 1 Sep 1993 – 30 Sep 1995; 1 Oct 1995 – 30 Sep 1996; 1 Sep 1996 – 30 Sep 1998; 1 Oct 1998 – 30 Sep 1999; 1 Oct 1999 – 30 Sep 2001; 1 Oct 2001 – 30 Sep 2003; 1 Apr 2007 – 31 Dec 2008;

EMBLEM (see square 28): Approved on 23 Oct 1995 **SIGNIFICANCE:** Blue and Yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force Operations. Yellow refers to the sun and the excellence required of Air Force personnel. The saltirewise colors blue and green represent the role of weather forces in both air and ground combat operations. The lightning flashes emphasize weather’s impact on the battlefield. The Black fleur-de-lis represents the first combat action of the U.S. Army Weather Service in France during World War I. The torch signifies the importance of knowledge in preparing for combat readiness. **MOTTO:** Parate Certameni (“Be Combat Ready”).

Commanders and Date of Assignment

17 Apr 95	Lt Col Gary L Sickler	28 Jul 03	Lt Col John Shattuck
31 Jul 96	Lt Col Malcolm E. Gosdin	29 Jul 05	Lt Col Jay DesJardines
o/a Jul 97	Lt Col Jonathan K. Hayward	Jul 07	Lt Col James C. Parsons
o/a 99	Lt Col Frank C. Halbert	8 Jul 09	Lt Col Henry R. Voegtle
o/a 01	Lt Col Michael Hemler	15 Jul 11	Maj David Vollmer

2nd SYSTEMS OPERATIONS SQUADRON Offutt AFB, Nebraska

LINEAGE: Constituted and activated on 28 March 2007, assigned to Air Force Weather Agency, and stationed at Offutt AFB, Nebraska. It was assigned to 2nd Weather Group on 19 September 2007.

AWARDS: Air Force Organizational Unit Award: 1 Jan 2009 – 31 Dec 2010.

EMBLEM (see square 29): Approval date unknown. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater for Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. Black represents strength and determination, Black and blue alludes to the squadron's day and night operations. Green signifies adaptability, and is a color traditionally connected with the Army, a military service deriving direct benefit from the unit's products and services. The flashes are three in number, symbolic of the three Air Force Weather enabling concepts of environmental characterization, managing net-centric data and services, and information exploitation. Each flash has three points, signifying support to strategic, operational, and tactical levels of operation. The anemometer symbolizes the squadron's mission as an element of Air Force Weather. The three flashes and the anemometer share a common point and denote the fusing and transformation of raw data into actionable environmental information. The globe represents the worldwide impact of the unit's mission.

Commanders and Date of Assignment

28 Mar 07	Lt Col Christopher E. Cantrell
3 Aug 09	Lt Col Jeffrey D. Shull
22 Jul 11	Lt Col Michael L. Gauthier

2nd WEATHER SQUADRON Offutt AFB, Nebraska

LINEAGE: Constituted as the Second Weather Squadron 24 June 1937, it was activated at Langley Field, Virginia, and assigned to the Office of the Chief of the Air Corps on 1 July 1937. It was one of three original squadrons organized when the weather function transferred from the Signal Corps to the Air Corps. It moved to Patterson Field, Ohio, on 13 March 1941, and was assigned to the Directorate of Weather, Army Air Forces on 8 March 1942. It was redesignated the 2d Weather Squadron, Regional, on 16 June 1942. It was assigned to the Flight Control Command on 14 April 1943 and to the Weather Wing, Flight Control Command (later Army Air Forces Weather Wing) on 19 May 1943. It was redesignated as the 2d Weather Squadron on 1 November 1943, disbanded on 7 September 1944 at Patterson Field, Ohio, and replaced by the 69th Army Air Forces Base Unit (2d Weather Region). It was reconstituted on 10 August 1951, activated at Carswell AFB, Texas, and assigned to the 2101st Air Weather Group [MAJCON] on 5 September 1951. It was assigned to the 1st Weather Group on 20 April 1952. The 2d Weather Squadron moved to Westover AFB, Massachusetts, on 1 June 1955 and was inactivated there on 8 October 1956. It was activated and assigned to the Military Airlift Command on 8 May 1967. Air Weather Service organized the 2d Weather Squadron on 8 July 1967 at Offutt AFB, Nebraska. It was assigned to the 3d Weather Wing on 7 July 1967, replacing Detachment 1, 3d Weather Wing, and was inactivated on 8 July 1969. It was activated at Andrews AFB, Maryland, and assigned to Air Force Global Weather Central on 1 August 1975. It was assigned directly to Air Weather Service on 1 January 1981, and to the 4th Weather Wing on 1 January 1984. It was inactivated on 30 September 1991. It was activated on 15 June 1992, assigned to 2nd Operations Group, and stationed at Barksdale AFB, LA. It was inactivated on 15 Jun 1994. The 2nd Weather Squadron was redesignated as the 2nd Weather Flight, 24 Jun 1994, assigned to the 18th Air support Operations Group, and stationed at Ft McPherson, GA. It was assigned to Air Combat Command on 1 Aug 2003. On 17 January 2007 it was redesignated as the 2nd Weather Squadron. It was activated on 28 February 2007, assigned to 2nd Weather Group, and stationed at Offutt AFB, NE.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941 – 2 Mar 1946; Air Force Outstanding Unit Award for 1 Jul 1980 – 30 Jun 1982; 1 Jun 1987 – 31 May 1989; 1 Oct 1993 – 15 Jun 1994; 1 Jun 1995 – 31 May 1996;

1 Jun 1997 – 31 May 1999; 1 Jun 1999 – 31 May 2001; 1 Jun 2001 – 31 May 2002; 19 Sep 2007 – 31 Dec 2008; 1 Sep 2009 – 31 Dec 2010.

FIRST EMBLEM (see square 30): Approved on 10 August 1944. **SIGNIFICANCE:** The black of the shield symbolizes night, with the two stars indicative of the 2d Weather Squadron. The blue of the shield represents day with a typical cloud formation symbolizing weather, the inference being the 2d Weather Squadron is on duty night and day, observing and forecasting the weather elements. The wings represent the Air Force to which the weather service is assigned.

SECOND EMBLEM (see square 31): Approved on 8 August 1969. **SIGNIFICANCE:** Blue alludes to the sky, the primary theater of Air Force operations, and yellow to the sun and excellence of personnel in assigned duties. The symbol of man represents the ever present awareness and recognition that people are the major resource involved in weather support. The aerospace vehicle indicates 2d Weather Squadron's support to the Air Force aircraft and space missions. The clouds symbolize weather and the globe denotes worldwide responsibility of Air Force Global Weather Central. The two lightning flashes indicate the 2d Weather Squadron.

Commanders and Date of Assignment

1 Jul 37	1Lt Julius K. Lacey	15 Oct 78	Col James W. Hall
Oct 39	1Lt Leo P. Dahl (temporary)	18 Jun 80	Col Lawrence R. French
30 Aug 40	1Lt Leo P. Dahl	8 Jul 83	Col Frederick Fowler
19 Dec 41	Maj Robert E. L. Eaton	10 Jul 85	Col Robert E. Black
17 Sep 42	Lt Col Norman L. Peterson (temporary)	10 Jul 86	Col Francis L. Guiberson
26 Oct 42	Lt Col Norman L. Peterson	15 Sep 87	Col Charles H. Tracy
17 Sep 43	Maj Arthur S. Francis, Jr.	7 Jun 89	Col Thomas E. Sieland
11 May 44	Maj Norman E. King	4 Apr 91	Col Roland F. Tadd
1944	Maj Guy A. Culbert	1995	Col Douglas C. Pearson
5 Sep 51	Lt Col Rufus G. Bounds, Jr.	1996	Maj Kevin Scasny
Jun 53	Lt Col John H. Conrad	1997-2006	No Information available
1956	Lt Col Robert L. Sorey	28 Feb 07	Lt Col Marvin Treu
8 Jul 67	Col Ralph J. Steele	14 Apr 09	Lt Col James Jones
1 Aug 75	Col Joseph J. Hope	31 May 11	Lt Col Daniel L. Weekley
25 Sep 78	Lt Col Clifford U. Hendricks, Jr.		

3rd WEATHER SQUADRON Fort Hood, Texas

LINEAGE: Constituted as the Third Weather Squadron on 24 June 1937, it was activated at Barksdale Field, Louisiana, and assigned to the Office of the Chief of the Army Air Corps on 1 July 1937. It was one of three original squadrons organized when the weather function was transferred from the Signal Corps to the Air Corps. The Third moved to Duncan Field (later Kelly Field), Texas, on 1 March 1941. It was assigned to the Directorate of Weather, Army Air Forces on 9 March 1942 and redesignated the 3d Weather Squadron, Regional, on 16 June 1942. It was assigned to the Flight Control Command on 13 April 1943 and to the Weather Wing, Flight Control Command (later Army Air Forces Weather Wing) on 19 May 1943. It was redesignated the 3d Weather Squadron on 1 November 1943. The 3d Weather Squadron was disbanded on 7 September 1944 and replaced by the 70th Army Air Forces Base Unit (3d Weather Region). The 3d Weather Squadron was reconstituted on 10 August 1951, activated at Pope AFB, North Carolina, and assigned to the 2102d Air Weather Group [MAJCON] on 5 September 1951. It was assigned to the 2d Weather Group on 20 April 1952 and relocated to Shaw AFB, South Carolina, on 26 August 1954. The 3d was assigned to the 5th Weather Wing on 7 October 1965 and the 3d was inactivated and replaced by Detachment 1, 5th Weather Wing on 30 June 1972. It was activated at Shaw AFB, South Carolina, and assigned to the 5th Weather Wing on 1 January 1975. It was inactivated on 30 September 1991. The unit was activated on 1 Jul 1994, assigned to 3rd Air Support Operations group, and stationed at Ft Hood, Texas. On 1 October 2008 existing weather units from under the 3rd Air Support Operations Group were re-aligned to Detachments under the 3rd Weather Squadron. These Detachments were located at Ft Bliss, TX, Ft Sam Houston, TX, Ft Riley, KS, and Ft Carson, CO.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946; Air Force Meritorious Unit Award for 1 Jun 2002 – 31 May 2004. Air Force Outstanding Unit Award for 1 Jul 1971-30 Jun 1972; 1 Apr 1978-31 Mar 1980; 1 Jul 1983-30 Jun 1985; 1 Jun 1986-31 May 1988; 1 Jul 1988-30 Jun 1990; 23 Feb-1 May 1991; 1 Jul 1994-31 May 1996; 1 Jun 1996-31 May 1997; 1 Jun 1998-31 May 2000; 1 Jun 2000-31 May 2002; 25 Jan 2008 – 31 May 2009.

FIRST EMBLEM (see square 32): Approved on 24 June 1943. **SIGNIFICANCE:** None attributed. **NOTE:** This emblem was designed by the Walt Disney Company.

SECOND EMBLEM (see square 33): Approved on 24 Jun 1943: **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. Cupid, with light blue wings, wearing a yellow Sherlock Holmes hat, black socks, shaded blue, seated on a small light blue cloud formation, outlined black, holding by a red shaft held between the knees a large ultramarine blue umbrella, studded with three yellow stars, underside black, while writing on white sheet of paper with yellow pencil held in right hand, left hand catching rain drops light blue falling to base; all in front of a red sun, rayed yellow.

Commanders and Date of Assignment

1 Jul 37	Capt Leon W. Johnson	7 Oct 79	Lt Col Ernie R. Dash
1 Jul 40	Capt Sidney A. Ofsthun	6 Aug 82	Lt Col John H. Bradham
Sep 42	Lt Col Lewis L. Mundell (temporary)	13 Jul 84	Lt Col Kenneth P. Freeman
Dec 42	Col Signey A. Ofsthun	15 Mar 86	Lt Col Joseph D. Dushan
1 Mar 44	Lt Col Oscar A. Heinlein	12 Aug 87	Lt Col William R. Johnson
5 Sep 51	Lt Col Louis A. Gazzaniga	Jul 89	Lt Col Gerald F. Riley
20 Aug 54	Lt Col Dillard N. Thompson	1 Jul 94	Lt Col Lloyd L. Anderson, Jr.
22 Sep 54	Lt Col Elwyn A. Moseley	Jun 95	Lt Col William Burnette
1 Jul 58	Lt Col Eugene A. Carter	Jul 96	Lt Col Nathaniel Feldman
22 Aug 58	Lt Col Frank S. Savage	Jul 98	Lt Col Mark Andrews
Aug 62	Lt Col Robert B. Hughes	Jun 00	Lt Col William R. George
8 Jul 66	Lt Col Everett W. Powell (temporary)	Jun 02	Lt Col Richard Twigg
16 Jul 66	Col Robert M. Hoffman	18 Jun 04	Lt Col Craig Souza
2 Sep 68	Col Walton L. Hogan	Jun 06	Lt Col Ramirez-Salas
30 Nov 71	Col John A. Samotis	Jun 08	Lt Col Michael Petrocco
1 Jan 75	Lt Col William M. Dinkins	Jun 10	Lt Col Robert D. Coxwell
1 Jul 75	Lt Col Roger F. Strand	26 Jun 12	Lt Col Corey Hummel ⁷
5 Jun 77	Lt Col Phillip W. West		

4th WEATHER SQUADRON INACTIVE

LINEAGE: Constituted as the 4th Weather Squadron on 20 November 1940, it was activated at Maxwell Field, Alabama, and assigned to the Chief of the Air Corps, Army Air Forces, on 16 December 1940. The 4th was assigned to the Flight Control Command on 14 April 1943 and to the Weather Wing, Flight Control Command (later Army Air Forces Weather Wing) on 19 May 1943. It moved to Atlanta, Georgia, on 4 September 1943 and was disbanded on 7 September 1944 and replaced by the 71st Army Air Forces Base Unit (4th Weather Region). It was reconstituted the 4th Weather Squadron on 10 August 1951, activated at Hamilton AFB, California, and assigned to the 2103d Air Weather Group on 5 September 1951. It was assigned to the 3d Weather Group on 20 April 1952 and to the 4th Weather Wing on 8 August 1959. It was discontinued and inactivated on 20 September 1964.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

EMBLEM (see square 34): Approved on 17 October 1951. **SIGNIFICANCE:** The weather instrument is symbolic of the mission of safe guidance in all types of weather. The vane corresponds with the direction of flight symbolizing the close association between weather and flying and at the same time conveys the thought of the plane being guided safely to its destination insofar as weather is concerned. The stars are for the numerical designation of the unit. Air Force blue and golden yellow are used.

⁷ E-Mail, Donald May, FW: *Air Force Weather Lineage and Honors Information Request (UNCLASSIFIED)*, 5 Mar 2012, [Note: information is listed at the end of the e-mail trail.]

Commanders and Date of Assignment

14 Nov 40	Col Julius K. Lacey	Jul 54	Lt Col Robert A. Taylor
18 Aug 41	Col William O. Senter	12 Jun 57	Lt Col Robert R. Osborn
10 Aug 42	Col Paul H. Johnston	19 Jul 60	Lt Col Mark J. Brown, Jr.
Aug 43	Maj Lloyd H. Magar	1 Nov 62	Lt Col Ralph J. Steele
May 44	Capt Leo C. Ogness	4 Jul 63	Lt Col Harold C. Hayes
11 Jul 44	Lt Col William E. Marling	29 Nov 63	Lt Col Lloyd C. Hughes
11 Sep 51	Lt Col Leland J. Rath	19 Jun 64	Lt Col George R. Grisham
22 Aug 52	Lt Col Paul M. Huber		

5th OPERATIONAL WEATHER FLIGHT (AFRC) Shaw AFB, South Carolina

LINEAGE: Constituted as the Air Corps Detachment, Weather, Philippines, it was assigned to the 20th Air Base Group (Reinforced) on 15 November 1940. It was activated at Nichols Field, Philippine Islands, on 2 January 1941 and attached to the Philippine Department. On 20 September 1941 it was assigned to the Philippine Department Air Force (in 1941, Far East Forces, Fifth Air Force in February 1942). It was redesignated the 5th Air Corps Squadron, Weather, (Regional Control) on 18 November 1941 and assigned to the Philippine Air Depot in 1942. It was inactivated on 2 April 1945. The 5th Weather Squadron was redesignated, activated, and assigned to the Military Airlift Command on 16 June 1966. It was organized at Tan Son Nhut AB, Republic of Vietnam, and assigned to the 1st Weather Group on 8 July 1966. On 3 July 1967 the “Fighting Fifth” moved to Long Binh Army Installation, Republic of Vietnam, and was inactivated there on 1 May 1972. It was activated on 1 January 1975, assigned to 5th Weather Wing and stationed at Fort McPherson, Georgia. . It was assigned to Tactical Air Command on 30 September 1991 and then to Air Combat Command on 1 June 1992. It was inactivated 15 June 1992. The 5th Weather Squadron was activated on 1 July 1993, assigned to 7th Air Operations Group, and was stationed at Yongsan AB, South Korea. It was inactivated on 15 December 1994. The squadron was redesignated as the 5th Operational Weather Flight on 5 October 2004. It was activated in the Reserves on 4 November 2004, assigned to the 610th Regional Support Group, and stationed at Shaw AFB, South Carolina.

AWARDS: Campaign Streamer for the Philippine Islands, World War II, 7 Dec 1941-10 May 1942; fourteen Campaign Streamers for Vietnam: Vietnam Air Offensive, 8 Jul 1966-8 Mar 1967; Vietnam Air Offensive, Phase II, 9 Mar 1967-31 Mar 1968; Vietnam Air Offensive, Phase III, 1 Apr 1968-31 Oct 1968; Vietnam Air/Ground, 22 Jan 1968-7 Jul 1968; Vietnam Air Offensive, Phase IV, 1 Nov 1968-22 Feb 1969; TET 69/Counteroffensive, 23 Feb 1969-8 Jun 1969; Vietnam Summer-Fall 1969; 9 Jun 1969-31 Oct 1969; Vietnam Winter-Spring 1970, 1 Nov 1969-30 Apr 1970; Sanctuary Counteroffensive, 1 May 1970-30 Jun 1970; Southwest Monsoon, 1 Jul 1970-30 Nov 1970; Commando Hunt V, 1 Dec 1970-14 May 1971; Command Hunt VI, 15 May 1971-31 Oct 1971; Command Hunt VII, 1 Nov 1971-29 Mar 1972; Vietnam Ceasefire, 30 Mar 1972-28 Jan 1973 (but the 5th's involvement ceased on 1 May 72); Vietnam Air Offensive, 29 Jun 1966-8 Mar 1967, (but the 5th's involvement began on 8 Jul 66); Distinguished Unit Citations (shared): Philippines, 8-22 Dec 1941; Philippines, 7 Dec 1941-10 May 1942; Philippines, 6 Jan-8 Mar 1942. Air Force Outstanding Unit Award for 2 Jul 1967-30 Jun 1969; 1 Jul 1970-1 May 1972; 1 Jul 1971-30 Jun 1972; 1 Apr 1978-31 Mar 1980; 1 Jul 1983-30 Jun 1985; with Combat “V” Device for 8 Jul 1966-1 Jul 1967; with Combat “V” Device for 1 Jan 1971-31 Dec 1971; 1 Jul 1990 – 14 Jun 1992. Republic of Vietnam Gallantry Cross with Palm for 8 Jul 1966-1 May 1972. The Philippine Republic Presidential Unit Citation for 7 Dec 1941-10 May 1942 and 17 Oct 1944-4 Jul 1945.

EMBLEM (see square 35): The 5th Weather Squadron’s emblem was approved on 1 November 1967. **SIGNIFICANCE:** Air Force colors are used. Ultramarine blue alludes to the sky, the primary theater of Air Force operation, and golden yellow to the excellence of Air Force personnel in performing duties. The light blue area denotes the night operations of the squadron. The triangle as a whole represents ancient alchemists’ sign for fire, earth and air, and symbolizes the support provided by the squadron. The anemometer symbolizes the field of meteorology. **MOTTO:** FIGHTING FIFTH.

Support Flights will normally use the emblem of their parent unit, which in this case is the 610th Regional Support Group.

Commanders and Date of Assignment

2 Jan 41	unknown	1 Jan 75	Lt Col William C. Montgomery
Sep 41	1Lt Harvey H. Whitfield	21 Aug 75	Col Boyce M. Smith
Apr 42-46	(Paper organization not manned through its inactivation)	1 Sep 78	Col John W. Reames
8 Jul 66	Lt Col Ralph R. Ruyle, Jr.	31 Oct 81	Lt Col Ardith N. Wagley
5 Aug 66	Lt Col Richard C. Suehr	Jul 83	Col Wilbert G. Maunz
8 Aug 67	Lt Col William H. Shivar	Mar 85	Lt Col Adrian A. Ritchie, Jr.
6 Aug 68	Lt Col William E. Cummins, II	24 Jun 88	Col Glenn W. McBride
1 Oct 69	Lt Col Loren L. Lorenzen	19 Jul 91	William S. Weaving
15 Jul 70	Lt Col Chester C. Lukasiewicz	04-12	No Information Available
1 Jul 71	Lt Col Thomas A. Studer		

6th WEATHER FLIGHT (ACC) INACTIVE

LINEAGE: Constituted as the Air Corps Detachment, Weather, Panama, on 15 November 1940, it was activated at Albrook Field, Canal Zone, and assigned to the Panama Canal Air Force (later Caribbean Air Force, and Sixth Air Force) on 11 December 1940. It was redesignated as the 6th Air Corps Squadron, Weather (Regional Control) on 18 November 1941. It was redesignated the 6th Army Air Forces Squadron, Weather (Regional Control) on 1 May 1942, and as the 6th Weather Squadron on 14 September 1942. It was assigned under the 8th Weather Group [AFCON] on 14 January 1946 and moved to Patrick AFB, Florida, on 5 April 1950. The 6th was assigned to Air Weather Service on 2 May 1951. It was assigned to the 6th Weather Group and moved to Tinker AFB, Oklahoma, on 20 May 1952. It was redesignated the 6th Weather Squadron (Mobile) on 1 August 1952 and on 20 January 1953 assigned directly to Air Weather Service. The 6th Weather Squadron (Mobile) was assigned in place to the 4th Weather Group on 1 November 1956 and to the 6th Weather Wing on 8 October 1965. On 1 July 1971 it was assigned to the 7th Weather Wing, and, on 30 June 1972, to the 5th Weather Wing. The 6th was assigned in place to the 7th Weather Wing on 1 January 1976 and moved to Eglin AFB, Florida, on 28 June 1985. It was inactivated on 30 September 1991. It was redesignated the 6th Weather Flight and assigned to Air Combat Command. The flight was activated on 1 July 1994 and stationed at Fort Rucker, Alabama.[No available information about inactivation date. Latest AFW Directory does not list this weather flight]

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946; Air Force Outstanding Unit Award for 1 Jul 1964-30 Jun 1966; 1 Jul 1967-30 Jun 1969; 1 Jan 1970-31 Dec 1971; 1 Jul 1972-30 Jun 1973; 1 Jul 1973-31 Dec 1974; 1 Jul 1977-30 Jun 1979; 1 Jun 1999 – 31 May 2001; with Valor device, 1 Jun 2001 – 31 May 2002.

FIRST EMBLEM (see square 36): Approved on 14 December 1943 for 6th Weather Squadron (Regional).
SIGNIFICANCE: The insignia is representative of weather phenomena in the tropical regions. The six red stars spaced equidistant around the border of the disc depict the numerical designation of the squadron.

SECOND EMBLEM (see square 37): Approved on 20 August 1956 for 6th Weather Squadron (Mobile).
SIGNIFICANCE: The American bald eagle symbolizes the strength, speed, and alertness of the United States and the 6th Weather Squadron (Mobile). The “tornado alley” and the atomic energy projects supported by the squadron are symbolized by the tornado funnel and atom nuclear symbol. The ground mobile device portrays an important item of equipment. Severe weather warning is symbolized by the cloud and lightning. **MOTTO:** WILLING AND ABLE.

Support Flight will normally use the emblem of their parent unit. In this case that would be ACC.

Commanders and Date of Assignment

1940	Capt James B. Baker	8 Aug 61	Lt Col Elwyn A. Moseley
6 Jul 42	Lt Col Chester W. Cecil	27 Feb 62	Lt Col David C. Barrow
26 Aug 42	1Lt Ralph W. Beatty	22 Aug 62	Lt Col Elwyn A. Moseley
19 May 43	Capt William F. Gannon	3 May 67	Lt Col Robert W. Vincent
20 Jun 44	Capt Bryan F. Smith	5 Jul 67	Col Frank Z. Kamer, Jr.
23 Jun 44	1Lt Robert E. Kennedy	2 Jun 70	Col Howard D. Turner (temporary)
2 Sep 44	Maj Lloyd H. Mager	Oct 70	Col Howard D. Turner
20 Jun 46	Maj George W. Moxon	1 Jan 74	Col Norman L. Clark
1 Sep 48	Maj Ralph P. Thompson	1 Jun 78	Lt Col Ivan L. Johnson
11 Apr 49	Lt Col John A. Haas	11 May 79	Lt Col Ronald R. Brown
5 Apr 50	Lt Col Ralph G. Suggs	10 Aug 79	Lt Col Don R. Van Leuven
Aug 51	Maj Mark J. Brown, Jr.	2 Sep 83	Lt Col Vincent P. Grocki
20 May 52	Lt Col William S. Barney	17 Jun 85	Lt Col David O. Roark
Sep 54	Lt Col Ernest J. Fawbush	Jun 87	Lt Col Thomas W. Utley, Jr.
Sep 55	Lt Col Bernard Pusin	14 Sep 90	Lt Col Wayne L. Golding
12 Feb 58	Lt Col Eugene T. Early	95	Maj Mark D. Zettlemoyer
8 Sep 58	Lt Col Bernard Pusin	96	Capt David Holt
25 May 61	Lt Col David C. Barrow	00-12	No information available

7th WEATHER SQUADRON Heidelberg AI, Germany

LINEAGE: Constituted as the Air Corps Detachment, Weather, Hawaii, on 15 November 1940, it was activated at Hickam Field, Oahu, and assigned to the 17th Air Base Command on 1 January 1941. It was redesignated the 7th Air Corps Squadron, Weather (Regional Control) and assigned to the Hawaiian Department Air Force on 18 November 1941. It was redesignated in January 1943 as the 7th Weather Squadron. The 7th was assigned to the Hawaiian Air Force Base Command at Hickam Field on 22 January 1942 and assigned to Headquarters, Hickam Field, Territory of Hawaii, on 10 February 1942. It was assigned to the 7th Air Force on 19 April 1943; the United States Armed Forces, Central Pacific Area, on 12 May 1944; the Army Air forces, Pacific Ocean Area, on 1 August 1944; and to the 1st Provisional Weather Group on 4 September 1944. The 7th Weather Squadron was disbanded at Hickam Field on 10 February 1945. It was reconstituted as the 7th Weather Squadron on 1 June 1959. The 7th was activated at Heidelberg Army Installation, Germany, and assigned to Air Weather Service which, in turn, assigned and attached the squadron to the 2d Weather Wing on 8 July 1959. On 30 September 1991 it was assigned to United States Air Forces in Europe and remained stationed at Heidelberg AI. The 7th was inactivated on 1 July 1994. It was activated on 30 September 1996, assigned to the 4th Air Support Operations Group, and stationed at Heidelberg AI, Germany. On 3 March 1998 it was assigned to United States Air Forces in Europe and remained stationed at Heidelberg AI.

AWARDS: Campaign Streamer, Central Pacific, World War II, 7 Dec 1941-6 Dec 1943; Air Force Outstanding Unit Award for 1 Jan 1968-31 Dec 1969; 1 Jul 1972-30 Jun 1974; 1 Jul 1975-30 Jun 1977; 1 Jul 1977-30 Jun 1979; 1 Jul 1982-30 Jun 1984; 1 Jul 1984-30 Jun 1986; 1 Jul 1990 - 30 Sep 1991; 1 Jul 1995 - 30 Jun 1997. Conferred Honors. Air Force Outstanding Unit Award: 24 Mar-10 Jun 1999.

EMBLEM (see square 38): Approved on 21 February 1961. **SIGNIFICANCE:** Against a background of blue and green (blue representing the sky, green the land) to symbolize the Air Force and the Army, a rising cumulus cloud omitting lightning and rain indicates the mission of weather service. The crossed rifle and psychrometer indicates the cooperation of the Army and Air Force and the squadron mission of providing weather service to the United States Army, Europe. **MOTTO:** E Nubibus Informatio.

Commanders and Date of Assignment

1 Jan 41	Capt Ernest Moore	Aug 82	Col John H. Taylor
21 Jul 41	Capt John K. Arnold, Jr.	3 Jul 85	Col James B. Sands, Jr.
14 Nov 41	Capt Newton C. Chaney	16 Oct 87	Col Peter F. Abt
15 Dec 41	Maj John K. Arnold, Jr.	23 Oct 90	Col Joseph D. Dushan
23 Mar 43	Capt Albert G. Kehrig	Jul 92	Col Thomas D. Accola
13 Jul 44	Capt Kenneth C. Banzhof	30 Sep 96	Col William F. Burnette
5 Sep 44	Maj Albert G. Kehrig	24 May 98	Lt Col Mark Welshinger
8 Jul 59	Lt Col Robert B. Sykes	23 May 00	Lt Col Scott Van Blarcum
18 Jul 61	Lt Col Roy A. Weidman (temporary)	Jun 02	Lt Col Michael Babcock
27 Jul 61	Lt Col Walton L. Hogan, Sr.	Jun 04	Lt Col Frederick L. Fahlbusch
23 Aug 65	Col Lewis A. Pitt	Jun 06	Lt Col David Bacot
26 Jun 68	Col Leonard V. Gillespie	Jun 08	Lt Col Thomas Blazek
12 Oct 71	Col James M. Priest	Jun 10	Lt Col Frank Tersigni
29 Jul 72	Col Boyce M. Smith	Jul 12	Lt Col Mark Coggins
2 Aug 76	Col John H. Elliff		
Jul 79	Col John A. Lasley, Jr.		

8th WEATHER SQUADRON INACTIVE

LINEAGE: Constituted as the Army Air Corps Detachment, Weather, Newfoundland, on 13 August 1941, it was activated two days later at Gander, and assigned to the Newfoundland Base Command. It was redesignated the 8th Air Corps Squadron, Weather, on 18 November 1941. In March 1942 it was redesignated the 8th Army Air Forces Squadron, Weather, and was relocated to Presque Isle, Maine, on 19 June 1942. It was redesignated the 8th Weather Squadron on 5 October 1942 and assigned to the Flight Control Command on 13 April 1943. The 8th was assigned to the Army Air Forces Weather Wing on 6 July 1943, and moved on 11 February 1944 to Grenier Field, New Hampshire. On 12 December 1945 it was assigned to the 8th Weather Group [AFCON] and moved to Westover Field, Massachusetts, on 2 February 1946. It was assigned to the 8th Weather (later 2108th Air Weather) Group on 1 June 1948 and moved to Fort McAndrews (later McAndrews) AFB, Newfoundland, on 3 August 1948. It was assigned directly to Air Weather Service on 2 May 1951 and relocated to Pepperrell AFB, Newfoundland, on 3 April 1952. It was inactivated on 8 February 1954. The 8th Weather Squadron was activated at Westover AFB, Massachusetts, on 14 September 1960. It was organized and assigned to the 3d Weather Wing on 18 October 1960 and assumed the mission of the 5th Weather Group. It was inactivated on 8 April 1970.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946; Army Meritorious Unit Commendation for 1 Jan 1944-1 Jul 1944; 1 Oct 1960-31 Jan 1963.

FIRST EMBLEM (see square 39): Approved on 28 July 1944. **SIGNIFICANCE:** The insignia symbolizes the forecasting problems which confront the squadron in the region to which it is assigned.

SECOND EMBLEM (see square 40): Approved on 17 November 1969. **SIGNIFICANCE:** The Air Force colors of ultramarine blue and golden yellow, as well as the national colors of red, white and blue are used. The globe depicts worldwide capability and the cloud and lightning flash are symbols associated with weather.

Commanders and Date of Assignment

15 Aug 41	Capt Clark L. Hosmer	15 Jun 51	Lt Col Arthur W. Anderson
30 Sep 42	Col Arthur F. Merewether	30 Nov 53	Lt Col Virgil E. Sandifer
15 Jan 46	Maj Leo A. Kiley, Jr.	18 Oct 60	Lt Col Ralph G. Suggs
2 Oct 46	Lt Col Frederick J. Cole	24 Jul 63	Col William H. Best, Jr.
12 Jul 48	Maj Lowell A. Schuknecht	Jun 66	Col Sidney A. Bird, Jr.
17 Jan 49	Lt Col Frederick J. Cole	1 Aug 68	Col Donald K. McGaughey

9th OPERATIONAL WEATHER SQUADRON INACTIVE

LINEAGE: Constituted as the 9th Weather Squadron, Regional, on 20 July 1942, it was activated at Morrison Field, Florida, and assigned to the Directorate of Weather, Army Air Forces, on 27 July 1942. On 29 March 1943 the 9th was assigned to the Army Air Forces and attached to the Flight Control Command. The 9th Weather Squadron, Regional, was assigned to the Flight Control Command on 13 April 1943 and was assigned to the Weather Wing, Flight Control Command (later Army Air Forces Weather Wing) on 19 May 1943. It was redesignated the 9th Weather Squadron assigned to the Air Transport Command, and attached to the Caribbean Wing on 1 July 1943. It was assigned to the Army Air Forces Weather Wing (later, Army Air Forces Weather Service) on 6 December 1943 but remained attached to the Caribbean Wing, Air Transport Command. The 9th was assigned to the 8th Weather Group [AFCON] on 21 December 1945 and moved to Borinquen Field, Puerto Rico, on 8 December 1946. It was assigned to the 101st Weather (later the 2101st Air Weather) Group, and moved to March AFB, California, on 15 June 1948. The 9th was assigned to the 2059th Air Weather Wing on 24 October 1950. It was assigned to the 2101st Air Weather Group to support the 15th Air Force on 16 September 1951. The 9th was assigned to the 1st Weather Group on 20 April 1952 and to the 3d Weather Wing on 8 October 1956. On 30 June 1972 it was inactivated at March AFB, California. The 9th Weather Squadron was activated at March AFB and assigned to the 3d Weather Wing to support the 15th Air Force on 1 January 1975. It was inactivated on 31 July 1991. The 9th was redesignated as the 9th Operational Weather Squadron on 3 May 2006. It was activated on 20 July 2006, assigned to 1st Weather Group, and was stationed at Shaw AFB, South Carolina. It was inactivated on 31 May 2008

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946; Air Force Outstanding Unit Award for 1 Oct 1960-31 Jan 1963; 1 Jul 1976-1978; 1 Apr 2007 – 24 Jun 2008.

FIRST EMBLEM (see square 42): Approved on 24 June 1945. **SIGNIFICANCE:** The basic figure with directional arrows indicates the three main air routes served by the squadron. The cloud depicts the squadron's strength behind the hurricane danger symbol. The blue portrays the tropical sky behind the wind vane which indicates the weather mission of the organization.

SECOND EMBLEM (see square 43): Approved on 25 February 1966. **SIGNIFICANCE:** Against the background of blue, which depicts the sky, the primary theater of Air Force operations, the directional arrowhead represents the three main air routes served by the unit when it was organized in 1942. The stars allude to the squadron's mission of support for Strategic Air Command with the number of stars indicating its numerical designation, the large star denoting its Air Force Outstanding Unit Award. The fleur-de-lis and three-cup anemometer are emblematic of the Air Weather Service's worldwide mission. The three lightning bolts symbolize the powerful forces served by the squadron as a part of the 3d Weather Wing. The hurricane symbol represents the tropics, the unit's first area of operations. The emblem bears the national colors of red, white, and blue and the Air Force colors of golden yellow and ultramarine blue. **MOTTO:** SEMPER SPECTANS which translates to ALWAYS ALERT.

THIRD EMBLEM (see square 41): Approval date unknown. **SIGNIFICANCE:** Against the background of blue, which depicts the sky, the primary theater of Air Force operations, the directional arrowhead represents the three main air routes served by the unit when it was organized in 1942. The stars allude to the squadron's mission of support for multiple unified commands and military installations in the Southeastern United States, with the number of stars indicating its numerical designation, the large star denoting its Air Force Outstanding Unit Award. The three-cup anemometer is emblematic of the weather mission. The hurricane symbol represents the tropics, the unit's first area of operations and the most severe event that threatens its area of operation. The emblem bears the national colors of red, white, and blue and the Air Force colors of golden yellow and ultramarine blue. **MOTTO:** ALWAYS ALERT.

Commanders and Date of Assignment

27 Jul 42	Lt Col Carl W. Carlmark	3 Nov 59	Lt Col Robert F. Neeley
2 Aug 42	Capt H. B. Skinner	10 Nov 59	Lt Col Arnold R. Hull
28 Aug 42	Capt Frederick A. Matchinski	7 Jul 64	Col Paul X. Geary, Jr.
1 Jul 44	Capt John C. Shiner	10 Apr 67	Col Lewis J. Neyland
18 Sep 44	Col John K. Arnold, Jr.	19 Jan 68	Lt col Joseph L. Skeldon
11 Aug 45	Maj Isadore Irving Porush	4 Mar 68	Col Hubert E. Harvey
14 Oct 45	Maj Marshall V. Jamison	1 Jul 69	Col Charles O. Jenista, Jr.
1946-1948	information not available	21 May 71	Lt Col Joseph D. Saccone
15 Jun 48	Capt Valentine J. Descamps	1 Jan 75	Col Glenn B. Rumley
1 Jul 48	Maj Charles R. Dole	21 Jun 75	Col Billy L. Moore
12 Jul 48	Maj Albert Criz	22 Jul 77	Lt Col Thomas L. Harris
Sep 49	Maj Silver R. McFall	21 Mar 79	Lt Col John R. Sweeney
1950	Lt Col Herbert W. Davis	1 Apr 82	Lt Col Peter F. Abt

10 May 51	Maj Silver R. McFall	31 Jul 84	Lt Col William D. Klein
20 Jul 51	Lt Col Virgil E. Sandifer	25 Jul 86	Lt Col James A. Phillips
5 Oct 53	Lt Col Gerald D. Crary, Jr.	10 Jun 88	Lt Col Thomas P. Walters
7 Dec 53	Lt Col Charles R. Dole	16 May 90	Lt Col Judson E. Stailey
21 Feb 55	Lt Col Lynn T. Irish	20 Jul 06	Lt Col Jonathan Kelly
25 Aug 58	Lt Col Joseph M. Bird		

10th COMBAT WEATHER SQUADRON

Hurlburt Field, Florida

LINEAGE: Constituted as the 10TH weather Squadron (Regional Control) on 15 June 1942, it was activated at Detrick Field, Frederick, Maryland, and assigned to the First Air Force on 24 June 1942. On 25 August 1942 it was assigned to the 10th Air Force and moved to Charleston MAP, South Carolina. The 10th staged at Camp Stoneman, California, on 20 November 1942, transferred to New Delhi, India, on 19 January 1943, and was assigned to the Army Air Forces, India-Burma Theater (later Army Air Forces, India-Burma Theater) on 21 August 1943. It relocated to Rishra, India, on 17 April 1944, and to Titagarh, India, on 23 July 1944. It was assigned to the Army Air Forces Weather Service on 12 October 1945, and moved to Shanghai, China, on 1 November 1945. The 10th Weather Squadron was inactivated on 3 July 1946. It was activated at McClellan AFB, California, and assigned to the 101st Weather (later the 2101st Air Weather) Group on 1 June 1948. The 10th Weather Squadron was assigned in place to the 2059th Air Weather Wing on 20 September 1950. The squadron was inactivated on 20 May 1952. It was activated at Udorn Airfield, Thailand, on 16 June 1966, organized and assigned to the 1st Weather Group on 8 July 1966. It was assigned to the 1st Weather Wing on 30 June 1972 and moved to Nakhon Phanom Airport, Thailand, on 6 February 1974. It was inactivated on 30 September 1975. Redesignated 10th Combat Weather Squadron, activated, assigned to 720th Special Tactics Group, and stationed at Ft Bragg, North Carolina 1 Apr 1996. It was stationed at Hurlburt Field, Florida, on 1 August 1996.

AWARDS: Service Streamer, Asian-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946; Vietnam Campaign Streamers, Vietnam Air Offensive, 8 Jul 1966-8 Mar 1967; Vietnam Air Offensive, Phase II, 9 Mar 1967-31 Mar 1968; Vietnam Air Offensive, Phase III, 1 Apr 1968-31 Oct 1968; Vietnam Air/Ground, 22 Jan 1968-7 Jul 1968; Vietnam Air Offensive, Phase IV, 1 Nov 1968-22 Feb 1969; TET 69/Counteroffensive, 23 Feb 1969-8 Jun 1969; Vietnam Summer-Fall 1969, 9 Jun 1969-31 Oct 1969; Vietnam Winter-Spring 1970, 1 Nov 1969-30 Apr 1970; Sanctuary Counteroffensive, 1 May 1970-30 Jun 1970; Southwest Monsoon, 1 Jul 1970-30 Nov 1970; Commando Hunt V, 1 Dec 1970-14 May 1971; Commando Hunt VI, 15 May 1971-31 Oct 1971; Commando Hunt VII, 1 Nov 1971-29 Mar 1972; Vietnam Ceasefire Campaign, 30 Mar 1972-28 Jan 1973; Vietnam Gallantry Cross, with Palm, 8 Jul 1966-28 Jan 1973; Air Force Meritorious Unit Award for 1 Jan 2008 – 30 Sep 2009; 1 Oct 2009 – 30 Sep 2011. Air Force Outstanding Unit Award for 2 Jul 1967-30 Jun 1969; with Combat “V” Device, 8 Jul 1966-1 Jul 1967; 1 Jul 1970-30 Jun 1972; with Combat “V” Device, 1 Jan 1971-31 Dec 1971; 1 Jul 1972-30 Jun 1973; 1 Jul 1974-30 Jun 1975; 1 Jul 1975-30 Sep 1975; 1 Aug 1995 – 31 Jun 1997; 1 Sep 2001 – 31 Aug 2003; *Conferred Honors*. Air Force Outstanding Unit Award: 24 Mar-10 Jun 1999. Air Force Gallant Unit Citation: 4 Jan 2007 – 31 Dec 2008.

FIRST EMBLEM (UNOFFICIAL) (see square 44): Used during World War II. **SIGNIFICANCE:** None attributed. A Walt Disney character (Donald Duck) was used in this design although the emblem was apparently not designed by the Walt Disney Company.

SECOND EMBLEM (UNOFFICIAL) (see square 45): Used during Vietnam war. **SIGNIFICANCE:** None attributed. However, the elephants were presumably used to reflect the theater of operations.

THIRD EMBLEM: Approved on 2 Jun 2000. **SIGNIFICANCE (see square 46):** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The white parachute represents the airborne requirement for all personnel in the unit and the dagger links the squadron to the Air Force Special Operations Command. The weathervane symbolizes the unit's previous designation as the 10th Weather Squadron. The lightning flashes, which signify the squadron's rapid response capabilities, are identified by color: Green for Army, Purple for Joint Operations and Blue for Air Force. **MOTTO:** Coela Bellatores (Weather Warriors).

Commanders and Date of Assignment

4 Jul 42	Maj John S. Hambleton	23 Aug 66	Lt Col Robert F. MacKenzie
16 Apr 43	Maj William E. Marling	11 Aug 67	Lt Col Thomas L. Scanlon
24 Aug 43	Lt Col Richard E. Ellsworth	26 Jan 68	Lt Col Arthur L. Warren, Jr.
6 Jul 45	Lt Col Joseph J. George	1 Aug 68	Lt Col Harry B. Vaughn

21 Sep 45	Lt Col Arthur A. McCartan	26 Jul 69	Lt Col Herbert A. Million
6 May 46	Capt Joseph W. Wilson	19 Jul 70	Lt Col Albert J. Kaehn, Jr.
1 Jun 48	Maj Frank Arietta	1 Jul 71	Lt Col Joseph K. Lambert
12 Jul 48	Maj Dewitt N. Morgan	26 May 72	Lt Col Joseph J. Hope
1 Aug 48	Maj Charles W. Yerkes	1 Jul 72	Col Berry W. Rowe
1 Jan 50	Maj Joaquin P. Hawley	20 Nov 72	Col Robert G. Mathers
1 May 50	Maj James H. Marsteller (temporary)	25 Feb 73	Col Patrick J. Brietling
15 May 50	Maj Joaquin P. Hawley	15 Jul 73	Lt Col Arthur Bidner
25 May 50	Maj James H. Marsteller (temporary)	7 Jul 74	Lt Col Keith R. Grimes
5 Jun 50	Maj Joaquin P. Hawley	15 Jul 75	Lt Col Earl E. Sands
14 Aug 50	Maj James H. Marsteller	1 Aug 96	Lt Col Scott Funk
1 Sep 50	Maj Frank Arietta	Jun 00	Maj Robert L. Russell
20 Sep 50	Lt Col John A. Hass	Jul 02	Maj Michael R. Dennis
23 Mar 51	Lt Col Virgil E. Sandifer	Jul 04	Lt Col Peter Clement
1951	Lt Col John A. Hass	07	Lt Col Steven Rose
1951	Lt Col Virgil E. Sandifer	10	Lt Col Joseph T. Benson
10 Sep 51	Lt Col Thomas J. Arbogast	11	Lt Col Bradley J. Armstrong
Mar 1942	Maj Charles W. Yerkes (temporary)		
8 Jul 66	Lt Col James H. Gillard		

11th OPERATIONAL WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the Air Corps Detachment, Weather, Alaska, on 15 November 1940, it was activated at Ladd Field, Alaska, and assigned to the Alaskan Defense Force on 11 January 1941. It was relocated to Elmendorf Field on 2 May 1941 and redesignated the 11th Air Corps Squadron, Weather (Regional Control) on 26 February 1942. On 18 December 1943 it was redesignated the 11th Weather Squadron and in January 1944 assigned to the 11th Air Force. The 11th was assigned to the Army Air Forces Weather Service on 15 October 1945 and assigned to the 7th Weather (later the 2107th Air Weather) Group on 1 June 1948. It was inactivated at Elmendorf Field and activated at Keesler AFB, Mississippi, on 20 April 1952. The 11th was further assigned to the 8th Weather Group [AFCON] on 20 May 1952 and inactivated on 18 November 1957. It was activated at Elmendorf and assigned to the 3d Weather Group on 18 June 1958, replacing the 7th Weather Group [AFCON]. It was assigned to the 4th Weather Wing on 8 August 1959 and to the 3d Weather Wing on 30 June 1972. It was assigned to the 1st Weather Wing on 1 Oct 1989. It was assigned to PACAF on 30 September 1991. It was moved and stationed at Eielson AFB on 1 April 1992 and assigned to the 343 Operational Group on 15 Apr 1992. The 11th Weather Squadron was inactivated on 1 June 1992. It was redesignated as the 11th Operational Weather Squadron, 5 February 1999; assigned to 611th Air Operations Group, and stationed at Eielson AFB, 19 February 1999, where it remained until it was inactivated on 13 Jun 2008.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946. Army Meritorious Unit Commendation, 1 Jan 1944-24 Oct 1945; Air Force Outstanding Unit Award for 1 May 1966-30 April 1968; 1 Jun 1969-31 May 1971; 1 Jan 1975 - 1 Apr 1976; 1 Jul 1976 - 30 Jun 1978; 1 Jul 1990 – 30 Jun 1992; 1 Oct 1999 – 30 Sep 2001; 1 Oct 2003 – 30 Sep 2005; 1 Nov 2005 – 31 Oct 2007; 1 Nov 2007 – 13 Jun 2008.

FIRST EMBLEM (see square 48): Approved on 20 September 1944. **SIGNIFICANCE:** The seal is common to the area in which the 11th Weather Squadron operates, while the gray overcast sky and the volcanic island are also typical of that region. The anemometer and thermometer, standard items of weather equipment, indicate the squadron's missions.

SECOND EMBLEM (see square 49): Approved on 13 June 1961. **SIGNIFICANCE:** The predominant colors are Air Force blue and golden yellow to indicate the squadron is a unit of the U.S. Air Force. It is divided into three parts to represent the unit's threefold mission: support to the Alaskan Command, to the Alaskan Air Command, and to the U.S. Army, Alaska. The frontal pattern, separating the three parts of the emblem, represents the forecasting function of the squadron; the igloo on a snow-covered point of land represents the remote site observing function. The anemometer symbolizes the relationship of the squadron with the Air Weather Service. The blue and gray skies represent day and night operations while the sun and the lightning bolt respectively represent the fair and foul weather which is observed and forecast. The snow-capped mountain peaks and the igloo are

representative of the general region in which the squadron operates. **MOTTO:** VIGILANTIAE DEDICATI which translates to DEDICATED TO VIGILANCE.

THIRD EMBLEM (see square 47): Approval date unknown. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The three mountain peaks represent the unit's support to the mission of the Alaskan Command, Alaskan NORAD Region and U.S. Army, Alaska. The Big Dipper constellation denotes the squadron's alignment with and support to the 11th Air Force. The anemometer symbolizes the commitment to excellence in weather forecast operations and the snowcapped mountain peaks allude to the unit's home location and operating conditions.

Commanders and Date of Assignment

11 Jan 41	Capt Wilson H. Neal	28 Jul 59	Lt Col Eugene A. Carter
28 Apr 42	Lt Clarence E. Peters	27 Jun 62	Lt Col Archie M. McFarland
unknown	Capt Harris D. Dean	10 Jul 64	Col David M. Sweeney
30 Dec 42	2Lt Paul A. Carlson	11 Jul 67	Lt Col Douglas M. Sheehan
1 May 45	Col Harold L. Smith	Aug 70	Col Howard E. Lysaker
8 Nov 45	Maj Oliver H. Otto	18 Jul 77	Col Wesley E. Robb
12 Dec 45	Capt Arnold E. McKenzie	29 May 81	Col William E. Buchan
Jul 48	Maj William A. Pope	5 Aug 83	Col James Kerlin
Oct 49	Lt Col Martin F. C. Sebode	30 Jun 85	Col William S. Koenemann
15 Sep 51	Lt Col Herbert J. Avise	8 Jul 88	Col Keith W. Rhyne
10 Oct 51	Col Richard M. Gill	2 Jul 91	Lt Col Richard C. Clayton
20 Apr 52	Capt John C. Brigham	5 Feb 99	Lt Col David Sautter
11 May 52	Lt Col William B. Hicks	01	Lt Col Pat Ludford
27 Feb 54	Lt Col Estil L. Hamill	03	Lt Col Scot Magnan
20 Feb 55	Lt Col Newton M. Burgner	05	Lt Col Joy Fitzgerald
18 Jun 58	Lt Col James M. Fahey		

12th OPERATIONAL WEATHER FLIGHT (AFRC)⁸ Scott AFB, Illinois

LINEAGE: Constituted the 12th Weather Squadron on 19 September 1942, it was activated at Camp Griffis, England, and assigned to the Twelfth Air Force on 24 September 1942. The 12th moved to Tafaraoui, Algeria, on 11 November 1942; to Algiers, Algeria, on 6 January 1943, and was assigned to the Army Air Forces, Mediterranean Theater, on 1 January 1944. It moved to Italy and was located at Mount Vesuvius on 21 February 1944, Caserta on 30 March 1944 and Naples in September 1945. On 15 November 1945 it was attached to the Naples Air Force General Depot. It was assigned in place to the 5th Weather Group on 11 December 1945, and moved to Casoria, Italy, on 8 January 1946. It moved to Wiesbaden, Germany, on 29 January 1946 and was assigned to the 6th Weather Group on 2 August 1946. It became a paper organization on 12 June 1946 until its inactivation on 3 October 1947. It was activated at Mitchel AFB, New York, and assigned to the 102d Weather (later the 2102d Air Weather) Group on 1 June 1948. It was assigned to the 2059th Air Weather Wing on 24 October 1950. The squadron moved to Stewart AFB, New York, on 10 September 1951 and was assigned in place to the 2103d Air Weather Group [MAJCON] on 16 September 1951. The 12th was assigned to the 3d Weather Group on 20 April 1952 and to the 4th Weather Wing on 1 June 1959. It moved to Hancock Field, New York, on 4 July 1959 and returned to Stewart AFB, New York, on 19 June 1964 before its inactivation there on 31 December 1969. The 12th Weather Squadron was activated at Ent AFB, Colorado, and assigned to the 3d Weather Wing on 30 June 1972. It moved to Colorado Springs, Colorado, on 22 January 1976. It was assigned to the 5th Weather Wing on 1 April 1980 and inactivated on 1 October 1983. Redesignated 12th Operational Weather Flight on 5 Oct 2004 and activated into the reserves on 4 Nov 2004 at Scott AFB, IL under the 932d Operations Group.

AWARDS: Campaign Streamers for Algeria-French Morocco; Rome-Arno 8 Nov 1942-11 Nov 1942; Meritorious Service Unit Commendation, Mediterranean Theater, 1 Sep 1944-28 Feb 1945, 1 Mar-31 Aug 1945; Air Force Outstanding Unit Award for 1 May 1966-30 Apr 1968; 1 Jul 1976-30 Jun 1978; 1 Jul-30 Sep 1983; 1 Sep 2005 – 30 Sep 2006; 1 Jan-31 Dec 2006 as part of the 932d Air Wing; 1 Jan-31 Dec 2007.

⁸ E-mail, Tompkins, Donald D., MSgt, USAF, *12 OWF Linage and Honors*, 21 Jun 2012

EMBLEM (see square 50): Approved on 21 August 1944. **SIGNIFICANCE:** The two lightning flashes symbolize the mighty power of the Air Force in the area served by the 12th Weather Region, for which the squadron forecasts route and target weather for flights of every description. The twelve points on the lightning flashes indicate the squadron's numerical designation. The blue background portrays the sky, while the anemometer is the universal symbol of the Weather Service in general.

Commanders and Date of Assignment

14 Sep 42	Maj Worth Harper	15 Jun 62	Lt Col Frederick E. Weigand
6 Jan 43	Lt Col James W. Osmun	1 Aug 62	Col Eugene A. Carter
20 Apr 43	Maj Norman W. Pete	1 Feb 65	Lt Col Frank R. Jackson
15 Dec 45	Lt Col Norman E. King	26 Jun 65	Col Robert A. Taylor
1 Feb 46	Maj Norman E. Hanson	25 Aug 68	Col Robert F. Neeley
22 Apr 46	1Lt Elmer J. Bruha	1 Aug 69	Col Bernard Pusin
Jun 48	Maj Joseph F. Loftus	30 Jun 72	Col Elwyn A. Mosely
Aug 48	Lt Col Edward F. Sustrick	1 Sep 74	Col Alfred C. Molla, Jr.
8 Jul 49	Maj Lawrence Cometh	28 Jul 75	Col Gerald D. McCright
19 Jun 50	Maj Edward J. Daly	27 Jun 77	Col Robert F. Woodnal
20 Sep 50	Lt Col Edward F. Sustrick	3 Feb 78	Lt Col Eugene S. Harsh
1 Sep 51	Lt Col Charles A. Beckman	10 Mar 78	Col Robert F. Woodnal
16 Aug 54	Lt Col Prevost Marshall	26 Jul 78	Col George R. Hammond
1 Sep 54	Lt Col Bernard F. Forster	4 Aug 80	Col Mikel M. Cohick
15 Sep 57	Lt Col Thomas J. Arbogast	15 Dec 82	Col Serhij Pilipowskyj
24 Sep 57	Lt Col Glen A. Hoglund	4 Nov 04	Lt Col Bridget Davis
3 Jul 59	Lt Col Harold D. Cooper	1 Oct 11	Maj Laura Maddin

**13th WEATHER SQUADRON
INACTIVE**

LINEAGE: Constituted the 13th Weather Squadron, it was assigned to the North African Theater of Operations on 8 August 1944. It was activated at Algiers, Algeria, on 1 September 1944. The 13th moved to Pomigliano, Italy, on 20 June 1945; to Gicia del Colle, Italy, on 3 July 1945; to Caserta, Italy, on 7 July 1945; and to Bagnoli, Italy, on 13 August 1945. The 13th was transferred to the newly organized 6583d Weather Group (Provisional) at Caserta, Italy, on 10 May 1945. On 13 August 1945 it was assigned from the 6583d back to the Army Air Force Mediterranean Theater of Operations. The 13th was assigned to Headquarters Army Air Forces Weather Service on 25 August 1945 and moved to Goldsboro, North Carolina, where it was inactivated on 8 November 1945. The 13th Weather Squadron was activated as a corollary (Air Force Reserve) unit at Mitchel AFB, New York, on 4 September 1948, and assigned to the 2102d Air Weather Group for training. It was inactivated on 23 June 1951.

AWARDS: Service Streamer, EAME Theater, World War II, 7 Dec 1941-8 Nov 1945.

EMBLEM (see square 51): Approved on 8 December 1944. **SIGNIFICANCE:** The black cat symbolizes the fact that weather is an element which must be carefully considered, since it may unleash a fury that will "scratch" scheduled operations. The cat's reputation for nocturnal vision reflects the "round-the-clock" nature of observing duties. His sharp eyes, piercing into the unknown darkness, seeking things to come, represent the forecaster. The WW-13 figure in the background, the symbol of threatening weather, indicates the squadron's numerical designation and the importance of weather squadrons to aviation. The sun and the cloud with rain emanating therefrom depict the squadron's continuous duties in all kinds of weather.

Commanders and Date of Assignment

1 Sep 44	Maj Joseph P. Carey, Jr.
19 Sep 44	Maj Harold C. Banks
8 Jul 45	Capt Bernard G. Carroll, Jr.
25 Aug 45	Capt Ben F. Haile
4 Sep 48	Not available.

14th WEATHER SQUADRON

Asheville, North Carolina

HISTORICAL BACKGROUND: The 14th Weather Squadron traces its roots to the formation of the Army Air Forces Weather Research Center's Climatological Section at Bolling Field, D.C., on 10 September 1941. Climatology played a key role in weather support to most military operations, and throughout World War II, the Army Air Forces Weather Service maintained a Climatology Section/Division/Branch with its staff at Headquarters Army Air Forces in the Pentagon, and by May 1943, with the Army Air Forces Weather Wing at Asheville, North Carolina.

Early in World War II, the Army Air Forces Weather Service advanced synoptic climatology by using IBM electronic calculators to sort data--dividing large geographic areas into smaller ones, examining historical map series and classifying them for each area, assembling all available cards, and summarizing the data for each base/post/field.

On 22 March 1946 Headquarters Air Weather Service (located at Langley Field, Virginia) formed a Research and Development Division in the Pentagon, under which was a Data Control Unit (established at New Orleans, Louisiana, the previous month), and assigned to the 72d Army Air Forces base unit (at Langley). The Data Control Unit continued the program of recording all weather observations using IBM card-punching machines. Effective 21 April 1947, the Research and Development Division was eliminated so the Data Control Unit was reassigned to Air Weather Service's Continental Weather Wing (headquartered at Tinker Field, Oklahoma) as Squadron D, 67th Army Air Forces Base Unit, New Orleans, effective 1 May 1947. Effective 31 December 1947 the Data Control Unit was authorized two officers (a captain and a second lieutenant), 76 enlisted, and 80 civilians.

On 19 May 1948, Headquarters Continental Weather Wing and the 67th Army Air Forces Base Unit was redesignated as the Headquarters and Headquarters Squadron, 59th Weather Wing, at Tinker AFB. When the 59th was redesignated as the 2059th Air Weather Wing effective 1 September 1948, the Data Control Unit at New Orleans became the 2076th Data Control Unit (Weather). In July 1948 the renowned Climatologist, Dr. Woodrow C. Jacobs, became the chief of the Military Climatology Division (which, on 2 January 1951, was elevated to the Directorate of Climatology, under Dr. Jacobs), Directorate of Scientific Services, Headquarters Air Weather Service. Therefore, effective 1 July 1949 when the 2076th Data Control Unit (Weather) was redesignated as AWS-1 Detachment (later Detachment 1) and was reassigned in place from the 2059th to Headquarters Air Weather Service, it was functionally managed by the Military Climatology Division, Directorate of Climatology.

In 1952, under Dr. Jacobs direction, Air Weather Service began decentralizing its climatology service by placing climatology cells at selected field units. Air Weather Service's Data Control Unit (Detachment 1, the heart of its climatological function) moved from New Orleans to Asheville, North Carolina, on 10 April 1952, and was renamed the Data Control Division (and then the Data Processing Division, effective 8 February 1960) which, by 1959 was authorized 194 people, mostly civilians. When an IBM 705 computer was inaugurated at the Data Control Division on 26 September 1956, it marked the beginning of the end of use by Air Weather Service since World War II of high-speed, electronic accounting machines (mostly IBM) for processing climatological data. Effective 18 April 1958, Detachment 1, Headquarters Air Weather Service at Asheville, was discontinued and became an Operating Location of Detachment 3, Headquarters Air Weather Service. (The operating location at Asheville was redesignated Detachment 50, 1210th Weather Squadron, on 8 July 1961. Effective 15 June 1965 Detachment 50 was discontinued, and on 21 June 1965 it was officially designated and established as Operating Location 1, 1210th Weather Squadron. On 8 July 1967 OL-1, 1210th Weather Squadron, was discontinued/eliminated at Asheville, and Operating Location 1, USAFETAC, was established at Asheville. Effective 1 September 1970, OL-1, USAFETAC was redesignated as OL-A, USAFETAC.)

After AWS closed its USAF Weather Central at Suitland, Maryland, on 11 December 1957, it merged its Washington area climatology functions (the Climatic Analysis Division and the Data Integration Branch of Headquarters Air Weather Service, and Detachment 3, Headquarters Air Weather Service, the Postweather Analysis Division, at Suitland) on 18 December into what became referred to as the Climatic Center (formally, Detachment 3, Headquarters Air Weather Service--initially activated on 1 May 1954 at Andrews AFB), that occupied space at Suitland formerly used by the USAF Weather Central. On 1 April 1959, Detachment 3 (the Climatic Center) moved from Suitland to the Washington Navy Yard (Annex 2, at 225 D Street, Southeast) on the Potomac River.

Effective 1 July 1960, Air Weather Service abolished the Directorate of Climatology at Headquarters Air Weather Service (Dr. Jacobs took a position with the Library of Congress) and inactivated Detachment 3, Headquarters Air Weather Service. In place of Detachment 3, the 2150th Air Weather Squadron was established as a named Air Force activity (the Climatic Center, USAF) and assumed control of Detachment 3's operating location (the Data Processing Division) at Asheville. On 1 July 1961 the 2150th was redesignated the 1210th Weather Squadron and, on 1 May 1963, it was reassigned in place from Headquarters Air Weather Service to the 4th Weather Group (Andrews AFB, Maryland). On 15 December 1964 the Climatic Center, USAF, was redesignated the Environmental Technical Applications Center (ETAC), USAF, a named activity, with continued assignment to the 4th Weather Group's 1210th Weather Squadron. The center was reorganized as the United States Air Force Environmental Technical Applications Center (USAFETAC) on 8 July 1967, concurrent with the 1210th's deactivation, and assigned in place to the 6th Weather Wing on 8 October 1965.

LINEAGE: Constituted as the USAF Environmental Technical Applications Center, it was activated at the Washington Navy Yard on 9 June 1967, and organized and assigned to the 6th Weather Wing on 8 July 1967. USAFETAC was reassigned to Air

Force Global Weather Central on 1 August 1975, and moved to Scott AFB, Illinois, on 30 August 1975. On 9 July 1991 USAFETAC was assigned to Hq Air Weather Service (later Air Force Weather Agency). It was redesignated as the Air Force Combat Climatology center on 1 October 1995. The center was stationed in Asheville, North Carolina on 1 July 1998. It was redesignated as the 14th Weather Squadron on 19 October 2007, assigned to 2nd Weather Group (AFWA), and remained stationed at Asheville, North Carolina.

AWARDS: Air Force Outstanding Unit Award for 1 Apr 1966 – 31 Mar 1968; 1 Jul 1971 – 31 May 1973; 26 Sep 1973 - 7 Sep 1974; 1 Jul 1980 – 30 Jun 1982; 19 Oct 2007 – 31 Dec 2008; 1 Jan 2009 – 31 Dec 2010. Air Force Organizational Excellence Award for 1 Sep 1993 – 30 Sep 1995; 1 Oct 1995 – 30 Sep 1996.

FIRST EMBLEM (see square 96): Approved on 26 October 1960 for the 2150th Air Weather Squadron (Climatic Center, USAF). **SIGNIFICANCE:** Against a background of light blue sky displaying a satellite to represent the Air Force Theater of operations and its satellite program, a set of anemometer cups with a fleur-de-lis symbolizes the Air Weather Service and indicates this unit's affiliation with its parent organization. The lightning indicates war, the olive branch represents peace, the missile and aircraft represent our advanced weapons and missile programs, and the globe indicates our global capabilities and mission. **MOTTO:** WE SUPPORT THE PLANNER.

SECOND EMBLEM (see square 97): Approved on 3 September 1981 for USAFETAC. **SIGNIFICANCE:** Fields of ultramarine blue and golden yellow represent the Air Force colors. The anemometer relates the unit to Air Weather Service. The quarter moon embedded in solar disk represents solar energy, astronomical calculations, and upper atmospheric meteorology. The gridded day/night earth represents all-hour classical climatology, numerical (gridded) weather modeling and simulation, and global applicability of unit's work. Earth also represents agricultural and boundary layer/low-level meteorology. Arrowhead embedded in gridded earth represents unit's mission to support all U.S. Air Force and Army aviation--aircraft, missile, and satellite. The computer is the unit's main non-human tool in performing the mission. The four directional indicators within broken circle represent consulting services. The arrows are indicating attempts to close the gap of incomplete knowledge (broken circle) by development of new techniques and searching the literature in an attempt to improve on old techniques. Light blue triangular band represents the unifying factor, our worldwide historical data base, stored on computer tape. It encloses the globe and brings together all the elements listed above. **MOTTO:** PAST WEATHER--OUR FUTURE.

THRID EMBLEM (see square 52): No approval information available for AFCCC or 14th WS. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of air force personnel. The tri-parted knot alludes to the world wide database archived on computer tape. The weather anemometer icon denotes the unit's mission.

Commanders and Date of Assignment

Data Control Unit, New Orleans

a/o 30 Jun 48 Capt Oscar R. Ford
a/o 31 Aug 48 Maj Frederick A. Stinson

Det 1, HQ AWS, New Orleans/Asheville

a/o 31 Mar 51 WOJG Dorothy A. Vossbrink
a/o 31 Dec 53 2Lt James C. Ponder
a/o 31 Dec 54 2Lt Daniel A. Ball

Mar 57 Capt Walter s. Bliss, Jr.

a/o Apr 58 Mr James R. DeCoster, GS-14

Det 50/OL-1, 1210WS, and OL-1/A, USAFETAC, Asheville)

8 Jul 61 Mr James R. DeCoster, GS-15

8 Jan 73 Mr Frank W. Worley, GS-13

25 Nov 73 Mr Louis A. Westphal, GM-14

Det 3, HQ AWS, Andrews AFB/Suitland/Navy Yard (Annex)

1 May 54 Maj Richard D. Crysler

a/o 23 Oct 57 Maj Joseph L. Gulinson

18 Apr 58 Lt Col Harrold D. Lilliedoll

a/o Jul 58 Lt Col George W. Moxon

2150th Weather Squadron

1 Jul 60 Lt Col George S. Moxon

1210th Weather Squadron)

1 Jul 61 Lt Col George W. Moxon

1 Jul 63 Lt Col Thomas H. Lewis

1 Mar 66 Lt Col Harold L. Powell
17 Aug 66 Col Dale J. Flinders

USAFETAC

8 Jul 67	Col Dale J. Flinders	4 Jan 80	Col Quenten L. Wilkes
31 Jul 68	Lt Col Walter E. Warner	10 Jul 81	Col Milton D. Forsyth
1 Feb 69	Col Robert W. Sanderson	15 Jul 83	Col Lawrence R. French
1 Feb 70	Col Thomas D. Potter	10 Jul 85	Col Phillip D. Wood
1 Feb 72	Col Richard A. Johnson	2 Feb 87	Lt Col Kenneth P. Freeman
15 Feb 73	Col Gilbert N. Woods	20 Jul 88	Col William B. Freeman
6 Apr 73	Col Robert M. Gottuso	7 Jul 89	Col Vernon G. Patterson
1 Feb 76	Col Paul Janota	9 Jul 91	Lt Col Kenneth e. Eis
30 Aug 77	Col Dale C. Barnum	26 May 92	Lt Col Judson E. Stailey
28 Jul 78	Col Robert J. Fox	2 Aug 95	Col Francis X. Routhier

AIR FORCE COMBAT CLIMATOLOGY CENTER (AFCCC)

1 Oct 95 Col Francis X. Routhier
Apr 98 Lt Col Virginia A. Dillon
6 Jul 00 Col David P. Urbanski
25 Jun 03 Lt Col eric J. McKinley
23 Jun 05 Lt Col Peter J. Broll
17 Aug 07 Lt Col Scott A. Hausman

14th WEATHER SQUADRON

19 Oct 07 Lt Col Scott A. Hausman
Jun 09 Lt Col Richard D. Butler
7 Jul 11 Lt col Joseph W. Kurtz

15th OPERATIONAL WEATHER SQUADRON Scott AFB, Illinois

HISTORICAL BACKGROUND: In the early months of World War II, weather support was unorganized and consisted of small groups of forecasters and observers attached to bombardment groups. In order to provide organization and centralization of Air Force Weather Agency, the 15th Weather Squadron was created. The 15th Weather Squadron was established April 10, 1942, and activated at McClellan Air Force Base, California, April 22. With approximately 235 men, the squadron moved from McClellan Field to a staging area in the International Harvester Building in Oakland, California, June 16. Where the Weather Squadron departed for Melbourne.

In the later part of July and first part of August, the Headquarters in Melbourne were busy sending men to different weather locations in Australia stretching from Melbourne to Cape York Peninsula. About half went on a long rail trip north to Townsville, Queensland (approximately 1,000 miles). From their new headquarters location in Townsville, Queensland, the squadron could better support the network of stations located throughout Australia and New Guinea that were providing reliable weather information to the heavy bombardment groups then actively bombing Japanese installations in Papua and New Britain.

By the end of World War II, more than 719 weathermen were assigned to 21 units in Australia, 23 units in New Guinea, eight units in the Philippines, and 17 units in the East Indies. The weathermen of the 15th WS were daring, courageous, and brave in their attempts to record the weather for the United States Army Air Forces. Besides the daily job of observing and forecasting the weather, the forecasters and observers attached to bombardment groups accompanied the planes on their missions adding in-flight weather information to the data and weather reports that were being transmitted over the network of weather and communications systems. Some came under attack by the Japanese, suffered the same routine of nerve-wracking bombing raids, ground attacks, disease, and discomfort that other ground and service forces endured. When the Japanese Army's advance was stopped, the men in the 15th WS accompanied United States Army troops and services forces to set up new weather stations at each of the islands they took back. In addition, some of the weathermen of the 15th Weather Squadron were selected for special training in guerrilla warfare for duty in the Philippines and in other areas of the Southwest Pacific.

The 15th Operational Weather Squadron was formed as part of the Chief of Staff of the United States Air Force's weather reengineering effort and commenced operations on 19 February 1999. The 125-person regional forecast center reaches full

operating capability in June 2001 and provides direct meteorological support to the Tanker Airlift Control Center and total force flying missions in the northeast United States.

The 15th Operational Weather Squadron was the recipient of the United States Air Force Fawbush-Miller Award recognizing the Outstanding Operational Weather Squadron performing the most outstanding weather support, operations, and training. During 2000, the squadron pioneered the use of database and web technologies to produce and disseminate over 3 million forecasts for 126 Air force and Army active duty, guard and reserve flying units in a 22-state area of responsibility. Their total integration with mission planners re-routing weather restricted C-5 Galaxy and C-17 Globemaster III missions ensured pinpoint selection of favorable air refueling tracks and airfields resulting in cost avoidance in excess of \$12M.

The 15th Operational Weather Squadron, Scott Air Force Base, IL, was the first of the four OWS's to re-align under the newly formed 1st Weather Group during a ceremony May 25, 2006. The 26th OWS was realigned at Barksdale Air Force Base, Jun. 22, 2006. Next, was the 25th Operational Weather Squadron at Davis-Monthan Air Force Base on July 6, 2006, and the last addition to the team was the 9th Operational Weather Squadron which was re-activated on Jul. 20, 2006 at Shaw Air Force Base.⁹

LINEAGE: Constituted the 15th Weather Squadron on 10 April 1942, it was activated at McClellan Field, California, on 22 April 1942 and assigned to the Sacramento Air Depot. On 16 July 1942 the squadron was assigned to the Allied Air Forces in Australia and moved to Melbourne. It was assigned to the 5th Air Force on 2 September 1942, and moved to Townsville, Australia, on 8 November 1942. The 15th was assigned to the Far East Air Forces Regional Control and Weather Group (Provisional) on 25 October 1944. It was assigned in place to the 1st Weather Group and attached to the 43d Weather Wing on 20 September 1945. On 20 October 1945 the 15th moved to Nichols Field, Philippines. It moved to Ft William McKinley, Philippines, on 15 May 1946 and to Kadena, Okinawa, on 1 July 1947. The squadron was assigned to the 1st Weather (later 2100th Air Weather) Group on 1 June 1948. It was attached to the 13th Air Force on 1 January 1949 and to the 20th Air Force on 16 May 1949. On 23 October 1949 the 15th was assigned to the 2143d Air Weather Wing but remained attached to the 20th Air Force until 1 June 1953. It was assigned to the 1st Weather Wing on 8 February 1954, and to the 10th Weather Group, 1st Weather Wing, on 18 February 1957. The 15th Weather Squadron was inactivated on 8 Aug 1959. It was activated on 28 February 1961 and organized under the 8th Weather Group on 8 July 1961 at Charleston AFB, South Carolina. The squadron moved to McGuire AFB, New Jersey, on 30 August 1963 and on 8 October 1965 it was assigned to the 7th Weather Wing. On 30 June 1972 the 15th was assigned to the 5th Weather Wing and moved to Scott AFB, Illinois. It moved to Wright-Patterson AFB, Ohio, and was assigned to the 7th Weather Wing on 1 January 1976. The squadron moved to McGuire AFB, New Jersey, on 1 June 1980. It was inactivated on 30 September 1991. It was activated, assigned to the 15th Operations Group, and stationed at Hickam AFB, Hawai'i on 1 Jun 1992. It was inactivated on 1 August 1994. The squadron was redesignated as the 15th Operational Weather Squadron on 8 Jan 1999. The 15th Operational Weather Squadron was activated, assigned to Air Mobility Command Tanker airlift Control Center, and was stationed at Scott AFB, Illinois on 15 Feb 1999. It was assigned to the 1st Weather Group on 11 May 2006 and remained stationed at Scott AFB, Illinois.

AWARDS: Service Streamer, Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946; Air Force Outstanding Unit Award for Mar 1956-Oct 1956; 1 Jul 1972-30 Jun 1973; 1 Jul 1973-31 Dec 1974; 1 Jul 1977-30 Jun 1979; 1 Jun 1992 – 30 Jun 1993; 1 Oct 1993 – 1 Aug 1994; 1 Apr 2000 – 31 Mar 2001; 1 Apr 2001 – 31 Mar 2002; 1 Apr 2002 – 31 Mar 2003; 1 Apr 2003 – 31 Mar 2004; 1 Oct 2004 – 30 Sep 2005; 1 Apr 2007 – 31 Dec 2008..

FIRST EMBLEM (see square 54): Approved on 9 October 1943. **SIGNIFICANCE:** The insignia portrays the 15th Weather Squadron behind the "8" ball of difficult weather reporting.

SECOND EMBLEM (see square 53): Approval date unknown. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The gauntlet gripping a lightning bolt from a thunderstorm cloud represents the unit's ability to maintain a firm forecasting grip on rapidly changing weather and assessment to the wing. The two background colors represent the day and night global capability and mobility of the unit.

⁹ Art., 15TH Operational Weather Squadron. Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/15th_Operational_Weather_Squadron, 20 Nov 2011

Commanders and Date of Assignment

2 Apr 42	Lt Col R. Loyal Easton	8 Jul 65	Lt Col Frederick S. Tuttle
10 May 42	Maj Whitford C. Mauldin	16 Jul 65	Col Andrew Paton
1 Aug 42	Lt Col James W. Twaddell, Jr	16 Jun 67	Lt Col Frederick S. Tuttle
Jan 44	Maj John M. Tucker	30 Jun 67	Col W. B. Willis
12 Mar 44	Maj Joseph W. Kelly	2 Jul 70	Col Lloyd C. Hughes
Jul 44	Maj Dorence C. Jameson	30 Jun 72	Col Robert L. Kane
25 Oct 44	Maj Joseph W. Kelly	31 Jul 73	Col Joseph D. Saccone
Feb 45	Capt Stephen J. Cope	18 Jan 74	Col Chester C. Lukas
1 Jul 45	Maj James R. Reynolds	6 Jun 74	Col Charles O. Jenista, Jr.
1 Jan 46	Lt Col Morrill E. Marston	1 Jan 76	Lt Col John E. Oliphant
25 Jan 46	Maj Wilbur B. Sherman	30 Apr 77	Lt Col Dan K. Waylett
3 Apr 46	Capt Edward O. Jess	20 Jun 78	Lt Col William C. Culver
15 May 46	Capt Oscar H. True	1 Aug 78	Col Donald E. Smith
10 Feb 47	Maj Leo A. Kiley, Jr.	1 Jun 80	Lt Col John J. Kelly, Jr.
13 Nov 47	Capt William J. Landsperger	13 Jul 81	Lt Col Darrell L. Lucas
12 Dec 47	Maj Thomas J. Arbogast	21 Jun 84	Lt Col James W. Overall
21 Feb 49	Maj DeWitt N. Morgan	26 Jun 86	Lt Col Frank J. Carvell
31 Dec 49	Lt Col William J. Hall	Jan 88	Lt Col Edwin N. Jenkins
20 Jun 50	Maj John S. Giegel	Sep 90	Lt Col Michael A. Neyland
9 Apr 51	Maj Leonard H. Hutchinson	Jul 91	Lt Col Robert H. Allen
25 May 51	Lt Col John S. Giegel	Jul 92	Unknown
26 Jul 52	Lt Col Jack H. Pelander	Jan 99	Lt Col Frederick C. Wirsing
28 Apr 53	Lt Col Leland J. Rath	Jul 02	Lt Col Louis V. Zuccarello
8 Apr 55	Lt Col Herschel H. Slater	Jul 04	Lt Col Brian Bjornson
5 Jun 55	Lt Col Lowell A Schuknecht	07	Lt Col Keith Duffy
6 Aug 57	Lt Col David C. Barrow	15 Jul 08	Lt Col Gary Kubat
28 Feb 61	unit not manned through 7 Jul 61	Jan 10	Lt Col Kyle G. Bellue
8 Jul 61	Col Robert F. Neeley		

16th WEATHER SQUADRON Offutt AFB, NE

LINEAGE: Constituted the 16th Weather Squadron, Regional Control, on 13 August 1942, it was activated at Great Falls, Montana on 1 September 1942. It was redesignated as the 16th Weather Squadron, Regional, and assigned to the Flight Control Command on 14 April 1943. The squadron was assigned to the Weather Wing, Flight Control Command (later Army Air Forces Weather Wing), and redesignated as the 16th Weather Squadron on 19 May 1943. The 16th was assigned to the Army Air Forces Weather Wing on 6 July 1943, and moved to Edmonton, Alberta, Canada, on 1 April 1944. It was assigned to the 7th Weather Group [AFCON] on 4 December 1945 and moved to Ft Richardson (Elmendorf), Alaska, on 20 June 1946. On 9 June 1948 it moved to Scott AFB, Illinois, with its reassignment to the 102d Weather (later 2102d Air Weather) Group. The squadron was assigned in place to the 2103d Air Weather Group [AFCON] on 20 May 1949. It was assigned to the 2059th Air Weather Wing [MAJCON] on 24 October 1950. It moved to Waco, Texas, on 16 May 1952, and was assigned to the 8th Weather Group [AFCON] on 20 May 1952. The 16th was inactivated on 18 November 1957. The 16th Weather Squadron was assigned to the 2d Weather Group and activated at Ft Monroe, Virginia, on 8 July 1959. It was assigned to the 5th Weather Wing on 8 October 1965 and inactivated on 1 October 1976. The squadron was activated on 18 Nov 2009 at Offutt AFB, NE and assigned to the 2nd Weather Group.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946. Air Force Outstanding Unit Award for 1 Jul 1971-30 Jun 1973 and 1 Jul 1973-31 Dec 1974; 18 Nov – 31 Dec 2010.

FIRST EMBLEM (see square 55): Approved on 15 February 1945. **SIGNIFICANCE:** None attributed.

SECOND EMBLEM (see square 56): Approved on 25 October 1957. **SIGNIFICANCE:** The emblem symbolizes the mission of the 16th Weather Squadron; the helping hand that safely guides the pilot through fair and stormy conditions. Ultramarine blue and golden yellow are the Air Force colors. **MOTTO:** IN TEMPESTATE ET SERENITATE which translates to IN STORMING CONDITIONS AND FAIR CONDITIONS.

THIRD EMBLEM (see square 57): Approved on 14 June 1962. **SIGNIFICANCE:** Against a field of ultramarine blue, a golden yellow anemometer is placed to reflect the Air Force colors. A field of blue, white, and red reflects the United States Continental Army Command patch and colors. Thus, the two services involved, Air Force (Air Weather Service) and Army (United States Continental Army Command) emblems are represented within this emblem to indicate Air Force and Army cooperation. The lightning flash over all symbolizes both the element of weather and the mobile, fast-reacting support rendered. **MOTTO:** SUSTINEMUS which translates to WE SUPPORT.

Commanders and Date of Assignment

1 Sep 42	Lt Col David H. Kennedy	24 Aug 61	Lt Col Lewis L. Howes
1 Jan 45	Col Carl W. Carlmark	early 63	Lt Col Thomas W. Lane
unknown	Capt Bernard Pusin	late 63	Col Leonard V. Gillespie
unknown	Capt Avery M. Gage	1968	Col L.A. Pitt
15 May 48	1Lt Norman P. Michelson	1969	Col William H. Shivar
16 Aug 48	Maj Paul S. Bechtel	1972	Col Isaac S. Israel
29 Aug 51	Lt Col Frederick S. Tuttle	1 Mar 75	Col Walter R. Brett
23 Jun 53	Lt Col Andrew Paton	18 Nov 09	Lt Col Neil Sanger
20 Sep 56	Lt Col Charles A. Beckham	11 Jul 11	Lt Col Christopher G. Smithro
8 Jul 59	Lt Col Walton L. Hogan, Sr.		

17th OPERATIONAL WEATHER SQUADRON Hickam AFB, Hawai'i

LINEAGE: Constituted the 17th Weather Squadron (Regional Control) on 31 August 1942, activated at McClellan Field, California, and was assigned to the Army Air Forces on 18 September 1942. The 17th staged at Camp Stoneman, Pittsburg, California, on 26 October 1942 and arrived at Auckland, New Zealand, on 22 November 1942. It was assigned to the United States Air Forces in the South Pacific Area and moved to Noumea, New Caledonia, on 20 January 1943. The 17th was assigned to the 13th Air Force on 1 July 1943 and to the United States Army Forces in the South Pacific Area on 20 December 1943. It was assigned to Army Air Forces, Pacific Ocean Area, on 1 August 1944 and to the 1st Provisional Weather Group on 4 September 1944. On 20 November of that year it moved to Hickam Field, Territory of Hawaii. The 17th was disbanded on 10 February 1945. It was reconstituted and redesignated the 17th Weather Squadron on 24 July 1969, activated at Travis AFB, California, and assigned to the 7th Weather Wing on 15 January 1970. It was inactivated on 30 June 1972. The 17th was activated at Travis and assigned to the 7th Weather Wing on 1 April 1980. It was inactivated on 30 September 1991. Redesignated as the 17th Operational Weather Squadron on 12 October 2000. It was activated, assigned to the 502nd Air Operations Group, and stationed at Hickam AFB, Hawai'i on 27 October 2000.

AWARDS: Service Streamer, Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946. Air Force Outstanding Unit Award: 1 Jul 2002 – 31 Aug 2004; 6 Oct 2006 – 31 Oct 2007; 1 Nov 2008 – 31 Oct 2010.

EMBLEM (see squares 58, 59,& 60): Approved on 8 July 1944 for 17th Weather Squadron (Regional Control). **SIGNIFICANCE:** The four stars and the blue background represent the Southern Cross constellation and the midnight sky, as observed in the area where the squadron is stationed. The red lightning flash against the yellow sky denotes the sudden tropical storms common to that region. The white anemometer, the universal symbol of weather forecasting, depicts the squadron's function. A modification to change the square shape to a round-disc shape was approved on 8 June 1982 for the 17th Weather Squadron. The significance remains the same.

Commanders and Date of Assignment

18 Sep 42	Capt Ernest W. Ruppelt	21 Jun 85	Lt Col Gerald J. Gayvert
1943	Capt Claude N. Hall	1 Sep 86	Lt Col Joseph J. Butchko
Jun 44	Maj Dewitt N. Morgan	Jan 88	Lt Col John M. Haas
Sep 44	Capt Andrew G. Irick	Jul 90	Lt Col Francis X. Routhier
15 Jan 70	Lt Col Anthony J.G. Timmermans	27 Oct 00	Lt Col Wendell Stapler
27 Nov 70	Lt Col Roddee E. Lord (temporary)	Jun 01	Lt Col Mark Zettlemoyer
7 Dec 70	Col James E. Smith	Jun 04	Lt Col Bill Spendley
1 Apr 80	Lt Col Clarence A.B. Warfel	Jun 07	Lt Col Kurt Brueske, PhD
1 Jun 81	Lt Col Bobby D. Underwood	Jun 09	Lt Col Robert Tibbetts
26 Jul 82	Lt Col Thomas K. Kline	Jun 11	Lt Col Jason M. Patla, PhD
6 Jun 83	Lt Col Jerry E. Albrecht		

18th WEATHER SQUADRON Fort Bragg, North Carolina

LINEAGE: Constituted the 18th Weather Squadron on 2 May 1942, it was activated at Bolling Field, Washington, D.C., assigned to the Chief of Weather Services, and attached to the 8th Air Force on 14 May 1942. The squadron moved to Bushy Park, Teddington (London), in July and August of 1942, to Marble Arch (London), in February 1944, to Cheddington, Buckinghamshire, in May 1944, and to Camp Griffiss, Middlesex, on or about 25 October 1944. The 18th was assigned to the United States Strategic Air Forces in Europe in October 1944, and to St. Germain-en-Laye, France, on 4 December 1944. It moved to Wiesbaden Military Post, Germany, on 26 October 1945 and was assigned to the 5th Weather Group on 11 December 1945. It was reorganized and assigned to Headquarters Air Weather Service on 1 June 1948 (replacing the 5th Weather Group) and to the 2105th Air Weather Group on 20 January 1949. The 18th moved to Wiesbaden AB on 5 December 1950. It was assigned to the 2058th Air Weather Wing on 12 October 1951 and discontinued and inactivated at Wiesbaden AB, Germany, on 3 October 1960. The unit was activated, assigned to 18th Air Support Operations Group, and stationed at Fort Bragg, North Carolina on 1 Jul 1994.

AWARDS: Service Streamer, EAME Theater, World War II, 7 Dec 1941-8 Nov 1945.

Decorations: Air Force Meritorious Unit Award: 9 Jun 08-1 Apr 09; Air Force Outstanding Unit Award with the Combat "V" Device: 1 Jun 2001-31 May 2002; 16 Sep – 15 Sep 2003;. Air Force Outstanding Unit Awards: 1 Jun 1993- 31 May 1995; 1 Jun 1999 -31 May 2001; 1 Jun 2009-31 May 2010.

EMBLEM (unofficial) First (61): Circa 1954. **SIGNIFICANCE:** The emblem represents support to the U.S. Air Forces Europe.

EMBLEM Second (62): Approval date unknown. **SIGNIFICANCE:** Ultramarine blue and Air Force yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The parachute is representative of the squadron's support of Army Airborne forces. The lightning bolt indicates the unit's ability to rapidly deploy to provide weather support, while the fleur-de-lis alludes to the unit's heritage from the Army Signal Corps in France, during WWI.

Commanders and Date of Assignment

1942	Capt Floyd J. Sampson	27 Nov 50	Maj Roscoe B. Blockledge
Feb 44	Capt Robert F. Parsons	4 Oct 52	Lt Col Hazen M. Bedke
29 Oct 44	Col Wilson H. Neal	5 Jul 54	Lt Col John W. Kodis
23 Jun 45	Lt Col Diran Arakelian	11 Jul 56	Lt Col Arthur f. Gustafson
10 Aug 45	Maj August W. Throgmorton	28 Jul 59	Lt Col Robert B. Hughes
26 Oct 45	Maj Harry M. Lange	94	Maj Mike McDonald
15 Dec 45	Maj Robert L. Sorey	96	Lt Col Michael J. Stanley
11 Feb 46	Lt Col Richard M. Gill	o/a Jul 97	Lt Col David A. Smarsh
1 Sep 46	Capt Glen A. Hoglund	00	Lt Col Cristopher K. Brooks
1 Jun 48	Col Edward W. Maschmeyer	02	Lt Col Curtis Winstead
19 Jul 48	Lt Col Nicholas H. Chavasse	Jun 04	Lt Col Michael R. Dennis
20 Jan 49	Maj William F. Bernhard	06	Lt Col Joseph Piasecki
28 Jul 49	Maj Prevost Marshall (temporary)	08	Lt Col Steven Dickerson
5 Aug 49	Maj Lewis R. Riley	10	Lt Col Paul Yuson
13 Jan 50	Lt Col Albert Guiliano		

19th EXPEDITIONARY WEATHER SQUADRON

Bagram Air Base, Afganistan

LINEAGE: Constituted as the 19th Weather Squadron, Regional, on 13 June 1942, it activated at Bolling Field, D.C., on 30 June 1942, and was assigned to the United States Army Forces in the Africa-Middle East Theater. It departed the U.S. on 7 October 1942 and arrived at Suez, Egypt, on 11 November 1942, moving to Fayid, Egypt, on 14 November 1942. It moved to Gura, Eritrea, on 18 December 1942 and to Accra, Gold Coast, British West Africa, on 21 April 1943, and was attached to the 19th Air Force. The squadron moved to the John H. Payne Field in Cairo, Egypt, and was assigned to the U.S. Army Forces in the Middle East on 31 October 1943. It was assigned to the Army Air Forces Weather Service on 19 July 1945, to the 6th Weather Group on 11 December 1945, and to the 5th Weather Group on 2 August 1946. It moved to Wiesbaden, Germany, on 11 June 1946, minus personnel. The squadron remained unmanned until 1 February 1947 and was inactivated on 3 October 1947. It was activated at Smoky Hill AFB, Salina, Kansas, on 1 June 1948, and assigned to the 103d Weather (later the 2103d Air Weather) Group. The squadron moved to Lowery AFB, Denver, Colorado, on 5 June 1949 and was assigned to the 2059th Air Weather Wing on 24 October 1950. The squadron moved to Kansas City, Missouri, on 10 September 1951 and was assigned to the 2103d Air Weather Group [MAJCON] on 16 September 1951. It was assigned to the 3d Weather Group on 20 April 1952 and relocated to Grandview AFB (later renamed Richards-Gebaur AFB), Missouri, on 19 February 1954. It was assigned to the 4th Weather Wing on 8 August 1959. It was discontinued and inactivated at Richards-Gebaur AFB on 8 July 1961. Redesignated as the 19th Expeditionary Weather Squadron and converted to provisional status on 12 February 2009. Stationed at Bagram Air Base, Afghanistan

AWARDS: Service Streamer, EAME Theater, World War II, 7 Dec 1941-8 Nov 1945. Meritorious Unit Award (MUA), Afghanistan – 1 October 2010 to 30 September 2011,

FIRST EMBLEM (see square 64): Approved on 4 May 1944. **SIGNIFICANCE:** None attributed.

SECOND EMBLEM (see square 65): Approved on 10 July 1959. **SIGNIFICANCE:** The blue background represents the sky and the chain of 19 links indicates the 19th Weather Squadron nearly surrounding the unchained Goddess of Weather (center design). The aircraft represents air power surmounting weather conditions. The emblem bears the official Air Force colors of ultramarine blue and golden yellow.

THIRD EMBLEM (see square 63): Approved on 1 February 2010. **SIGNIFICANCE:** Ultramarine blue and Air Force yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The significance of the split field has to do with weather support to both Air Force aviation and to the Army ground forces. Bad weather represented by thunderclouds with lightning threatens both the air and ground theaters of operation, but the mission of the 19 EWXS is to forecast good weather, which is represented by the sun, in the midst of bad in which the unit can deliver combat power, signified by the sword, from the air to the ground.

Commanders and Date of Assignment

30 Jun 42	Maj Henry A. Mooney	28 Aug 51	Lt Col John P.K. Cavender
mid 1945	Maj Max M. Stratton	27 May 54	Lt Col Everett J. Cartwright
Dec 45	Paper organization unmanned until 1 Feb 47	12 Jan 57	Maj Frank R. O'Black, Jr. (temporary)
1 Feb 47	Col Richard M. Gill	11 Jul 57	Lt Col Stephen M. Godfrey
20 Feb 47	Maj William J. Norton	15 Jul 60	Lt Col Paul X. Geary, Jr.
Jun 48	Maj Eugene H. Karstens	May 09	Lt Col Brian D. Griffith
Jul 48	Maj Russell K. Pierce, Jr.	May 10	Lt Col Paul A. Roelle
19 Feb 51	Lt Col George E. Rath (temporary)	May 11	Lt Col Gerald D. Sullivan, Jr.
28 Mar 51	Lt Col Russell K. Pierce, Jr.	Apr 12	Lt Col Patrick C. Williams
4 May 51	Lt Col Eugene H. Karstens		

20th OPERATIONAL WEATHER SQUADRON

INACTIVE

LINEAGE: Constituted the 20th Weather Squadron, it activated at Cairo, Egypt, and was assigned to the 9th Air Force on 15 April 1943. It was disbanded on 31 October 1943. It was reconstituted on 4 November 1944, activated at Sorido Airdrome, Biak Island, Netherlands East Indies, and assigned to the Far East Air Forces Regional Control and Weather Group (Provisional) on 6 December 1944. It moved to Ft McKinley (Manila) on 9 May 1945, and to Nichols Field, Philippines, on 14 August. The 20th was assigned to the 1st Weather Group and attached to the 43d Weather Wing on 20 September 1945. Located in Japan, it was first

at Tokyo on 2 November 1945 and then at Nagoya on 22 May 1946. The 20th was assigned to the 2143d Air Weather Wing [MAJCON] and attached to the 5th Air Force on 23 October 1949. It was assigned to the 1st Weather Wing on 8 February 1954 and was inactivated on 18 February 1957. It was activated on 2 March 1964, organized at Fuchu AS, Japan, and assigned to the 1st Weather Wing to support the 5th Air Force on 8 June 1964. The squadron moved to Yokota AB, Japan, on 6 October 1974 where it was inactivated on 1 September 1976. The 20th Weather Squadron was activated at Yokota AB, Japan, and assigned to the 1st Weather Wing on 1 January 1985. It was assigned in place to Pacific Air Forces on 30 September 1991. It was stationed at Hickam AFB, Hawai'i on 1 April 1992. It was assigned to the 15th Operations Group on 15 April 1992. It was inactivated on 1 June 1992. It was redesignated as the 20th Operational Weather Squadron on 13 Jul 2000, activated at Yokota Air Base, Japan, and assigned to 5th Air Force on 1 October 2000. It was inactivated on 17 April 2006.

AWARDS: Service Streamers for the Korean Theater, Korean War, 27 Jun 1950-27 Jul 1953; and EAME Theater, World War II, 7 Dec 1941-8 Nov 1945. Campaign Streamer for New Guinea, 24 Jan 1943-31 Dec 1944. Air Force Outstanding Unit Award for Mar-Oct 1956; 2 Jul 1967-30 Jun 1969; 1 Jul 1970-30 Jun 1972; 1 Jul 1972-30 Jun 1973; 1 Jul 1974-30 Jun 1976; and 1 Jul 1986-30 Jun 1988; 1 Jan 2005 – 17 Apr 2006; 1 Oct 2006 – 17 Apr 2007.

FIRST EMBLEM (see square 67): Approved on 15 September 1943. **SIGNIFICANCE:** None attributed

SECOND EMBLEM (see square 68): Approved on 11 January 1965. **SIGNIFICANCE:** The blue background in the top portion of the design represents the sky, the primary theater of Air Force operations. The mission of the unit is to provide support in the atmospheric sciences and is represented by the weather satellite. The dark and light background depicts the day and night capability. The partial globe maintains the symbolism used in the parent major command, and further depicts the global responsibilities. The two stars allude to the armed forces, U.S. Air Force and U.S. Army, for which the unit is responsible for providing meteorological support.

THIRD EMBLEM (see square 66): Approved on 9 October 1986. This was actually a modification of the second emblem changing the pentagon shape to a circular shape. **SIGNIFICANCE:** The Air Force colors of ultramarine blue and golden yellow are used. Blue alludes to the sky, the primary theater of operations. Yellow refers to the sun and the excellence required of Air Force personnel. The weather Satellite symbolizes the mission of the unit to provide support in the atmospheric sciences. The black and light blue background depicts night and day capability. The globe is from the emblem of the parent major command and further depicts global responsibilities. The two stars indicate the services, U.S. Air Force and U.S. Army, which the unit supports by providing meteorological information.

Commanders and Date of Assignment

1943	Maj Eugene T. Early	20 Jan 67	Col Edward O. Jess
Dec 44	Maj Dorence C. Jameson	25 Jun 67	Col Elwyn A. Moseley
29 Jul 45	Lt Col Morrill E. Marston	30 Jun 70	Col Robert M. Pfeiffer
24 Sep 45	Capt John L. Mitchell	9 Jun 72	Col William E. Smurro
5 Feb 46	Lt Col Jerome A. Pryber	20 Aug 74	Col Salvatore R. LeMole
14 May 48	Lt Col John M. Feeley, Jr.	1 Jan 85	Lt Col Richard Vogt ¹⁰
5 Mar 49	Maj Arthur B. Hilmo (temporary)	1 Jul 87	Lt Col Stephen M. Horn
1 Apr 49	Lt Col Oliver K. Jones	1 Jul 89	Lt Col Raymond A. Kandler
7 Nov 51	Lt Col Wray B. Bartling	28 Jun 91	Lt Col Gerald D. Swoboda
23 May 53	Lt Col Carl E. Wagner	10 Oct 00	Lt Col Robert J. Rizza
18 Nov 54	Lt Col Louis Bertoni	19 Jul 02	Lt Col Kim M. Waldron
24 Jul 56	Col Donald W. Roberts	7 Jul 04	Lt Col Michael R. Farrar
8 Jun 64	Col Leroy C. Iverson		
28 Apr 65	Col Hershell L. Abbott		

¹⁰ Hist., 1WW History, 30 Jun 87, p1. Note: This is a correction to the 1987 heritage document that incorrectly listed LtCol Richard Volk as the commander

21st OPERATIONAL WEATHER SQUADRON

Sembach Air Base, Germany

LINEAGE: Constituted the 21st Weather Squadron on 19 April 1943, it activated at Bradley Field, Connecticut, and was assigned to the Flight Control Command on 1 May 1943. It moved to England, at Wilford Park in July 1943, and to Sunninghill Park on 1 September 1943. The 21st was assigned to the 9th Air Force on 16 October 1943. It had various stations in France: Grandcamp, Canisy, Force-Mayrme, and finally Chantilly on 15 September 1944. It was located at Bad Kissingen, Germany, on 6 June 1945 and to Wiesbaden on 17 November 1945, where it was inactivated on 12 July 1946. The 21st Weather Squadron was activated at Madrid, Spain, on 18 August 1956. It moved to Torrejon AB, Spain, on 15 September 1957 where it was inactivated 1 July 1971. Consolidated (20 June 2005) with the United States Air Forces in Europe Operational Weather Squadron, which was constituted as United States Air Forces in Europe Theater Weather Support Squadron on 14 November 1997. It was Activated on 1 December 1997 at Sembach Air Base, Germany and assigned to United States Air Forces in Europe. It was redesignated as the United States Air Forces in Europe Operational Weather Squadron on 17 February 1999. It was redesignated in place as the 21st Operational Weather Squadron and assigned to the 616th Support Group on 1 November 2005.

AWARDS: Campaign Streamers for Northern France, 25 Jul-14 Sep 1944; Rhineland, 15 Sep 1944-21 Mar 1945; and Central Europe, 22 Mar-11 May 1945. Army Meritorious Unit Citation, 1 Jan-1 Jul 1944. Air Force Outstanding Unit Award for 1 Jan 1968-31 Dec 1969; 1 Jan 2006 – 31 Dec 2007. Air Force Organizational Excellence Awards: 1 Jul 1996-30 Jun 1998; 1 Jul 1998-30 Jun 2000; 1 Jul 2002 – 30 Jun 2004; 1 Jul 2004 – 30 Jun 2005; 1 Jan 2006 – 31 Dec 2007.

FIRST EMBLEM (see square 71): Approved on 14 April 1960. **SIGNIFICANCE:** The emblem is symbolic of the weather support status of the squadron in relation to aircraft flying at increasingly higher altitudes. The stylized aircraft and supporting hand represent the meteorology necessary to provide accurate upper atmospheric information for safety of flight. The emblem bears the Air Force colors of ultramarine blue and golden yellow. **MOTTO:** ARTIUM OPE CAELUM NOVISSE.

SECOND EMBLEM (see square 70): Approved on 20 August 1998. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. The knight represents the unit's readiness and its dedication to support the warfighter and its role as a "keeper of peace". He leaps over a weather vane symbolizing a commander's ability to overcome adverse weather conditions due to accurate weather information provided by the Squadron. The horse signifies the unit's key mission of carrying tailored intelligence information to operational customers and the ability to complete the Air Force mission. The lance carried by the knight denotes the Squadron as the "tip" of weather forecasting services reaching into the theater to make a difference; the shield connotes the ability to safeguard those who may be in harm's way. The wind anemometer within the shield is a standard trademark for Air Force weather personnel and a key tool for the craft. The developing thunderstorm in the background symbolizes the weather hazards that may impede combat operations

Commanders and Date of Assignment

1 May 43	Maj Richard J. Kent	Jul 65	Col Robert F. Neely
1 Sep 43	Col Thomas S. Moorman	1 Aug 68	Col Isaac S. Israel
1 Jan 44	Capt August W. Throgmorton	18 Jun 71	Lt Col John A. Samotis
5 Jul 45	Maj Cullie B. Harris	1 Dec 97	Lt Col Ralph O. Stoffler
1 Oct 45	Col Wilson H. Neal	Jul 99	Lt Col John D. Murphy
11 Dec 45	1Lt Donald R. Anderson	01	Lt Col Carolyn M. Vadnais
May 46	Capt Francis T. McHenry	03	Lt Col Tim Hutchison
18 Aug 56	Capt Donald J. Wolfe	05	Lt Col John Shepley
29 Aug 56	Lt Col Leonard H. Hutchinson	07	Lt Col Brian Pukall
10 Jun 58	Lt Col William E. Kunz	09	Lt Col David Andrus
26 Jan 60	Lt Col Lawrence D. Connolly	11	Lt Col Eugene Wall
Jan 63	Lt Col Nicholas J. Gavares		

22nd EXPEDITIONARY WEATHER SQUADRON (ACC)

LINEAGE: Constituted the 22d Weather Squadron on 28 June 1943, it activated at Natal, Brazil, and was assigned to the South Atlantic Wing, Air Transport Command, on 13 July 1943. It was assigned to the Army Air Forces Weather Wing on 6 December 1943. The 22d was inactivated at Natal on 5 February 1946. It was activated on 4 September 1948 as a corollary (Air Force Reserve) unit at Los Angeles, California. It moved to March AFB on 26 September 1949 where it was inactivated on 23 June 1951. It was redesignated as the 22 Expeditionary Weather Squadron, and converted to provisional status and activated on 12

February 2009, assigned to 9th AF it was stationed at Camp Victory, Baghdad, Iraq. It was re-assigned to 9th Air Expeditionary Task Force-Iraq 1 Nov 2010; the squadron was inactivated on 18 December 2011, upon conclusion of Operation NEW DAWN.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946. Meritorious Unit Award (MUA), Iraq 2 Apr 2009 – 12 Mar 2010, 13 Mar 2010 – 7 Feb 2011, 1 Jun 2011 - 19 Dec 2011.

EMBLEM (see square 72): Not approved (unofficial). **SIGNIFICANCE:** None attributed. However, one can interpret that the U.S. and Iraqi flags joined side by side symbolize the overall mission of the squadron during its most recent period of activation during the latter part of Operation IRAQI FREEDOM and Operation NEW DAWN, to advise and assist Iraq in rebuilding a national weather service. The scorpion symbolizes the resurrection of the Iraqi weather service and creating constancy in its operations. The large S with a horizontal arrow pointing to the right is the present weather symbol for sandstorm, the prevalent weather phenomena experienced in the area of operation. The pair of deuces indicates the squadron's number.

Commanders and Date of Assignment

1 Jul 43	Lt Col James B. Baker
11 Oct 44	LT Col Arthur A. McCartan
23 Apr 45	Lt Col John H. Eberly
13 Oct 45	Maj Harvey W. Smith
4 Sep 48	Not available.
12 Feb 09	Lt Col Thomas R. Blazek
19 Apr 09	Lt Col Michael S. Petrocco
17 Oct 09	Lt Col Steven N. Dickerson
5 Mar 10	Lt Col Eugene M. Wall
4 Feb 11	Lt Col Steven Vilpors

23^d WEATHER SQUADRON **Hurlburt Field, FL**

LINEAGE: Constituted the 23d Weather Squadron on 28 October 1943 and activated 1 November 1943, at San Antonio, Texas, and was assigned to the Army Air Force Weather Wing. It moved to Kansas City, Missouri, on 8 November 1943. The 23d was disbanded on 7 September 1944 and replaced by the 72d Army Air Forces Base Unit (23d Weather Region). It was reconstituted and redesignated as the 23rd Weather squadron on 3 June 2009. On 3 July 2009 it was activated at Hurlburt Field, FL, and assigned to 23rd Air Force.¹¹

AWARDS: Air Force Outstanding Unit Award: 3 Jul 2009 – 30 Sep 2009; 1 Oct 2009 – 30 Sep 2011.

FIRST EMBLEM (see square 73):

SECOND EMBLEM (see square 74): Approved on 8 Jul 2009. **SIGNIFICANCE:**

Commanders and Date of Assignment

1 Nov 43	Lt Col Diran Arakelian
3 Jul 09	Lt Col Bryan Adams
5 Jul 11	Maj Christopher M. Hogue ¹²

24th WEATHER SQUADRON **INACTIVE**

¹¹ Fact Sheet, 23rd WS, AF Historical Research Agency, 17 Jul 2009, downloaded 2 Dec 2011 from <http://www.afhra.af.mil/factsheets/factsheet.asp?id=15052>

¹² Art., 23rd WS Welcomes New Commander, AF Print News, 1st SOSW/PA, Hurlburt Field, FL, 12 Jul 2011, downloaded 2 Dec 2011 from http://www2.hurlburt.af.mil/news/story_print.asp?id=123263578

LINEAGE: Constituted the 24th Weather Squadron on 28 October 1943, it activated at Great Falls, Montana, and was assigned to the Army Air Forces Weather Wing on 1 November 1943. It moved to Seattle, Washington, on 27 November 1943 and was disbanded on 7 September 1944 when it was replaced by the 73d Army Air Forces Base Unit (24th Weather Region). It was reconstituted the 24th Weather Squadron on 18 May 1948, activated at Kelly AFB, Texas, and assigned to the 103d Weather (later the 2103d Air Weather) Group on 1 June 1948. It moved to Brooks AFB, Texas, on 20 November 1948. It moved back to Kelly and was assigned to the 2059th Air Weather Wing on 24 October 1950. The squadron moved to Randolph AFB, Texas, on 16 May 1952 and was assigned to the 8th Weather Group [AFCON] on 20 May 1952. It was inactivated on 18 November 1957. The 24th was activated at Randolph on 28 February 1961, organized and assigned to the 7th Weather Wing on 8 October 1965, to the 3d Weather Wing on 30 June 1972, to the 5th Weather Wing on 1 January 1976, and then to the 3d Weather Wing on 1 April 1980. It was inactivated 31 July 1991. The squadron was activated on 15 Jun 1992, assigned to 24th Operations Group, and stationed Howard AFB, Panama. It was inactivated on 1 June 1999.

AWARDS: Air Force Outstanding Unit Award for 1 April 1978-31 Mar 1980; 11 Feb 1992-31 Jul 1993; 1 Jun 1996-31 May 1998.

FIRST EMBLEM (see square 75): Approved on 1 November 1944. **SIGNIFICANCE:** This design is intended to have special significance with reference to this particular weather squadron. The chief points are mountains in the background, barren terrain, and sudden closing-in of the weather. The character of the little Indian is typical of the region in which the 24th is located, and he is used as observer-forecaster. The broad grin and snap of the fingers shows that he considers a forecast a “cinch.” However, it is obvious he is only considering the fair weather cumulus. Just behind him is a terrific system on the point of closing in the station (and mauling him in the bargain). The sun is laughing at the ironic humor of the situation, having seen this happen many times before in this western section. The little cumulus is departing in a hurry. Hence, the features in the design are typical of this weather region in particular--the mountains, the “obvious” but “wrong” forecast based on present weather, and the sudden appearance of bad weather from the blue.

SECOND EMBLEM (see square 76): Approved on 14 September 1965. **SIGNIFICANCE:** The blue background depicts the sky, the primary theater of Air Force operations, with the two shades of blue indicating the unit’s night and day operations. The lightning bolts allude to the speed at which weather conditions change. The six stars, two and four, represent the squadron’s numerical designation, and also denote that weather support is a 24-hour-a-day job. The anemometer symbolizes the integral role which the squadron plays in Air Weather Service. The emblem bears the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment

1 Nov 43	Capt Bernard Pusin	1 Jul 66	Col Arthur Yorra
1 Jun 48	Maj Louis D. Laurin	28 Aug 68	Col LeRoy P. Brunner
24 Oct 50	Lt Col Lawrence A. Atwell	24 Jun 70	Col William C. Anderson
23 Jan 51	Maj Griffin H. Wood (temporary)	4 Jun 73	Col Eugene C. St. Clair
5 Feb 51	Lt Col Rufus G. Bounds	1 Sep 75	Col Loren L. Lorenzen
23 Feb 51	Maj Griffin H. Wood	26 Jun 80	Col Donald E. Smith
7 May 51	Maj Wilfred M. Martin, Sr. (temporary)	29 Jun 83	Col Arthur L. Boright
10 Aug 51	Lt Col August W. Throgmorton	12 Jun 86	Col John P. Upchurch
22 Aug 54	Lt Col Robert B. Hughes	22 Apr 88	Col John W. Oliver
23 Jun 56	Lt Col Nicholas J. Gavares	15 Jun 90	Col Patrick J. Larkin
8 Jul 61	Col John C. Scales	15 Jun 92	Lt Col Fran Bieker
15 Aug 62	Col Carl E. Wagner	Jul 1993	Lt Col Tom MacPhail
1 Aug 65	Lt Col Morris H. Newhouse	Jul 1995	Lt Col Kevin Johnston
20 Aug 65	Col Nicholas J. Gavares	Jul 1997	Lt Col Ray M. Clark

25th OPERATIONAL WEATHER SQUADRON

Davis-Monthan Air Force Base, Arizona

HISTORICAL BACKGROUND: The Army Air Forces constituted the 25th Weather Squadron on October 28, 1943. The squadron activated at Patterson Field, Ohio, and was assigned to the Army Air Forces Weather Wing four days later. The 25th moved to Lynbrook, Long Island, New York, on November 4, 1943, and was disbanded on September 7, 1944.

The U.S. Air Force reconstituted the 25th Weather Squadron on May 18, 1948, and activated it at Robins Air Force Base, Georgia. The squadron was assigned to the 104th Weather Group, later the 2104th Air Weather Group on June 1, 1948. It was reassigned to the 2059th Air Weather Wing on October 24, 1950.

The 25th moved to Donaldson Air Force Base, South Carolina, on September 10, 1951. The squadron was assigned to the 2102nd Air Weather Group on September 16, 1951. The 25th was reassigned to the 2nd Weather Group on April 20, 1952.

In 1953 in addition to operating the Troop Carrier Weather Center at Donaldson Air Force Base, the 25th was designated to test and develop doctrine for the provision of weather service for airborne forces and determine the requirements of and procedures for providing their service in cold weather operations. To validate its cold weather concepts the squadron participated in joint training activities such as Exercise SNOW STORM in upstate New York during the winter of 1953.

The 25th moved to Waco, Texas, and began its association with the Twelfth Air Force on September 18, 1957. In addition to providing meteorological services to Twelfth Air Force bases, the 25th supported U.S. Strike Command exercises, contingencies, and special missions. The squadron was assigned to the 5th Weather Wing when the wing was activated on October 8, 1965.

The 25th Weather Squadron moved to Bergstrom Air Force Base, Texas, on May 23, 1968, concurrent with the move of Headquarters, Twelfth Air Force from Waco to Bergstrom Air Force Base.

Air Weather Service deactivated the 25th Weather Squadron on June 30, 1972 as an Air Force budgetary reduction caused Air Weather Service to reduce squadron overhead. A Staff Weather Officer cell was established in its place to support Twelfth Air Force. This was short-lived as Air Weather Service again activated the squadron at Bergstrom Air Force Base and again assigned it to the 5th Weather Wing on January 1, 1975. In June 1975 Lt Col George E. Chapman, who was later promoted to brigadier general and served as commander of Air Weather Service from 1982 to 1988, took command of the 25th. In addition to numerous annual exercises, the 25th supported contingencies such as Operation JUST CAUSE in 1989.¹³

LINEAGE: Constituted the 25th Weather Squadron on 28 October 1943, it activated at Patterson Field, Ohio, and was assigned to the Army Air Forces Weather Wing four days later. It moved to Lynbrook, Long Island, New York, on 4 November 1943 and was disbanded on 7 September 1944 when it was replaced by the 74th Army Air Forces Base Unit (25th Weather Region). It was reconstituted the 25th Weather Squadron on 18 May 1948, was activated at Robins AFB, Georgia, and assigned to the 104th Weather (later the 2104th Air Weather) Group on 1 June 1948. It was assigned to the 2059th Air Weather Wing on 24 October 1950 and moved to Donaldson AFB, South Carolina, on 10 September 1951. It was assigned to the 2102d Air Weather Group [MAJCON] on 16 September 1951. The 25th was assigned to the 2d Weather Group on 20 April 1952. It moved to Waco, Texas, and was attached to Tactical Air Command's 12th Air Force on 18 September 1957. It was assigned to the 5th Weather Wing on 8 October 1965 and moved to Bergstrom AFB, Texas, on 23 May 1968. It was inactivated on 30 June 1972. It was activated at Bergstrom, and assigned to the 5th Weather Wing on 1 January 1975. It was inactivated on 30 September 1991. The squadron was redesignated as the 25th Operational weather Squadron on 5 February 1999. It was activated at Davis-Monthan Air Force Base and assigned to the 612th Air Operations Group on 1 April 1999. It was assigned in place to the 1st Weather Group 11 May 2006.

AWARDS: Air Force Outstanding Unit Award for 1 Jul 1971-30 Jun 1972; 1 Apr 1978-31 Mar 1980; 1 Jul 1983-30 Jun 1985; 1 Jul 1988 – 30 Jun 1990; 1 Jun 1999 – 31 May 2001; 1 Jun 2003 – 31 May 2005; 1 Apr 2007 – 31 Dec 2008.

FIRST EMBLEM (see square 78): Approved on 26 February 1944. **SIGNIFICANCE:** The weather warrior symbolizes, simultaneously, the friendly aspect of weather when properly understood and used, as well as its destructive potentialities when it is not understood or heeded.

SECOND EMBLEM (see square 77): Approval date unknown. **SIGNIFICANCE:** Ultramarine blue and Air Force yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. Green symbolizes the Earth, the primary theater of Army operations. The thunderstorm cloud represents nature. The bobcat, native to the Squadron's desert southwest home, is transfixed with three lightning bolts which symbolize the unit's strategic, operational and tactical knowledge of war.

¹³ Art., 25th Operational Weather Squadron, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/26th_Operational_Weather_Squadron, 17 Nov 2011

Commanders and Date of Assignment

1 Nov 43	1Lt Walter R. McNaughton	9 Aug 63	Col Griffin H. Wood
20 Dec 43	1Lt James F. Yoder	2 Jan 68	Col Eugene C. St. Clair
5 Apr 44	Maj Richard M. Gill	10 Jan 70	Col Bernard Pusin
12 Apr 44	Capt Robert W. Booth	1 Jan 75	Lt Col Gerald D. McCright
20 May 44	Maj Richard M. Gill	16 Jun 75	Lt Col George E. Chapman
28 Jun 44	Capt Robert W. Booth	27 Jul 77	Lt Col Donald P. Bjornson
1 Jun 48	Maj DeVon F. Maurer	29 May 79	Lt Col James O. Ivory
Apr 49	Capt Jesse I. Ledbetter	13 Jun 80	Lt Col James K. Lavin
Jun 49	Maj John S. Hudson, Jr.	12 Jul 82	Lt Col John T. Madura
20 Sep 50	Lt Col DeVon F. Maurer	25 Jun 85	Lt Col Earl C. Bogard, Jr.
18 Sep 51	Lt Col William J. Norton	13 Aug 87	Lt Col Thomas D. Accola
16 May 55	Lt Col DeAlbert S. Hoke, Jr.	20 Jul 89	Lt Col Dominic A. Ruggeri
1 Jun 55	Lt Col Raymond B. Girardo	Oct 99	Lt Col Robert L. Hamilton
18 Sep 57	Lt Col Charles a. Beckham	01	Lt Col Robert Mahood
18 Dec 57	Lt Col Dale R. Chambers	Jul 03	Lt Col Vicki Michetti
1 Feb 58	Lt Col Raymond B. Girardo	o/a Sep05	Lt Col Robert Fleishauer
8 Jul 60	Lt Col Francis H. Smith (temporary)	Jul 07	Lt Col Donald Shannon
28 Jul 60	Lt Col George A. Williamson	Jul 09	Lt Col Lee A. Byerle
10 Jun 63	Lt Col Francis H. Smith (temporary)	Jul 11	Lt Col Michael S. Gremillion

26th OPERATIONAL WEATHER SQUADRON Barksdale AFB, Louisiana

HISTORICAL BACKGROUND: In response to a request from the commanding general of the Army Air Forces School of Applied Tactics for an assigned weather squadron, the Army Air Forces headquarters constituted today's 26th Operational Weather Squadron on September 30, 1943, as the 26th Weather Squadron. The squadron activated on October 10, 1943, under the command of Lt Col Chester W. Cecil, Jr., at Orlando Army Air Base, Florida. In addition to his squadron duties, Colonel Cecil served as the 26th Weather Regional Control Officer and staff weather officer for the Army Air Forces School of Applied Tactics.

Later redesignated the Army Air Forces Tactical Air Center, the School of Applied Tactics was activated on October 16, 1942, to train selected officers under simulated combat conditions. More than 840 weather officers attended the Weather Staff Officer course conducted at the School of Applied Tactics during World War II.

The Army Air Forces disbanded the 26th Weather Squadron on June 3, 1944, and Squadron personnel were transferred in-place to Squadron B, 902nd Army Air Forces Base Unit.

The newly independent United States Air Force reconstituted the 26th Weather Squadron on May 18, 1948. On June 1, it activated the 26th at Brookley Air Force Base, near Mobile, Alabama. The Air Force assigned the 26th to the 104th Weather Group, which was later redesignated the 2104th Air Weather Group.

The 26th Weather Squadron was soon indirectly supporting Operation VITTLES as Brookley transports, including the limited production C-74 Globemaster I, began participating in the Berlin Airlift.

The 26th Weather Squadron was reassigned to the 2059th Air Weather Wing on October 24, 1950, as part of Air Weather Service's restructuring to eliminate the Weather Groups.

The 26th Weather Squadron moved its headquarters to Barksdale Air Force Base, Louisiana, on September 10, 1951, in order to align itself with the headquarters of Strategic Air Command's Second Air Force at Barksdale for which the 26th had been given functional responsibility under Air Weather Service's new organizational scheme.

In continuing Air Weather Service reorganizations, the 26th was reassigned to the 2101st Air Weather Group on September 16, 1951, and to the 1st Weather Group on April 20, 1952. The squadron began its long association with the 3rd Weather Wing on October 8, 1956, to which it was assigned until it was inactivated on June 30, 1972.

The 26th was again activated and assigned to the 3rd Weather Wing on January 1, 1975. The 26th continued at Barksdale until the divestiture of Air Weather Service. The squadron was deactivated on July 31, 1991.

As part of Air Force Weather's re-engineering, the squadron was redesignated the 26th Operational Weather Squadron on February 5, 1999, and again activated at Barksdale on October 1, 1999, where it was assigned to Eighth Air Force's 608th Air Operations Group.

The 26th Operational Weather Squadron, Barksdale AFB, Louisiana, realigned under the 1st Weather Group on 22 June 2006, attempting to reorganize Air Force Weather.¹⁴

LINEAGE: Constituted the 26th Weather Squadron on 30 September 1943, it activated at Orlando AAB, Florida, and was assigned to the Army Air Forces School of Applied Tactics (later Army Air Forces Tactical Air Center) on 10 October 1943. The 26th was disbanded on 3 June 1944. It was reconstituted on 18 May 1948 and activated at Brookley AFB, Alabama, and assigned to the 104th Air Weather (later the 2104th Air Weather) Group on 1 June 1948. The 26th was assigned to the 2059th Air Weather Wing on 24 October 1950 and moved to Barksdale AFB, Louisiana, on 10 September 1951. The squadron was assigned to the 2101st Air Weather Group [MAJCON] on 16 September 1951. It was assigned in place to the 1st Weather Group on 20 April 1952, and to the 3d Weather Wing on 8 October 1956. It was inactivated at Barksdale on 30 June 1972. The 26th was activated at Barksdale and assigned to the 3d Weather Wing on 1 January 1975. It was inactivated 31 July 1991. The squadron was redesignated as the 26th Operational Weather Squadron on 5 February 1999. It was activated at Barksdale on 1 October 1999 and assigned to the 608th Air Operations Group. It was assigned to the 1st Weather Group on 11 May 2006 and remained at Barksdale.

AWARDS: Air Force Outstanding Unit Award for 1 Oct 1960-31 Jan 1963; 1 Jul 1976-30 Jun 1978; with Valor Device, 1 Jun 2001-31 May 2003; 1 Jun 2004-31 May 2006; 1 Apr 2007-31 Dec 2008.¹⁵

FIRST EMBLEM (see square 80): Approved on 20 April 1944. **SIGNIFICANCE:** None attributed.

SECOND EMBLEM (see square 79 & 81): Approved on 3 November 1965. **SIGNIFICANCE:** Against the background of sky, the primary theater of Air Force operations, the blue saltire bearing the arrow crossed by the lightning bolt commemorates the squadron's history and organization in September 1943. The fleur-de-lis and anemometer, emblematic of Air Weather Service, with the star compass signifies the unit's participation in the Air Weather Service global mission. The star compass also denotes the squadron's Air Force Outstanding Unit Award. The placement of the stars two and six allude to the squadron's numerical designation. The emblem bears the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment

10 Oct 43	Col Chester W. Cecil, Jr.	19 Jul 78	Lt Col David L. Donley
1 Jun 48	Maj Eckwood H. Reagan	Jul 80	Lt Col Jerald L. Picantine ¹⁶
24 Jun 48	Maj Joseph B. Smith	28 Mar 82	Lt Col Ronald D. Haynes
Jan 51	Lt Col Norman E. King	17 Nov 83	Lt Col Patrick J. Larkin
10 Sep 51	Lt Col Stephen W. Pournaras	1 Jul 85	Lt Col George E. Duffield
Mar 54	Lt Col Jack H. Pelander	4 Aug 87	Lt Col Fred P. Lewis
23 Mar 57	Lt Col Lawrence D. Connolly	25 Jul 89	Lt Col Julius A. Jackson, Jr.
17 Aug 57	Lt Col Robert L. Sorey	25 Jan 91	Lt Col Thomas C. Adang
1 Aug 62	Col Paul E. McAnally	Oct 99	Col Joel D. Martin
26 Jun 65	Col Lawrence D. Connolly	Aug 00	Lt Col Harold A. Elkins
18 Jun 68	Col Leonard E. Zapinski	Jul 02	Lt Col Patrick M. Condray
5 Dec 69	Lt Col Donald W. Moon	Jul 04	Lt Col Rob P. Fleishauer
6 Jan 70	Col John C. Ball	Aug 05	Maj Jonathan L. Kelly
1 Jun 71	Lt Col Kenneth F. Gordon	Apr 06	Lt Col Ronald L. Comoglio
20 Jul 71	Col Gordon W. Schmal	16 Jul 08	Lt Col Timothy E. Dreifke
1 Jan 75	Lt Col Frank D. Reeder	Jul 10	Lt Col Herbert L. Keyser
25 Jun 75	Lt Col Tommy D. Guest		

¹⁴ Art., *26 Operational Weather Squadron*, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/26th_Operational_Weather_Squadron, 17 Nov 2011

¹⁵ E-mail, Robertson, Patsy, AFHRA/RS to Donald May, AFWA/HO, *Inquiry*, 20 Jan 2012.

¹⁶ E-mail, AirWeaAssn@aol.com to acqwxman1@aol.com, *AFW publication edits*, 16 Jul 2012.

27th WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the 27th Weather Squadron, it was assigned to the Army Air Forces Weather Wing on 30 May 1945. It was activated at Seymour-Johnson Field, North Carolina, on 4 June 1945 and inactivated there on 9 November 1945.

AWARDS: None.

Commanders and Date of Assignment

4 Jun 45 Lt Col Richard M. Gill

28th OPERATIONAL WEATHER SQUADRON Shaw Air Force Base, South Carolina

HISTORICAL BACKGROUND: On January 26, 1945, the commanding general of the US Army Air Forces in the Pacific requested two mobile weather squadrons be activated for projected land operations in the theater's forward area. The Weather Wing constituted the 27th and 28th Weather Squadrons on May 30, 1945. The squadrons activated at Seymour Johnson Field, North Carolina, on June 5, 1945, and underwent intensive training.

The squadrons were ordered to port for movement to the Pacific in August 1945, but the order was soon thereafter rescinded when Japan capitulated. Both squadrons were inactivated on November 9, 1945.

The 28th Weather Squadron was reactivated on March 1, 1949, at Bushy Park, England to provide weather services for US Air Force and US Army units within the British Isles. The squadron was assigned to the 2105th Air Weather Group, redesignated the 2058th Air Weather Wing in October 1951.

The 28th's predominant customer was the 3d Air Division which was activated in 1948 under the command of then-Maj Gen Leon W. Johnson. Maj Gen Leon W. Johnson, a World War II Medal of Honor recipient, was a member of the initial cadre of officers assigned to the US Air Corps weather service when it was formed in 1937.

The headquarters of the 28th Weather Squadron was relocated to South Ruislip, England, near 3d Air Division headquarters, on June 7, 1949; but returned to Bushy Park in March 1951. The headquarters moved to RAF Northolt, England, on October 24, 1962.

The 28th was reassigned to the 2d Weather Wing on February 8, 1954, in concert with an Air Weather Service overseas wing reorganization. The 28th Weather Squadron's emblem was in use by 1952. The Air Force officially approved its use on April 10, 1959.

The 28th Weather Squadron was one of seven weather squadrons eliminated as part of an Air Force directed Military Airlift Command programming action to reduce Air Weather Service command elements. It was deactivated on July 1, 1971, and its detachments were assigned to the 31st Weather Squadron.

Air Weather Service commander Brig Gen Albert J. Kaehn, Jr. approved a reorganization plan in 1979 that included reactivation of the 28th Weather Squadron, which he officiated on July 1, 1980, at RAF Mildenhall, England. Detachments of the 28th at Lakenheath, Bentwaters, Woodbridge, Mildenhall, Upper Heyford, Fairford, and Alconbury Royal Air Force stations were activated simultaneously.

With the Air Force-directed disestablishment of Air Weather Service "to give mission commanders ownership of their weather support resources", the 28th Weather Squadron and its detachments were again deactivated on September 30, 1991.

Under the Air Force Weather re-engineering effort, the 28th Weather Squadron was redesignated the 28th Operational Weather Squadron on February 5, 1999. The 28th was activated at Shaw Air Force Base, South Carolina, on February 17, 1999, and assigned to the Air Combat Command's 609th Air Operations Group, severing its deep roots planted in England during the Cold War.

On July 20, 2006, the 28th Operational Weather Squadron was split into two entities: the 28th Operational Weather Squadron, which maintained USCENTCOM functions; and the 9th Operational Weather Squadron, which continued CONUS-based operations. The 9th Operational Weather Squadron dissolved in 2007 and CONUS functions were relocated to the 26th Operational Weather Squadron, Barksdale AFB, Louisiana. As of 2010 the 28th Operational Weather Squadron is the only OWS assigned to Shaw AFB, South Carolina and is the only OWS in the United States Air Force that focuses specifically on USCENTCOM military meteorology and product development.

LINEAGE: Constituted the 28th Weather Squadron on 30 May 1945, it was activated at Seymour-Johnson Field, North Carolina, and assigned to the Army Air Force Weather Wing on 4 June 1945. It was inactivated on 9 November 1945. The 28th was activated at Bushy Park, England, assigned to the 2105th Air Weather Group (later the 2058th Air Weather Wing) on 1 March 1949. It moved to South Ruislip, England, on 7 June 1949, and back to Bushy Park on 22 March 1951. The squadron was assigned to the

2d Weather Wing on 8 February 1954, moved to RAF Northolt, England, on 24 October 1962, and inactivated there on 1 July 1971. The 28th Weather Squadron was activated at RAF Mildenhall, United Kingdom, and assigned to the 2d Weather Wing on 1 July 1980. It was inactivated on 30 September 1991. The squadron was redesignated as the 28th Operational Weather Squadron on 5 February 1999. It was activated at Shaw Air Force Base, South Carolina and assigned to the 609th Air Operations Group on 17 February 1999.

AWARDS: Air Force Outstanding Unit Award for 1 Jan 68-31 Dec 69; 1 Jul 1982-30 Jun 1984; 1 Jul 1990 – 30 Sep 1991; 1 Jun 1998 – 31 May 2000; 1 Jun 2000 – 31 May 2002; 1 Jun 2003 – 31 May 2004; 1 Jun 2004 – 31 May 2006; 1 Jun 2006 – 31 May 2007.

EMBLEM (see squares 82, 83, & 111): Approved on 10 April 1959. [Note: the 1945 emblem in square 111 was not approved.] **SIGNIFICANCE:** The blue and black background colors indicate day and night, and are symbolic of the around-the-clock mission of the unit. The three lightning flashes are symbolic of the three main Air Force Commands which the 28th Weather Squadron supports, i.e., Strategic Air Command, Tactical Air Command, and Military Air Transport Service. The cumulonimbus cloud is a weather symbol. It is commonly known as an “anvil top” cloud and this is again repeated in the iron anvil. The arm and the hammer indicate the drive of the unit. Taken together, the arm and hammer, the iron anvil, the cloud, and the lightning symbolize the forcefulness of the 28th Weather Squadron.

Commanders and Date of Assignment

5 Jun 45	Maj Leo A. Kiley, Jr.	1 Jul 80	Lt Col Arthur L. Boright
1 Mar 49	Maj John J. Scott	18 Jul 81	Lt Col Glenn W. McBride
12 Apr 51	Lt Col Charles R. Dole	29 Jul 84	Lt Col Robert P. Wright
Jan 53	Lt Col Everett J. Cartwright	20 Jun 86	Lt Col Donald W. Pittman
Jul 53	Lt Col John W. Kodis	14 Aug 87	Lt Col William C. Smith
17 Jun 54	Lt Col Guy N. Gosewisch	21 Aug 90	Lt Col Gerard D. Wittman
20 Jun 57	Lt Col Arnold R. Hull	25 Jul 91	Lt Col Paul H. Harris
3 Aug 58	Col Wray B. Bartling	17 Feb 99	Lt Col Billy Davis
20 Aug 60	Lt Col Milton M. Hause	Jul 01	Lt Col Thomas B. Frooninckx
15 Jul 63	Col George A. Williamson	Jul 03	Lt Col John Coulter
22 Jul 66	Col Jacob P. Accola	Jul 05	Lt Col Steven P. DeSordi
10 Jun 67	Col Robert D. Johnston	Jun 07	Lt Col Frederick Williams
Sep 70	Col Newton R. Galligar	10 Jul 09	Lt Col William Pryor
1971	(Inactive)	14 Jul 11	Lt Col Jeffrey C. Jarry

29th WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the 29th Weather Squadron on 29 August 1945, it was activated at Pinetree AAB, Okinawa, and assigned to the 2d Weather Group on 20 September 1945. It was organized under the U.S. Army Forces, Pacific, on 1 October 1945 which in turn assigned it to Headquarters, Far East Air Forces. The squadron was assigned TO headquarters Army Air Forces Weather Service on 15 October 1945 and was assigned in place to the 1st Weather Group on 1 November 1945. It moved to Kadena AB on 4 December 1945, and inactivated there on 1 August 1946. The 29th was activated at Wheelus Field, Tripoli, Libya, and assigned to the 2105th Air Weather Group (later the 2058th Air Weather Wing) on 1 April 1949. It was assigned on 8 February 1954 to the 2d Weather Wing and was inactivated on 18 May 1958. The 29th Weather Squadron was activated at Malmstrom AFB, Montana, assigned to the 4th Weather Wing on 8 October 1959 to support the 29th NORAD Division (SAGE). The squadron accompanied the move of the 29th NORAD Region and the 29th Air Division (SAGE) to Richards-Gebaur AFB, Missouri, on 1 July 1961 and was inactivated on 31 December 1969.

AWARDS: Service Streamer, Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946. Air Force Outstanding Unit Award for 1 May 1966-30 Apr 1968.

EMBLEM (see square 84): Approved on 9 October 1961. **SIGNIFICANCE:** Against a background of two shades of blue, representing day and night weather support and a radar scope which aids in collecting meteorological phenomena and assists in diverting flights from hazardous weather areas, an anemometer symbolizes weather observing equipment used in continuous recording of weather phenomena. The aircraft and missile indicate Air Defense Command and its defense of the United States. The cumulonimbus cloud and lightning indicate weather phenomena which affect the safety of flight and must be forecast accurately.

The stars reflect the unit's numerical designation. The emblem bears the Air Force colors of ultramarine blue and golden yellow.
MOTTO: DEFENSORES IUVANUS which translates to WE SUPPORT THE DEFENDERS.

Commanders and Date of Assignment

15 Oct 45	Lt Col Richard Arnold, Jr.	8 Oct 59	Lt Col Joseph J. Slack
1 Nov 45	Maj Harold S. Anthon	8 Jul 61	Lt Col Paul X. Geary
14 Dec 45	Capt Robert H. Lester	24 Jul 61	Lt Col Valdo J. J. Moncada
16 Feb 46	Maj Norman E. Huseby	20 Aug 61	Lt Col Andrew Patten
1 Apr 49	Capt Harold A. Jacobs	15 Jun 65	Lt Col Marion G. Cowan
1 Dec 49	Maj Carroll K. Tolle	26 Jun 65	Col William J. Norton
31 May 51	Lt Col Russell K. Pierce	31 May 67	Lt Col Stephen M. Godfrey
21 Jul 53	Lt Col Rufus G. Bounds	1 May 69	Lt Col James M. Dunn
9 Oct 55	Lt Col Ernest J. Fawbush		

30th WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the 30th Weather Squadron on 29 August 1945, it was activated at Harmon Field, Guam, and assigned to the 2d Weather Group through the 43d Weather Wing, on 20 September 1945. It was assigned in place to the 1st Weather Group on 1 August 1946, and to the 1st Weather (later 2100th Air Weather) Group [MAJCON] on 1 June 1948. The squadron moved to North Guam AFB, Guam, on 25 October 1949 and was assigned to the 2143d Air Weather Wing [MAJCON]. It was inactivated on 9 November 1949. The squadron was activated at Seoul, Korea, and assigned to the 2143d Air Weather Wing on 16 November 1950. The 30th moved on 22 December 1950 to Taegu, Korea, and back to Seoul on 3 July 1951. The 30th moved to Osan AB, Korea, on 25 January 1954 and was assigned to the 1st Weather Wing on 8 February 1954. The 30th was assigned to the 10th Weather Group through the 1st Weather Wing on 18 February 1957. The 30th Weather Squadron moved to Moriyama AS, Nagoya, Japan on 9 May 1957 and moved to Komaki AB, Honshu, Japan, on 27 July 1957. It moved to Yamato AS, Japan, on 10 March 1958 and was inactivated on 8 August 1959. It was activated at Tan Son Nhut AB, Vietnam, on 5 October 1962 and organized under the 1st Weather Wing on 8 November 1962. The 30th was assigned in place to the 1st Weather Group on 8 July 1966 and was inactivated on 1 July 1971. It was activated at Yongsan AIN, Korea, and assigned to the 1st Weather Wing on 1 September 1976. It was assigned in place to the 5TH Air Control group, 15 Apr 1992. It was inactivated on 1 June 1992. The 30th was activated, assigned to 30th Operations Group, and stationed at Vandenberg AFB, CA, 1 Jul 1992. The squadron was inactivated on 1 June 2011.

AWARDS: Service Streamer for Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946. Eight Campaign Streamers for the Korean War: Chinese Communist Forces Intervention, 3 Nov 1950-24 Jan 1951; First UN Counteroffensive, 25 Jan-21 Apr 1951; Chinese Communist Forces Spring Offensive, 22 Apr-8 Jul 1951; UN Summer-Fall Offensive, 9 Jul-27 Nov 1951; Second Korean Winter, 28 Nov 1951-30 Apr 1952; Korea Summer-Fall, 1 May-30 Nov 1952; Third Korean Winter, 1 Dec 1952-30 Apr 1953; Korea Summer-Fall, 1 May-27 Jul 1953. Fourteen Campaign Streamers for Southeast Asia: Vietnam Advisory, 15 Nov 1961-1 Mar 1965 (the 30th's involvement began 8 Nov 1962); Vietnam Defense, 2 Mar 1965-30 Jan 1966; Vietnam Air, 31 Jan 1966-28 Jun 1966; Vietnam Air Offensive, 29 Jun 1966-8 Mar 1967; Vietnam Air Offensive, Phase II, 9 Mar 1967-31 Mar 1968; Vietnam Air Offensive, Phase III, 1 Apr 1968-31 Oct 1968; Vietnam Air/Ground, 22 Jan 1968-7 Jul 1968; Vietnam Air Offensive, Phase IV, 1 Nov 1968-22 Feb 1969; TET 69/Counteroffensive, 23 Feb 1969-8 Jun 1969; Vietnam Summer-Fall 69, 9 Jun 1969-31 Oct 1969; Vietnam Winter-Spring 70, 1 Nov 1969-30 Apr 1970; Sanctuary Counteroffensive, 1 May 1970-30 Jun 1970; Southwest Monsoon, 1 Jul 1970-30 Nov 1970; Commando Hunt V, 1 Dec 1970-14 May 1971. Decorations: Air Force Outstanding Unit Awards with Combat "V" Device: 1 May 1963-30 Apr 1964; 1 May 1964-7 Jul 1966; 8 Jul 1966-1 Jul 1967; 1 Jan 1971-30 Jun 1971. Air Force Outstanding Unit Awards: 16 Nov 1950-31 May 1951; [1] Mar 1956-[31] Oct 1956; 2 Jul 1967-30 Jun 1969; 1 Jul 1970-1 Jul 1971; 1 Sep 1976-30 Jun 1978; 1 Jul 1981-30 Jun 1983; 1 Jul 1986-30 Jun 1988; 1 Nov 1991-30 Sep 1993; 1 Oct 1994-30 Sep 1996; 1 Oct 1996-30 Sep 1997; 1 Jan-31 Dec 1997; 1 Jan 1998-30 Sep 1999; 1 Jan-31 Dec 2000; 1 Oct 2000-30 Sep 2001; 1 Oct 2001-30 Sep 2002; 1 Oct 2009 – 30 Sep 2010. Three Republic of Korea Presidential Unit Citations: 16 Nov 1950-30 Jun 1951; 16 Mar 1951-30 Sep 1952; 1 Oct 1952-27 Jul 1953. Republic of Vietnam Gallantry Cross with Palm for 1 Apr 1966-1 Jul 1971.

FIRST EMBLEM (see square 85): Approved on 20 November 1963. **SIGNIFICANCE:** The anemometer represents the Air Weather Service. The colors blue and green represent the Air Force and Army, both of which are supported by this organization.

SECOND EMBLEM (see square 86): No information available.

Commanders and Date of Assignment

7 Oct 45	Maj Edward A. Adelberg	5 Sep 66	Lt Col George B. Skinner
24 Nov 45	Capt Clarence E. Erickson	14 Aug 67	Lt Col Gordon W. Schmal
28 Jan 46	Maj J. Vern Hales	8 Aug 68	Lt Col Roy A. Wegener
17 Jul 46	Maj Ross A. Somers	29 Jul 69	Lt Col Edward R. Dvorak
22 Nov 48	Maj Archie M. McFarland	2 Apr 70	Lt Col Norman J. Clark
16 Nov 50	Maj Kenneth Linder	1 Jul 70	Lt Col Alfred C. Molla, Jr.
19 Jun 51	Lt Col George E. Rath	1 Aug 70	Lt Col Joseph D. Saccone
16 Feb 52	Lt Col Carl E. Wagner	1 Sep 76	Col Robert E. Julian
20 Feb 53	Lt Col Eugene H. Karstens	17 Jul 78	Col Vernon M. Malahy, Jr.
19 Jan 54	Lt Col Max M. Stratton	2 Jun 80	Col Allan C. Ramsay
1 Jan 55	Lt Col Olav Njus	8 Jul 81	Col John W. Diercks
1 Jun 55	Lt Col Bernard Pusin	18 Jul 83	Col John H. Wylie, Jr.
Jun 55	Lt Col Glen A. Hoglund	28 Jun 85	Col John A. Odland
28 May 56	Lt Col Charles G. Vaughn	Jun 87	Col Randolph W. Ashby
16 Aug 56	Lt Col Alfred R. Crisi	21 Jul 89	Col Peter J. Havanac
5 Jul 57	Lt Col Dillard N. Thompson	26 Jul 91	Lt. Col John M. Haas
31 Jul 58	Lt Col James V. Carroll	Jul 94	Lt Col Robert Miller
8 Nov 62	Lt Col Chandler R. Brown	Jul 96	Lt Col Robert W. Keefer
31 Dec 63	Lt Col Lewis L. Howes	Jul 97	Lt Col Charles M. Davenport
28 Mar 64	Lt Col Hal R. Montague	01	Lt Col Elizabeth B. Borelli
16 Apr 64	Lt Col Thomas W. Lane	Jun 03	Lt Col Chan Keith
21 Mar 65	Col Alexander Kouts	Jun 05	Lt Col Jeffery M. Cox
21 Mar 66	Col Lewis J. Neyland	Jun 08	Lt Col Shannon Krug
6 Jul 66	Lt Col Edward T. Badger	Jun 10	Lt Col Diana Hajek
12 Aug 66	Maj Allan B. Milloy		

31st WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the 31st Weather Squadron on 29 August 1945, it was activated at Hickam AFB, Hawaii, and assigned to the 2d Weather Group through the 43d Weather Wing on 1 October 1945. The 2d Weather Group personnel were transferred to the 31st when the 2d became a paper organization. The 31st was assigned to the 43d Weather Wing [AFCON] on 31 December 1945. It was inactivated at Hickam AFB and activated at Landsberg, Germany, and assigned to the 2058th Air Weather Wing all on 20 May 1952. The 31st moved to Ramstein AB in July 1953, and was assigned to the 2d Weather Wing on 8 February 1954. It moved to Lindsey AS, Germany, on 15 August 1973, to Rhein-Main AB on 1 October 1975, and to Sembach AB on 1 August 1982. It was inactivated on 30 Sep 1991.

AWARDS: Service Streamer, Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946. Air Force Outstanding Unit Award for 1 July 1968-30 Dec 1969; 1 Jul 1972-30 Jun 1974; 1 Jul 1975-30 Jun 1977; 1 Jul 1982-30 Jun 1984; 1 Jul 1990 – 30 Sep 1991.

EMBLEM (see square 87): Approved on 16 March 1959. **SIGNIFICANCE:** The stylized fighting cock symbolizes the mission of the 31st Weather Squadron not only as providing weather support on every day basis (the familiar weather vane rooster), but also the maintaining of wartime capability (the warrior attire). The shield he carries indicates his allegiance to the Air Weather Service and support and attachment to the U.S. Air Forces, Europe. The weather vane is superimposed on a background of cumulonimbus or thunderhead cloud to indicate his activity during periods of bad weather. The Air Force colors of ultramarine blue and golden yellow, as well as the national colors of red, white, and blue are used.

Commanders and Date of Assignment

1 Oct 45	Capt John F. Murphy	Jul 65	Col Douglas C. Purdy
27 Oct 45	Maj Bernard Pusin	1 Jul 67	Col Lloyd C. Hughes
1 Jan 46	Maj W.B. Sherman	1 Jun 70	Col Joseph M. Tyndall
2 Jan 46	Capt Arthur Yorra	7 Jul 71	Col Robert S. Wood
27 Jun 46	Capt Robert E. Heft	15 Aug 73	Col Leon R. Tucker
1 Mar 47	Capt William S. Nesley	4 Aug 75	Col Glenn B. Rumley, Jr.
15 Oct 47	Lt Col Norman E. King	1 Jul 78	Lt Col Richard A. Brown
1 Jun 50	Lt Col Wray B. Bartling	1 Dec 80	Lt Col Thomas O. Proffitt
18 Oct 51	Lt Col Lawrence Cometh	20 Jul 81	Lt Col George L. Frederick, Jr.
20 Mar 52	Lt Col Jacob Follmer	2 Aug 83	Lt Col Louis R. Billones
17 Feb 55	Lt Col Clarence E. Roache, Jr.	24 Jun 85	Lt Col Harry H. Hughes
May 58	Lt Col Carl E. Wagner	30 Aug 86	Lt Col Robert J. Dumont
Dec 60	Lt Col Paul E. McAnally	1 Jul 88	Lt Col Douglas M. Brooks
19 Jun 62	Lt Col Paul X. Geary	10 Aug 90	Lt Col Steve O. Ouzts
20 Jul 62	Col Everett J. Cartwright		

32nd WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the 32d Weather Squadron, it was allotted to the Air Force Reserve on 26 September 1949. It was activated in the Reserve at Wright-Patterson AFB, Ohio, and assigned to Air Weather Service on 3 October 1949. It was inactivated on 23 June 1951. The 32d was activated at Dobbins AFB, Georgia, and assigned to the 4th Weather Wing in support of the 32d Air Division (SAGE) on 8 August 1959. It moved from Dobbins to Oklahoma City AFS, Oklahoma, accompanying the move of the 32d Air Division (SAGE) on 8 August 1961. The 32d moved to Gunter AFS, Alabama, to support the 32d NORAD Region on 20 September 1964. It was discontinued and inactivated on 25 July 1968.

AWARDS: Air Force Outstanding Unit Award for 20 Oct 1962-30 Nov 1962; 1 May 1966-30 Apr 1968.

EMBLEM (see square 88): Approved on 6 June 1962. **SIGNIFICANCE:** Against a background divided into three parts, blue representing daytime operations, black representing night operations, and golden yellow symbolizing the golden opportunities in future operations, an anemometer indicates the Air Weather Service. The cumulonimbus cloud emitting a lightning flash represents the unit's foul weather alertness, the manned fighter aircraft, and the unmanned missile indicate the type of mission supported, and the Mastiff taken from the emblem of the 32d Air Division represents its support to the division. The emblem bears the Air Force colors of ultramarine blue and golden yellow and the national colors of red, white, and blue.

Commanders and Date of Assignment

8 Aug 59	Lt Col Leonard H. Hutchinson
9 Jun 61	Maj Lewis R. Hart, Jr.
8 Jul 61	Lt Col Leonard V. Gillespie
1 Jul 63	Lt Col Thomas Beauchamp
20 Sep 64	Lt Col Joseph C. Nawrocki
7 Dec 64	Lt Col Douglas M. Sheehan
17 Jun 67	Lt Col Paul H. Fisher

33rd WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the 33d Weather Squadron, it was allotted to the Air Force Reserve on 26 September 1949. It was activated in the Reserve at McClellan AFB, California, and assigned to Air Weather Service on 3 October 1949. It was activated at McClellan on 23 June 1951. The 33d Weather Squadron was activated at Truax Field, Wisconsin, and assigned to the 4th Weather Wing in support of the 30th Air Division (SAGE) on 8 August 1959. The 33d was discontinued and inactivated on 20 September 1964.

AWARDS: None.

EMBLEM (see square 89): Approved on 8 February 1963. **SIGNIFICANCE:** The emblem is symbolic of the squadron and its mission of weather support to the 30th NORAD region. The background of ultramarine blue, representing aerospace, together with the golden yellow of the sun and its rays, reflects the Air Force colors. The cloud mass and the brilliant sun represent the opposite extremes of weather through both of which air defense power must be effective. The circular shape of the emblem and the converging rays of the sun are symbolic of the necessity of a defense posture, supported with weather information, covering a 360 degree radius. The interceptors, on a mission, symbolize the ultimate use of weather support and give meaning to the squadron's motto. **MOTTO:** CONTINUA TEMPESTATIS VIGILIA which translates to CONTINUOUS METEOROLOGICAL WATCH.

Commanders and Date of Assignment

8 Aug 59	Lt Col Loy E. Watkins
1 Dec 61	Maj Reuben R. Belongia
15 Mar 62	Lt Col Wayne Leach
11 Aug 62	Lt Col Frederick E. Weigand

34th WEATHER FLIGHT INACTIVE

LINEAGE: Constituted the 34th Weather Squadron, it was allotted to the Air Force Reserve on 26 September 1949. Activated in the Reserve at Scott AFB, Illinois, and assigned to the Air Weather Service on 3 October 1949. It was inactivated on 23 June 1951. It was redesignated 34th Air Weather Flight on 17 December 1979 and activated in the Reserve at Keesler AFB, Mississippi, on 1 January 1980. [No information available on deactivation date.]

AWARDS: None.

Commanders and Date of Assignment

Not available in the AFWA archives.

35th WEATHER SQUADRON INACTIVE

LINEAGE: Constituted the 35th Weather Squadron on 9 November 1945, it was activated at John H. Payne Field, Cairo, Egypt, and assigned to the 6th Weather Group (also located at Cairo) on 23 November 1945. The 35th moved to Cazes Army Air Base, Casablanca, French Morocco, on 16 March 1946 and to Wiesbaden, Germany, on 11 June 1946, where it was inactivated on 12 July 1946. The 35th was allotted to the AFB, Colorado, on 3 October 1949 and inactivated on 23 June 1951. The 35th Weather Squadron was organized at McChord AFB, Washington, and assigned to the 4th Weather Wing in support of the 25th NORAD Region and the Air Defense Command's 25th Air Division (SAGE) on 8 April 1960. It moved to Hamilton AFB, California, to support the Fourth Air Force on 2 October 1965. The 35th was inactivated on 15 September 1969.

AWARDS: Air Force Outstanding Unit Award for 1 May 1966-30 April 1968.

EMBLEM (see square 90): Approved for use on 4 December 1962. **SIGNIFICANCE:** The anemometer cups represent weather support to the four interceptors. The interceptors indicate the Air Defense Command with active missions in all directions around the clock (24-hour operations). The black and blue fields represent night and day. The emblem bears the Air Force colors,

ultramarine blue and golden yellow, to indicate the squadron is a member of the USAF. The motto reflects the primary mission which is direct support of the 25th NORAD Region and the 25th Air Division (SAGE). **MOTTO:** SUPPORT FOR DEFENSE.

Commanders and Date of Assignment

1945-46	unknown
1949-50	unknown
1 Feb 51	Lt Col Robert A. Hatch
1 Mar 51	Maj Harold C. Banks
8 Apr 60	Lt Col Leon H. Robinson
Jul 60	Col Jack H. Pelander
Oct 65	Col Leroy C. Iverson
1 Sep 68	Lt Col Milton F. Plattner
1 Jan 69	Lt Col Arthur L. Warren

**36th WEATHER SQUADRON
INACTIVE**

LINEAGE: Constituted the 36th Weather Squadron, it was allotted to the Air Force Reserve on 26 September 1949. It was activated in the Reserve at Brooks AFB, Texas, on 3 October 1949. It moved to Kelly AFB, Texas, on 12 December 1950 and was inactivated on 23 June 1951.

AWARDS: None.

Commanders and Date of Assignment

Not available in the Air Weather Service archives

**37th WEATHER SQUADRON
INACTIVE**

LINEAGE: Constituted the 37th Weather Squadron, it was allotted to the Air Force Reserve on 26 September 1949. It was activated in the Reserve at Robins AFB, Georgia, on 3 October 1949. It was inactivated on 23 June 1951.

AWARDS: None.

Commanders and Date of Assignment

Not available in the Air Weather Service archives

**38th WEATHER SQUADRON
INACTIVE**

LINEAGE: Constituted the 38th Weather Squadron, it was allotted to the Air Force Reserve on 26 September 1949. It was activated in the Reserve at Brookley AFB, Alabama, on 3 October 1949. It was inactivated on 23 June 1951.

AWARDS: None.

Commanders and Date of Assignment

Not available in the Air Weather Service archives

45th WEATHER SQUADRON

Patrick Air Force Base, Florida

HISTORICAL BACKGROUND: Detachment 11 of the 2nd Weather Squadron became the 45th Weather Squadron under the 45th Operations Group when the 45th Space Wing was activated in November 1991. Under either designation, the unit monitored the collection and analysis of all weather data pertinent to Patrick AFB, Cape Canaveral AFS, and Kennedy Space Center (KSC) operations. The weathermen provided briefings and forecasts, updated planning and program documents and evaluated new weather instrumentation for possible use on the Eastern Range. The 45th's area of operation encompasses over 15,000,000 square miles (39,000,000 km²) of air, land and sea that make up NASA's and the USAF's east coast flight range. In December 2005, 45 WS had 7 officers, 18 enlisted people and 9 civilians.

45th WS provided weather data to NASA's Lightning Launch Commit Criteria for Shuttle countdown procedures. For Shuttle landing criteria and site selection determination, the Shuttle's in-flight weather support, including landing forecasts, was provided by the National Weather Service's Spaceflight Meteorology Group at Johnson Space Center, Texas, in coordination with the 45th WS. The 45th WS provided data and decision criteria when a Shuttle had to be ferried back to KSC from Edwards Air Force Base, California. This was where the Orbiter was mated on top of a modified Boeing 747, known as the Shuttle Carrier Aircraft for the return flight to KSC. Edwards AFB' desert landing runway was the primary backup site for returning Orbiters when the weather was severe at KSC.¹⁷

LINEAGE: Constituted as the 45th Weather Squadron on 1 November 1991. It was activated, assigned to 45th Operations Group, and stationed at Patrick AFB, FL on 12 November 1991.

AWARDS: Air Force Outstanding Unit Awards: [12 Nov] 1991-30 Sep 1992; 1 Sep 1993-30 Aug 1995; 1 Oct 1995 – 30 Sep 1996; 1 Sep 1997-31 Aug 1998; 1 Oct 2002 – 30 Sep 2004; 1 Oct 2003 – 30 Sep 2004; 1 Oct 2004 – 30 Sep 2005; 1 Oct 2005 – 30 Sep 2006; 1 Oct 2006 – 30 Sep 2008.

EMBLEM (see square 91): Approved 13 Jul 1992. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The specific blue and black combination symbolizes the 24-hour service provided by weather personnel. The blue globe emphasizes the fragile environment of the earth and our efforts to understand and forecast future events within that environment. The stylized aircraft represent the strength and commitment to the space program and all platforms used to launch vehicles into space.

Commander and Dates of Assignment¹⁸

12 Nov 91	Col John Madura
Jun 93	Col William R. Johnson, Jr.
o/a 95	Col Thomas Adang
o/a 97	Col Richard Taylor
Apr 98	Col David P. Urbanski ¹⁹
Aug 01	Col Neil Wyse
Aug 03	Col Robert D. LaFebre
Jul 05	Col Michael Bedard
Jul 07	Col Andrew Boerlage
Jul 09	Col Elizabeth B. Borelli
Jul 11	Col Steven Cahanin

¹⁷ Art., *45th Weather Squadron*, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/45th_Weather_Squadron , 9 Nov 2011.

¹⁸ E-mail, McAleenan, Mike, 45WS to Coleman, George, AWA, *45th CC List of Names and Dates*, 3 Apr 2012

¹⁹ Bio, Urbanski, David P. Col, USAF, AFWA/HO

46th WEATHER FLIGHT²⁰ **Eglin Air Force Base, Florida**

LINEAGE: Constituted as the 46th Weather Squadron on 24 September 1992. It was activated, assigned to the 46th Test Wing, and stationed at Eglin AFB, FL, on 1 October 1992. It was redesignated in place as the 46th Weather Flight and assigned to the 46th Operations Group on 8 September 1993. It was assigned in place to the 46th Operations support Squadron on 1 February 1995. It was redesignated in place as the 46th weather Squadron and assigned to the 46th Operations group on 1 May 1996. It was redesignated in place as the 46th Weather flight in Mar 2011.

AWARDS: Air Force Outstanding Unit Awards: [1 Oct 1992]-31 Dec 1992; 1 Jan-31 Dec 1993; 1 Jan-31 Dec 1994; 1 Jan-31 Dec 1995; 1 Jan-31 Dec 1997; 1 Jan – 31 Dec 2000; 1 Jan – 31 Dec 2001; 1 Jan – 31 Dec 2005; 1 Jan – 31 Dec 2008; 1 Jan – 31 Dec 2010

EMBLEM (see square 92): Approval date unknown. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The eagle symbolizes bravery, alertness and protection. The lightning bolt represents the power of the squadron's support of test and operational aircraft. The missile alludes to the operational weather support provided to armament testing. The anemometer, which measures wind speed, represents the unit's membership in Air Force Weather. The hurricane symbol is for the protection the squadron gives to personnel and resources during hurricane season each year.

Commander and Dates of Assignment

	92	[No information available]
	94	Lt Col Mike W. Koa
	96	Lt Col Dave Rust
	99	Lt Col Robert LaFebre
	00	[No information available]
	02	Lt Col Timothy Springer
	Jun 04	Lt Col John B. Knowles
	Mar 06	Lt Col Julie Noto
	08	[No information available]
	10	Lt Col Tamara Parsons

88th WEATHER SQUADRON **INACTIVE**

LINEAGE: Constituted as the 645th Weather Squadron on 24 Sep 1992. It was activated at Wright-Patterson AFB, OH and assigned to the 645th Logistics and Operations Group on 1 October 1992. It was redesignated in place as the 645 Weather Flight on 1 Oct 1993. It was redesignated in place as the 88th Weather Flight and assigned to the 88th Operations Support Squadron, on 1 October 1994. It was redesignated in place as the 88th Weather Squadron and assigned to the 88th Logistics and Operations (later, 88th Logistics) Group on 1 May 1996. It was inactivated on 30 Sep 2005.

AWARDS: Air Force Outstanding Unit Award: 1 Jan-31 Dec 1995; 1 Jan – 31 Dec 1996; 1 Jan – 31 Dec 2003.

EMBLEM (see square 94): Approved on 10 December 1996. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The storm cloud and sun reflect the physical environment in which the unit strives to understand and exploit the benefit of Air Force weapons systems. The biplane represents those Air Force systems. The anemometer symbolizes the scientific analysis the Squadron conducts to better understand the impact of weather conditions and fulfill the unit mission.

²⁰ E-mail, Robertson, Patsy H., Civ, AFHRA/RS, 46 WS, to May, Donald J., AFWA/HO, 10 Jul 2012

Commander and Dates of Assignment

1 May 96 Lt Col Dave Smarsh
Sep 97 Lt Col John M. Lanicci
Jun 00 Lt Col Mark Weadon
Jul 02 Lt Col John M Egentowich
Apr 04 Lt Col Rick Davila

607th WEATHER SQUADRON Yongsan Army Installation, Republic of Korea

HISTORICAL BACKGROUND: Following the conclusion of World War II, Korean weather support was managed by the 20th Weather Squadron, headquartered in Japan. The lone Air Force weather detachment in Korea was closed in September 1949.

Mobile units of the 20th returned to Korea the next year at the start of the Korean War. The 30th Weather Squadron was soon reactivated with its headquarters in Korea to support the Fifth Air Force and other United Nations Forces. Within one month, the unit's headquarters were forced to retreat south from Seoul to Taegu. It remained in Taegu until July 1951, when it returned to Seoul. In 1954, the headquarters moved to Osan Air Base.

After the end of the Korean War, the 30th Weather Squadron began to turn over several of its locations to the Republic of Korea (ROK) Air Force. In 1957, headquarters of the 30th moved from Korea to Japan, to oversee the weather detachments in Korea and Japan with the inactivation of the 20th Weather Squadron. In 1957, the 30th was assigned to the 10th Weather Group. In 1959, the 30th was inactivated and its detachments assigned directly to the 10th Weather Group. The 10th Weather Group was inactivated in 1960.

From 1960 to 1964, the remaining USAF weather units in Korea reported directly to the First Weather Wing located at Hickam AFB, Hawaii. In 1964, the 20th Weather Squadron was reactivated at Fuchu Air Station, Japan, and again took responsibility for managing the USAF weather units in Korea. In 1974, 20th Weather Squadron headquarters moved to Yokota AB, Japan, and continued to manage USAF weather support in Korea until it was inactivated on 1 September 1976.

On that date, the 30th Weather Squadron was reactivated at Yongsan Army Garrison, Seoul, and all USAF weather units on the Korean peninsula were placed under the squadron's control. The 30th Weather Squadron managed all US weather support in Korea until 1992.

In 1992, the US Air Force reorganized, placing all support assets under the control of the local Wing Commander. The 30th Weather Squadron was again inactivated, the squadron at Yongsan was redesignated as the 51st Weather Squadron, and weather units at Osan and Kunsan were removed from squadron control and placed under the local USAF Wing Commanders at their respective bases. The 51st Weather Squadron continued to manage weather support to the Commander, United Nations Command, the Commander, Combined Forces Command, the Commander, United States Forces Korea (CDR, USFK), the Commander, Eighth United States Army (CDR, EUSA), and to all US Army units on the peninsula.

Because the 51st Weather Squadron was not under the operational control of the 51st Fighter Wing at Osan AB, the decision was made in July 1993 to replace it with the reactivated 5th Weather Squadron, which had a long lineage of battle decorations from the Pacific Theater in World War II and the Vietnam War.

Another USAF restructuring of Numbered Air Forces and a drive toward standardized naming conventions caused the Air Force to inactivate the 5th Weather Squadron and to activate the 607th Weather Squadron in December 1994. Today, the 607th Weather Squadron is part of the 607th Air Support Operations Group, 7th Air Force, Pacific Air Forces.

In 1999, the 607th Weather Squadron became the USAF's second "Weather Hub". In this capacity, the squadron was responsible for providing all point and area weather forecasts for US Forces Command forces operating on the Korean Peninsula. The Weather Hub portion of the 607th was decommissioned and moved to Japan in 2003.

Today, the 607th Weather Squadron has 60 personnel assigned at five locations throughout the Republic of Korea including USAG-Yongsan, Seoul; K-16 Air Base, Seoul AB East, Sungnam; USAG-Red Cloud, Uijongbu; and USAG-Humphreys, Pyongtaek.²¹

LINEAGE: Constituted as the 607th Weather Squadron on 12 December 1994. It was activated at Yongsan Army Installation, Republic of Korea and assigned to the 607th Air support Operations Group on 15 December 1994.

AWARDS: Air Force Outstanding Unit Awards: 1 Jul 1993 – 30 Jun 1995; 1 Jul 1995-30 Jun 1997; 1 Jul 1999-30 Jun 2001; 1 Oct 2006 – 30 Sep 2008.

²¹ Art., 607th Weather Squadron, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/607th_Weather_Squadron , 9 Nov 2011

EMBLEM (see square 95): Approved on 2 January 2003. **SIGNIFICANCE:** Blue and yellow are the Air Force colors. Blue alludes to the sky, the primary theater of Air Force operations. Yellow refers to the sun and the excellence required of Air Force personnel. The Taeguk represents the balance of forces in nature that make all military weather operations necessary. The triangle divided into three colors symbolizes air, land, and sea operations relevant to weather support. The anemometer symbol is indicative of meteorological support provided by the unit.

Commander and Dates of Assignment

1992-1994	Unknown
1995-1996	Lt Col J. Love
1996-1997	Lt Col Richard Bensinger
1997-1999	Lt Col Thomas Schott
1999-2001	Lt Col Michael L. Davenport
2001-2003	Lt Col Kevin P. Callahan
2003-2005	Lt Col Mark B. Miller
2005-2007	Lt Col Leanne Siedlarz
2007-2009	Lt Col Robert T. Swanson, Jr.
2009-2011	Lt Col Travis A. Steen
2011	Lt Col Edward C. Harris

617th WEATHER SQUADRON

LINEAGE: Constituted and activated as the 617th Weather Squadron, assigned to the 617th Air Support Group, 17th Air Force (USAFE), and stationed at Heidelberg, Germany on 1 July 1994. It was inactivated on 1 August 1996

AWARDS: Air Force Outstanding Unit Award 1 Sep 1993 – 31 Aug 1995; 1 Sep 1995-30 Jun 1997.

EMBLEM: No information available.

Commander and Dates of Assignment

1995-1996	Lt. Col Malcom E. Gosdin, Jr.
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**1211th TEST SQUADRON (SAMPLING)
INACTIVE**

LINEAGE: Constituted the 4926th Test Squadron (Sampling), it was organized at Kirtland AFb, New Mexico, and assigned to the Air Research and Development Command on 1 April 1953. It was assigned to the Military Air Transport Service, further assigned to the 9th Weather Reconnaissance Group, and redesignated the 1211th Test Squadron (Sampling) on 16 August 1961. It was discontinued on 8 June 1963.

AWARDS: None.

EMBLEM: Approved on 26 June 1958. **SIGNIFICANCE:** The emblem symbolizes the squadron and its mission of worldwide support of the U.S. nuclear testing program as well as the collection, monitoring, and tracking of nuclear particles in the atmosphere. The nuclear cloud rising over the globe represents the unit's worldwide responsibility. In the center of the cloud is the atomic nucleus with its escaping particles and gases. The "busy bee" with his net, representing the unit's aircraft with their sampling tanks for collecting nuclear samples, is preparing to trap the escaping nuclear particles. The emblem bears the Air Force colors of ultramarine blue and golden yellow to indicate the unit is a member of the U.S. Air Force and the national colors of red, white, and blue to indicate the patriotism of the personnel. (This emblem not illustrated.)

Commanders and Date of Assignment

Not available in the Air Weather Service archives

**1212th BALLOON ACTIVITIES SQUADRON
INACTIVE**

LINEAGE: Designated the 1110th Balloon Activities Squadron, it was organized at Goodfellow AFB, Texas, and assigned to Headquarters Command, U.S. Air Force on 1 January 1960. It was assigned to the 9th Weather Reconnaissance Group on 1 January 1962 and concurrently redesignated as the 1212th Balloon Activities Squadron. It was discontinued on 8 June 1963.

AWARDS: None.

Commanders and Date of Assignment

1 Jan 60 Maj Keith D. Swisher
24 Feb 61 Maj Robert L. Ray

**2060th MOBILE WEATHER SQUADRON
INACTIVE**

LINEAGE: Designated the 21st Mobile Weather Squadron on 19 May 1948, it was organized at Tinker AFB, Oklahoma, and assigned to the 59th (later 2059th) Weather Wing on 1 June 1948. It was redesignated the 2021st Mobile Weather Squadron on 1 October 1948 and the 2060th Mobile Weather Squadron on 1 January 1949. It was discontinued on 20 May 1952.

AWARDS: None.

Commanders and Date of Assignment

1 Jun 48 Maj August W. Throgmorton
11 Apr 50 Lt Col Ernest R. Miller
7 May 52 Col William S. Barney

**2061st MOBILE WEATHER SQUADRON
INACTIVE**

LINEAGE: Designated the 2061st Mobile Weather Squadron, it was organized at Landsberg AB, Germany, and assigned to the 2105th Air Weather Group (later the 2058th Air Weather Wing) on 23 April 1951. The 2061st was discontinued and its personnel assigned to the 31st Weather Squadron at Landsberg, all on 20 May 1952.

AWARDS: None.

Commanders and Date of Assignment

23 Apr 51 Maj Leroy C. Iverson
10 Sep 51 Maj William P. Hulen, Jr.
4 Jan 52 Lt Col Jacob Follmer

AIR FORCE SPACE FORECAST CENTER
55th Space Weather Squadron
INACTIVE

HISTORICAL BACKGROUND: In October 1962, Headquarters Air Weather Service issued the Air Force's first solar forecast, a function which was transferred to the 4th Weather Wing at Ent AFB, Colorado, two years later. September 1965 saw the establishment of the Solar Observing and Forecasting Network with sites at Sagamore Hill, Massachusetts; Sacramento Peak, New Mexico; Hawaii; Athens, Greece; and Manila, Philippines.

In 1966 the Solar Forecast Facility (Detachment 7, 4th Weather Wing) was established at Ent AFB in April; this unit was the organizational ancestor of the current Air Force Space Forecast Center. In May, the solar/geographical teletype network became operational.

In April 1970, the Solar Forecast Center (Operating Location 10, Detachment 7, 4th Weather Wing) and Detachment 1, 4th Weather Wing were combined to form the Space Forecasting branch of the Aerospace Environmental Center. This operation was then transferred to Air Force Global Weather Central (AFGWC) at Offutt AFB, Nebraska in December 1973. The solar forecasting branch of AFGWC would retain the Air Force operational space forecasting mission until 1992.

In February 1978, the Palehua, Hawaii solar radio telescope became operational. Two years later this site became the first fully automated observing site. In May 1979, AWS accepted responsibility for operation of the Air Force's polarimeter network, with sites at Athens, Greece; Goose Bay, Canada; Osan, Republic of Korea; Palehua, Hawaii; Patrick AFB, Florida; Ramey, Puerto Rico; Sagamore Hill, Massachusetts; Shemya AFB, Alaska; and Taipei, Taiwan.

Subsequent to the creation of the Air Force Space Command, plans were formed in 1983 to move the Space Environmental Support Branch from Air Force Global Weather Central to Colorado Springs. Approval was received in 1985 and the Space Forecast Center acquisition was conceived. Ground was broken for the Air Force Space Forecast Center building on June 15, 1988 at Falcon [Schriever] AFB, Colorado Springs, Colorado. The \$2.15 million, 10,000-square foot facility was completed in 1989.

Detachment 7, 4th Weather Wing was re-activated in June 1989 as the Space Forecast Center. In January 1991, OL-B AFGWC, at NOAA's Space Environment Support Center in Boulder, Colorado was redesignated OL-A, Det 7, 4WW and assigned to the Space Forecast Center. In October 1991, 4WW was inactivated and Det 7 was assigned to Headquarters Air Weather Service and redesignated as the Air Force Space Forecast Center. The unit was given control of the Air Force's six solar observatories located at Holloman AFB, New Mexico; Learmonth, Australia; Palehua, Hawaii; Ramey, Puerto Rico; Sagamore Hill, Massachusetts; and San Vito, Italy.

The Air Force Space Forecast Center achieved Full Operating Capability in October 1992. This represented the latest milestone in the USAF's 30-year history of monitoring and forecasting the space environment.²²

In 1994 the SESS function was transferred to AF Space Command and the Air Force space Forecast Center was inactivated. The 50th Weather Squadron²³ was activated at Falcon AFB, assigned to 50th Operations Group, and assumed responsibility for the AFW SESS function.

On 1 Oct 1999 the SESS function was transferred to the Air Force Weather Agency. AFWA initiated a plan to relocate the function to Offutt AFB. This effort reached full operational capability in Jul 2002 and the unit was inactivated.

LINEAGE: The Air Force Space Forecast Center was constituted and activated at Falcon AFB, CO, on 1 October 1991. It was inactivated on 30 September 1994.

The 55th Space Weather Squadron lineage begins with the 55th Weather Reconnaissance Squadron. The 55th was redesignated on 1 Mar 1997 and activated on 17 Mar 1997, assigned to the 50th Operations Group at Falcon (later Schriever) AFB, CO, 17 Mar 1997-16 Jul 02. Inactivated 16 Jul 02

EMBLEM (see square 93) No other information available.

Commanders and Date of Assignment

1 Oct 91 Lt Col Allen E. Ronn
13 Jul 93 Lt Col Norman E. Buss
[94-97 Function aligned with 50th WS (AFSPC)]
17 Mar 97 Lt Col William Keller
1 Oct 99 Lt Col Jeffrey T. Carson

²² Art., *Air Force Space Forecast Center History*, extracted from an event program guide prepared for the transfer and designation ceremony of the space forecast function to Air Force Space Command on 1 Oct 1994.

²³ Note: there are no records in the AFWA/HO files pertaining to the lineage of the 50th Weather squadron.

WEATHER RECONNAISSANCE LINEAGES

This section gives the official lineage of weather reconnaissance units. The lineage is followed by awards, emblems, and a chronological list of unit commanders. Dates for Service and Campaign Streamers are as listed in Air Force Instruction 34-1201. The last commander listed for a given unit is either the current commander or the last commander that held that position while assigned to Air Weather Service. For the most part data was extracted from *Air Weather Service: Our Heritage, 1937-1987*. Some units who remained active after leaving Air Weather Service were updated with additional lineage and commander information with sources identified.

BACKGROUND

Air Weather Service's involvement in weather reconnaissance started in 1942 with the activation of the Army Air Force Weather Reconnaissance Squadron (Test) Number 1. During World War II weather reconnaissance provided weather information over the transoceanic ferrying routes and intended bomb targets. Air Weather Service established a Weather Reconnaissance Branch under its Operations and Training Division at Headquarters Air Weather Service in April 1946. Weather reconnaissance was instrumental in nuclear testing and aerial sampling performed in the Pacific and the United States by its ability to measure radioactivity and collect airborne nuclear debris. It also monitored the storm-infested areas of the Atlantic and Pacific for typhoons and hurricanes. Coming close to extinction during 1959 through 1963, the Reconnaissance Panel of the Force Estimates Board reinstated weather reconnaissance into the U.S. Air Force program in 1963. Air Weather Service was named the single manager for all aerial sampling and weather reconnaissance on 1 April 1962. This mission was transferred to the Aerospace Rescue and Recovery Service in 1975.

1st WEATHER RECONNAISSANCE SQUADRON, AIR ROUTE, MEDIUM [AFCON] INACTIVE

LINEAGE: Constituted the Army Air Forces Weather Reconnaissance Squadron (Test) Number 1 on 16 August 1942, it was activated at Patterson Field, Fairfield, Ohio, on 21 August 1942. It was assigned to the Headquarters Army Air Forces Directorate of Weather, which further assigned it to the 2d Weather Squadron (Regional Control). In April 1943 the squadron moved to Truax AAF, Madison, Wisconsin, and was assigned to the Flight Control Command on 13 April 1943. It moved to Presque Isle, Maine, on 23 June 1943 and was assigned to the Army Air Forces Weather Wing on 6 July 1943. It was redesignated the 30th Weather Reconnaissance Squadron, Air Route, Medium, and assigned to Air Transport Command on 21 December 1943. It was redesignated the 1st Weather Reconnaissance Squadron, Air Route, Medium, on 5 August 1944 and moved to Grenier Field, New Hampshire, on 5 September 1944. It was reassigned to the 311th Photographic Wing, Mapping and Charting, on 9 February 1945 and was inactivated on 21 December 1945.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

EMBLEM (see square 112): Approved on 26 March 1943 for the Weather Reconnaissance Squadron (Test) Number 1. **SIGNIFICANCE:** The blue background represents the sky, which is the working area of the meteorologist. The thunderbird portrays the early American Indians' conception of the cause of all thunderstorms. The clouds, red thunderbolt, and raindrops depict meteorological elements associated with thunderstorms.

Commanders and Date of Assignment

21 Aug 42	1Lt Horace J. Wheeler, Jr.
23 Sep 42	Capt Arthur A. McCartan
23 Jun 43	Lt Col Clark L. Hosmer
14 Aug 44	Maj Karl T. Rauk
14 Feb 45	Capt Sidney C. Bruce

2d WEATHER RECONNAISSANCE SQUADRON, AIR ROUTE, MEDIUM INACTIVE

LINEAGE: Constituted the 2d Weather Reconnaissance Squadron, Air Route, Medium, on 20 January 1944, it was activated at Key Field, Mississippi, and assigned to the III Reconnaissance Command on 1 February 1944. It was assigned to the I Tactical Air Division on 18 April 1944 and to the III Tactical Air Division by 1 May 1944. It moved temporarily to Demopolis Army Air Field, Alabama, in June 1944, and later returned to Key Field. It was redesignated the 2d Weather Reconnaissance Squadron, Medium, on 20 July 1944. It moved to Camp Anza, California, in August 1944 and departed the United States on 30 August 1944, arriving at Guskhara, India, on 14 October 1944. It was assigned to the Army Air Forces, India-Burma Theater, in the 10th Weather Region. It was inactivated in India on 28 December 1945.

AWARDS: Campaign Streamers for India-Burma, 2 Apr 1942-28 Jan 1945; China Defensive, 4 Jul 1942-4 May 1945; and Central Burma, 29 Jan-15 Jul 1945.

EMBLEM (see square 113): Approved on 8 March 1945 for the 2d Weather Reconnaissance Squadron.
SIGNIFICANCE: The caricatured brown bear is symbolic of the squadron, rough and ready. Running through space with his left forepaw shading his eyes represents speedy reconnaissance. His attire indicates his ability to venture out in any kind of weather. The anemometer portrays the equipment he must carry to obtain the necessary weather data.

Commanders and Date of Assignment

1 Feb 44	Lt Col James B. Baker
15 Apr 45	Capt Wallace B. Black
7 Jun 45	Lt Col Arthur A. McCartan
Sep 45	Capt Parks R. Warnick, Jr.

9th WEATHER RECONNAISSANCE GROUP INACTIVE

LINEAGE: Constituted as the 9th Weather Group on 31 March 1952, it was activated at Andrews AFB, Maryland, and assigned to Air Weather Service on 20 April 1952. The group moved to Scott AFB, Illinois, on 2 October 1957 accompanying Military Air Transport Service's move there. On 8 July 1961 the 9th was redesignated the 9th Weather Reconnaissance Group (with the mission of supervising all AWS weather reconnaissance squadrons), and moved from Scott AFB to McClellan AFB, California. It was discontinued and inactivated on 8 July 1965 and replaced by the 9th Weather Reconnaissance Wing.

AWARDS: Air Force Outstanding Unit Award for 1 Mar 1960-28 Feb 1961.

EMBLEM (see square 23): Approved on 19 March 1964 for 9th Weather Reconnaissance Group.
SIGNIFICANCE: The fleur-de-lis is from the device of the Air Weather Service to which this unit is subordinate. Atmospheric sampling and weather reconnaissance on a worldwide basis are represented by the globe and orbiting electrons between clouds and lightning. The recording function is indicated by quill pens.

Commanders and Date of Assignment

20 Apr 52	Lt Col William H. Wyatt
15 May 52	Col Roy W. Nelson, Jr.
10 Jun 52	Lt Col Martin F.C. Sebode
20 Dec 52	Col Roy W. Nelson, Jr.
15 Aug 55	Col Kral T. Rauk
21 Aug 57	Col William S. Barney
8 Jul 61	Col Harvey P. Hall
11 Aug 62	Col Templeton S. Walker
Jun 64	Col Carl H. Morales

9th WEATHER RECONNAISSANCE WING INACTIVE

MISSION: The 9th Weather Reconnaissance Wing originally supported specialized aerial weather reconnaissance and air sampling operations in accordance with mission priorities and requirements established by the Chief of Staff, U.S. Air Force.

LINEAGE: Established and activated as the 9th Weather Reconnaissance Wing on 4 May 1965. The wing organized at McClellan AFB, California, on 8 July 1965 where it assumed the mission and resources of the 9th Weather Reconnaissance Group which was discontinued the same date. The wing was inactivated on 1 September 1975.

AWARDS: Air Force Outstanding Unit Award, 1 Jul 1967-30 Jun 1968; 1 Jan-31 Dec 1971.

EMBLEM (see square 13): Approved on 16 February 1966. **SIGNIFICANCE:** Against the blue background which depicts the sky, the primary theater of Air Force operations, the weather fess, symbolizing war and cold fronts, with the anemometer represents the weather mission of the wing and denotes its assignment to the Air Weather Service. The sphere within the red ring braced by lightning alludes to atmospheric sampling and weather reconnaissance on a worldwide basis. The nuclear rose, its nine electrons indicating the wing's numerical designation, and the hurricane symbol refer to research in the field of weather forecasting and control. The emblem bears the national colors of red, white, and blue, and the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment

8 Jul 65	Col Carl H. Morales
25 Jan 67	Col Felix G. Brenner
20 Oct 69	Col Thomas A. Aldrich
15 Jun 70	Col Ralph S. Saunders
14 May 71	Col Tedd L. Bishop
3 May 73	Col Anthony J.G. Timmermans, Jr.
14 May 73	Col John W. Collens, III
7 Feb 74	Col James H. Gillard

11th CONSOLIDATED AIRCRAFT MAINTENANCE SQUADRON INACTIVE

LINEAGE: Constituted the 11th Maintenance Squadron, Bombardment, Heavy, on 18 November 1948, it was redesignated the 11th Maintenance Squadron on 9 August 1950. It was activated at Carswell AFB, Texas, and assigned to the 11th Maintenance and Supply Group on 4 January 1951. It was assigned to the 11th Bombardment Group (attached to the 11th Bombardment Wing) on 16 February 1951, redesignated the 11th Field Maintenance Squadron, and assigned to the 11th Bombardment Wing on 16 June 1952. It relocated to Altus AFB, Oklahoma, on 13 December 1957 and inactivated on 25 March 1969. It was redesignated the 11th Consolidated Aircraft Maintenance Squadron on 13 July 1973, activated at McClellan AFB, California, and assigned to the 9th Weather Reconnaissance Wing on 1 August 1973. On 1 September 1975 it was assigned in place to the 41st Rescue and Weather Reconnaissance Wing of Military Airlift Command's Aerospace Rescue and Recovery Service.

AWARDS: Air Force Outstanding Unit Award for 6 Aug 1954-15 Jul 1957; 27 Oct 1958-16 Sep 1960.

Commanders and Date of Assignment

Jan 51	Maj Perier A. Koenig	Jun 58	Lt Col Seaborn M. Hunt
Mar 51	Maj Urban W. Martin	1961	Maj Edward E. Lampshire
Jul 51	Capt Jay Stewart	Apr 62	Maj Edward L. Johnson
8 Jan 52	Lt Col John C. Harrington	1962	Lt Col Joseph C. Hamilton, Jr.
Mar 53	Maj Raymond W. Stevens	May 63	Maj Edward J. Chapek
2 Nov 53	Maj William S. Chandler	16 Jun 63	Lt Col Thomas W. Martin

Sep 54	Maj Donald J. Longtain	1964	Lt Col Robert H. Ottman
Jul 55	Maj James E. Conner	1966	Maj J. F. Rutherford
Dec 55	Maj Albert J. Feldt	1966	Lt Col Edward S. Prunko
Jan 56	Lt Col Harold E. Walker	1 Aug 68	Maj Thomas S. Bateman
Dec 56	Maj Charles R. Samms	1968	Maj Walter J. Pierpont
Aug 57	Maj John W. Hanley	1 Aug 73	Lt Col Robert M. McCutcheon
1958	Capt John F. Campbell	Aug 75	Col Robert T. Dobson

53d WEATHER RECONNAISSANCE SQUADRON (AFRC) Keesler AFB, Mississippi

LINEAGE: Constituted as the 3rd Weather Reconnaissance Squadron, Air Route, Medium, on 7 August 1944, it was activated at Presque Isle, Maine, and assigned to the North Atlantic Division on 31 August 1944. It moved to Grenier Field, New Hampshire on 9 November 1944, was assigned to the Air Transport Command on 12 January 1945, and redesignated the 3d Reconnaissance Squadron, Weather, Heavy, on 26 January 1945. It was assigned to the 311th Photographic Wing, Mapping and Charting (later the Reconnaissance Wing) on 15 February 1945 and redesignated the 53d Reconnaissance Squadron, Long Range, Weather, on 15 June 1945. On 27 November 1945 it was redesignated the 53d Reconnaissance Squadron, Very Long Range, Weather, and assigned to Air Transport Command on 13 March 1946. It was assigned to Air Weather Service on 20 March 1946, and to the 308th Reconnaissance Group (Weather) on 17 October 1946. It moved first to Morrison Field, Florida, on 8 November 1946; to Camp Kilmer, New Jersey, on 23 July 1947; and to Kindley Field, Bermuda, on 17 August 1947 where it was inactivated on 15 October 1947. It was redesignated the 53d Strategic Reconnaissance Squadron, Medium, Weather, on 22 January 1951, activated at Kindley Field, Bermuda, and assigned to the 2108th Air Weather Group on 21 February 1951. It was assigned directly to Air Weather Service on 2 May 1951 and it was further assigned to the 9th Weather Group on 20 April 1953. The 53d moved to Burtonwood Airdrome, England, on 7 November 1953 and on 25 November 1953 it was assigned to the 2058th Air Weather Wing. It was assigned to the 2d Weather Wing on 8 February 1954, and redesignated the 53d Weather Reconnaissance Squadron on 15 February 1954. It moved to RAF Alconbury, England, on 26 April 1959 and to RAF Mildenhall, England, on 10 August 1959. The squadron was discontinued there on 18 March 1960. It was again organized at Kindley AFB, Bermuda, and assigned to the 9th Weather Reconnaissance Group on 8 January 1962. The squadron moved to Hunter AFB, Georgia, on 31 August 1963 and was assigned to the 9th Weather Reconnaissance Wing on 8 July 1965. It moved to Ramey AFB, Puerto Rico, on 15 June 1966 and then to Keesler AFB, Mississippi, on 1 July 1973. The 53d Weather Reconnaissance Squadron was transferred from its assignment to Air Weather Service and assigned to the Aerospace Rescue and Recovery Service's 41st Rescue and Weather Reconnaissance Wing on 1 September 1975. The unit was inactivated 30 June 1991. It was activated in the Reserve on 1 Nov 1993, assigned to the 403 Operations Group and stationed at Keesler AFB, Mississippi.²⁴

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946. Army Meritorious Unit Commendation for 23 May-31 Oct 1945. Air Force Outstanding Unit Awards: 1 Dec 1958-30 Sep 1959; 1 Jul 1967-30 Jun 1968; 1 Jan-31 Dec 1971; 1 Sep 1975-1 May 1977; 16 Jul 1977-16 Jul 1979; 17 Jul 1979-15 Jun 1981; 1 Apr 1984-31 Mar 1986; 1 Apr 1986-31 Mar 1988; 1 Apr 1987 – 31 Mar 1988; 1 May 1992 – 30 Apr 1994; 1 May 1994-30 Apr 1996; 1 May 1996-31 Aug 1997;²⁵ 1 Jan 2004 – 31 Dec 2005;

FIRST EMBLEM (see square 114): Approved on 15 November 1945 for 53d Reconnaissance Squadron (Long Range) Weather. **SIGNIFICANCE:** None attributed.

SECOND EMBLEM (see squares 115 & 116): Approved on 11 April 1963 for 53d Weather Reconnaissance Squadron. **SIGNIFICANCE:** The central figure of the insignia, the hurricane symbol, which is used by meteorologists to indicate hurricanes on weather charts, represents one of the important and perhaps most well known aspects of the

²⁴ Art., 53rd Weather Reconnaissance Squadron "Hurricane Hunters," Fact Sheet, 403rd Wing, downloaded from <http://www.403wg.afrc.af.mil/library/factsheets/factsheet.asp?id=7483>, 9 Nov 2011 [Updated with information from AFMPC Awards database]

²⁵ Hist., Haulman, Daniel L., *Lineage and Honors of the 53 Weather Reconnaissance Squadron (AFRC)*, 6 Feb 1997

unit's mission, that of aerial weather reconnaissance of tropical storms and hurricanes. The flight vehicle over the hurricane symbol indicates aerial weather reconnaissance; the flight vehicle penetrating the molecular symbol is symbolic of the atmospheric sampling mission; the yellow lightning bolt, also a symbol of weather, represents by its trailing of the flight vehicle the support rendered by the unit to other agencies, and is further representative of the dynamic, prompt, and timely execution of mission responsibilities. The emblem bears the Air Force colors of ultramarine blue and golden yellow, and the national colors of red, white, and blue. **MOTTO:** HURRICANE HUNTERS.

Commanders and Date of Assignment

Feb 45	Lt Col Karl T. Rauk	7 Feb 71	Lt Col John Reeves
19 Jun 45	Maj George Newton, Jr.	1 Apr 71	Col Keith Ricks
12 Sep 46	Maj John N. Hawley	Apr 72	Col Lawrence Pennington
16 Oct 46	Lt Col James H. Starbuck	23 Jan 74	Col Charles Landsdale
16 Jun 47	Lt Col Robert G. David	14 Jul 75	Lt Col Albert Purvis
21 Feb 51	Lt Col Stanley I. Hand	21 Oct 1977	Lt Col John D. Laughlin,
4 Dec 52	Lt Col Richard D. Stowell	14 Apr 1978	Lt Col Thomas L. Shera
17 May 56	Lt Col William O. Riser, Jr.	10 Oct 1980	Lt Col Theron J. May
1 Jun 59	Lt Col John H. Mohn	9 Aug 1982	Lt Col Donald K. Whitney
8 Jan 62	Lt Col Arnold E. Zimmerman	31 Jul 1984	Lt Col Dennis D. Wood
Jun 64	Lt Col Eugene Wernette	28 May 1986	Lt Col Christopher D. Mays
15 Jun 66	Lt Col Dwight Hartman	1 Jul 1988-	Lt Col James L. Donnelly
		30 Jun 1991.	
mid-1967	Col Robert Moeller	1 Nov 1993	Lt Col Thomas W. Fell, Jr.,
11 Aug 68	Lt Col George Thurman	26 Oct 1994	Lt Col James P. Marcotte
20 Feb 70	Col Jerrie Wells	13 Jul 1997-	Lt Col Lamart J. Buggage

54th WEATHER RECONNAISSANCE SQUADRON INACTIVE

LINEAGE: Constituted the 654th Bombardment Squadron, Heavy (Reconnaissance, Special) on 17 July 1944, it was activated and assigned to the 25th Bombardment Group (Reconnaissance) at Watton, Norfolk, England, on 9 August 1944. It moved to Drew Field, Florida, on 6 August 1945 and was redesignated the 54th Reconnaissance Squadron, Long Range, Weather, on 4 September 1945. It moved to Guam upon its reassignment to the 311th Reconnaissance Wing and was redesignated the 54th Reconnaissance Squadron, Very Long Range, Weather, on 27 November 1945. It was assigned to the Air Transport Command on 13 March 1946, moved on 20 March 1946 to Buckley Field, Colorado, and was further assigned to Air Weather Service. It moved to Langley Field, Virginia, on 2 June 1946 and to Morrison Field, Florida, on 21 July 1946. The 54th was assigned to the 43d Weather Wing and moved to North Army Air Base, Guam, on 1 August 1947 where it was inactivated on 15 October 1947. It was redesignated the 54th Strategic Reconnaissance Squadron, Medium, Weather, on 22 January 1951, activated and assigned to the 2143d Air Weather Wing at Andersen AFB, Guam, on 21 February 1951. The 54th was assigned to the 1st Weather Wing on 8 February 1954 and redesignated the 54th Weather Reconnaissance Squadron on 15 February 1954. It was discontinued on 18 March 1960. Organized at Andersen and assigned to the 9th Weather Reconnaissance Group on 18 April 1962, it was subsequently assigned to the 9th Weather Reconnaissance Wing on 8 July 1965. The 54th Weather Reconnaissance Squadron was transferred from its assignment to Air Weather Service and assigned to the Aerospace Rescue and Recovery Service's 41st Rescue and Weather Reconnaissance Wing on 1 September 1975. It was inactivated 30 Sep 1987.²⁶

AWARDS: Service Streamer for Asiatic-Pacific Theater, World War II, 7 Dec 1941-2 Mar 1946; Korean Theater, Korean War, 27 Jun 1950-27 Jul 1953; Campaign Streamers for Ardennes-Alsace, 16 Dec 1944-25 Jan 1945; Central Europe, 22 Mar-11 May 1945; Northern France, 25 Jul-14 Sep 1944; Rhineland, 15 Sep 1944-21 Mar 1945; Air Combat EAME Theater, 7 Dec 1941-11 May 1945. Air Force Outstanding Unit Awards for Mar-Oct 1956; 1 Jul 1967-

²⁶ Art., AWRA Organizational History, downloaded from <http://tabacofamily.com/jtabaco/AWRA/0054wrs.html>, 9 Nov 2011.

30 Jun 1968; 1 Jan-31 Dec 1971; 1 Jan 1975-31 May 1976; 1 Sep 1975-1 May 1977; 16 Jul 1977-16 Jul 1979; 17 Jul 1979 – 15 Jun 1981; 1 Apr 1984 – 31 Mar 1986; 1 Apr 1986 – 30 Sep 1987.

FIRST EMBLEM : Approved on 23 October 1944 for 654th Bombardment Squadron Heavy (Reconnaissance Special). **SIGNIFICANCE:** This emblem is not weather oriented but was used by the 54th Reconnaissance Squadron, Long Range, Weather, and its successors from 4 September 1945 until a second emblem was approved in 1951. (Not illustrated in the emblem section.)

SECOND EMBLEM (see square 117): Approved on 10 August 1951 for 54th Strategic Reconnaissance Squadron (Medium) Weather. **SIGNIFICANCE:** The stylized “fireball,” nickname synonymous with the unit, symbolizes the high spirit and determination of the 54th Strategic Reconnaissance Squadron (Medium) Weather. The wind instrument and thermometer are instruments used in carrying out the mission of the unit. The sky and the light flash symbolize where the mission is performed.

THIRD EMBLEM (see square 118): Approved on 9 July 1963 for 54th Weather Reconnaissance Squadron. **SIGNIFICANCE:** The globe represents the base area covered by the squadron’s activities, the vulture being the bird name allotted to it by the Air Weather Service, bird names being used as squadron designators. The vulture, in having patience and an extremely keen eye, can spot its objective from extremely high altitudes and can also fly for long periods of time. Standing on a cloud, which represents a typhoon, the vulture alludes to the squadron’s weather and storm reconnaissance mission. The two atom symbols refer to the squadron’s participation in such advanced projects as aerial sampling. Dominic, Mercury, Discoverer, and other similar projects, which may be assigned.

FOURTH EMBLEM (see square 119): Approved on 29 November 1973 for 54th Weather Reconnaissance Squadron. **SIGNIFICANCE:** The emblem is symbolic of the unit and the Air Force colors of ultramarine blue and golden yellow are used in the design. The color blue alludes to the sky, the primary theater of Air Force operations, and yellow to the sun and excellence of personnel in assigned tasks. The international symbol of cyclones is superimposed on the disc. In the center of the cyclone is the likeness of the Australian Black Swan. This large and strikingly beautiful waterfowl is a native of Australia and the Pacific world. It also represents the weather track designators, the airborne call sign (weatherbird) as well as the squadron aircraft (i.e., Swan Birds). As a native of the Pacific, the swan also represents the location of the unit. The bird’s plumage is black, representing the dark, rain-soaked clouds that often make up the wall cloud of a fully developed typhoon. The placement of the swan in the center of the cyclone symbol represents the location in the “eye” of a storm from which the aerial weather observations are performed. **MOTTO:** TYPHOON CHASERS.

Commanders and Date of Assignment

9 Aug 44	Maj John Larkin	26 Jun 64	Lt Col William Rankin
8 Jan 45	Maj Willis D. Locke	18 Jun 66	Lt Col George Podwolsky
Apr 45	Maj Robert P. Howle	26 Jun 66	Col Robert Kane
unknown	Capt Willard Blackwell	1 Jun 67	Lt Col Arthur Weaver
7 Jan 46	1Lt Leo C. Stewart, Jr.	1 Jul 69	Col Carl Gunderson, Jr.
10 Jun 46	Capt Richard Shine	15 Aug 70	Lt Col Allen Weeks
15 Aug 46	Capt R.H. Murray	2 Aug 71	Col Douglas Campbell
6 Sep 46	Maj William S. Barney	25 Mar 72	Lt Col Merle Nelson
10 Sep 46	Maj Harold W. Richardson	23 Jun 72	Lt Col Leo Rice
16 Sep 46	Lt Col Roy W. Nelson, Jr.	28 Jun 72	Col Franklin Ross
25 Feb 47	Maj William s. Barney	4 Aug 75	Maj Charles Conover
25 Mar 47	Lt Col Roy W. Nelson, Jr.	7 Aug 75	Col Foster A. Post
21 Feb 51	Lt Col Paul S. Bechtel	2 Sep 75	Lt Col William Christian
17 Jun 52	Lt Col Roger A. Stevenson	1 Sep 77	Lt Col Gerald Lasco
6 Aug 54	Lt Col Griffin H. Wood	27 Jun 79	Lt Col Paul Prescott
7 Apr 56	Lt Col Howard L. Berg	17 Jun 81	Lt Col Jerald Bell
4 Apr 48	Lt Col Dale D. Desper	13 Sep 82	Lt Col Norman Lee III
18 Apr 62	Lt Col Eugene Wernette	23 Mar 84	Lt Col William Rahter

55th WEATHER RECONNAISSANCE SQUADRON INACTIVE

LINEAGE: Constituted the 655th Bombardment Squadron, Heavy, on 11 August 1944, it was activated at Will Rogers Field, Oklahoma, and assigned to the Third Air Force on 21 August 1944. It was assigned to the III Tactical Air Command on 1 October 1944 and to the III Tactical Air Division by November 1944. The squadron moved to Fort Lawton, Washington, on 9 March 1945. It moved to Harmon Field, Guam, was assigned to the 20th Air Force and attached to XXI Bomber Command on 11 April 1945. It was redesignated the 55th Reconnaissance Squadron, Long Range, Weather, on 16 June 1945. On 27 November 1945 it was redesignated the 55th Reconnaissance Squadron, Very Long Range, Weather, assigned to the 311th Reconnaissance Wing, and attached to the U.S. Army Strategic Air Forces, Pacific. On 13 March 1946 it was assigned to the Air Transport Command who in turn assigned it to Air Weather Service when it relocated to Buckley Field, Colorado, on 20 March 1946. It moved to Langley Field, Virginia, on 9 May 1946 and to Morrison Field, Florida, in July 1946. On 1 June 1947 it moved to Fairfield-Suisun AAF, California, where it was inactivated on 15 October 1947. It was redesignated the 55th Strategic Reconnaissance Squadron, Medium, Weather, on 22 January 1951, activated at McClellan AFB, California, and assigned to Air Weather Service on 21 February 1951. It was assigned to the 9th Weather Group on 20 April 1953 and redesignated the 55th Weather Reconnaissance Squadron on 15 February 1954. It was discontinued on 8 July 1961. It was activated and assigned to the Military Air Transport Service on 12 October 1961, reorganized at McClellan AFB, California, and assigned to the 9th Weather Reconnaissance Group on 8 January 1962. It was assigned to the 9th Weather Reconnaissance Wing on 8 July 1965. The squadron was transferred from its assignment to Air Weather Service and assigned to the Aerospace Rescue and Recovery Service's 41st Rescue and Weather Reconnaissance Wing on 1 September 1975. It was inactivated on 1 Oct 1993.

AWARDS: Campaign Streamer for the Western Pacific, World War II, 17 April 1944-2 Sep 1945. Army Meritorious Unit Commendation for 15 May 1945-1 Jan 1956. Air Force Outstanding Unit Awards for 1 Mar 1960-28 Feb 1961; 1 Jul 1967-30 Jun 1968; 1 Jan-31 Dec 1971; 1 Sep 1975-1 May 1977; 16 Jul 1977-16 Jul 1979; 17 Jul 1979 – 15 Jun 1981; 1 Apr 1984 – 31 Mar 1986; 1 Apr 1986 – 31 Mar 1988; 1 Aug 1989 – 30 Jun 1991.

FIRST EMBLEM (see square 131): Approved on 16 February 1945 for the 655th Bombardment Squadron, Heavy (Weather Reconnaissance Heavy). **SIGNIFICANCE:** Willie Weatherbee symbolizes the squadron's readiness to carry out its assigned task under all climatic conditions. **NOTE:** The nickname "Willie" most likely comes from the name of the Army Air Field (Will Rogers Field, Oklahoma) where the 655th Bomber Squadron was activated in 1944.

SECOND EMBLEM (see square 120): Approved on 3 July 1967 for 55th Weather Reconnaissance Squadron. **SIGNIFICANCE:** The blue field depicts the sky, the primary theater of Air Force operations, and the global shape alludes to the worldwide scope of the squadron's activities. The gold fess with red simulated lightning across the sphere symbolizes the earth's division into frigid, temperate, and torrid zones. The gold dividers counter-colored over the zones reflect the route, area weather data, and aerial atmospheric sampling obtained through photographic and visual reconnaissance. The five pointed star with five rays, while indicating the squadron's numerical designation, also symbolizes the unit's awards--the Meritorious Unit Commendation earned during World War II and the unit's Air Force Outstanding Unit Awards. The emblem bears the national colors of red, white, and blue, and the Air Force colors of golden yellow and ultramarine blue.

Commanders and Date of Assignment

21 Aug 44	Capt Raymond A. Walker	Dec 62	Lt Col Robert V. McKibban
3 Sep 44	Lt Col Nicholas H. Chavasse	Dec 63	Lt Col Earl W. Peters
1 Apr 46	Capt Fred M. Barricklow	8 Jun 65	Lt Col Clyde C. Angley
11 Jul 46	2Lt Eugene R. Cummings	26 Jun 65	Lt Col Leon M. Grisham

²⁷ *Ibid.*, Note: source document did not have a complete date for last commander.

13 Jul 46	Capt Y. Mitchell	15 Jul 67	Lt Col Hiram P. Bilyeu
10 Sep 46	Maj Charles F. Adams	20 Nov 69	Lt Col Leslie E. Gamble
16 Sep 46	Maj Paul V. Fackler	10 Nov 70	Lt Col Carlton F. Garlock
24 May 47	Maj Kenneth A. Linder	15 Apr 71	Col Wilson V. Palmore
16 Jun 47	Maj Robert L. Foley	26 May 73	Col Foster A. Post
21 Feb 51	Lt Col Aubrey D. Taylor	1 Aug 73	Col Orville J. Beranek
7 Jan 52	Lt Col Richard D. Stowell	3 Sep 75	Lt Col Charles M. Teed
13 Feb 52	Lt Col Kenneth A. Linder	1 Mar 77	Lt Col Forrest N. Dye
12 Oct 53	Lt Col Russell W. Neely	1 Jun 79	Lt Col John P. Joyce
13 Sep 54	Lt Col Roger A. Stevenson	28 Oct 80	Lt Col James D. Johnson
22 Sep 56	Lt Col Dale D. Desper	30 Oct 81	Lt Col George B. Stokes
3 Mar 58	Maj Robert E. Kerr	16 Sep 83	Lt Col Daniel B. Ahern
15 Jun 58	Lt Col Harvey P. Hall	3 Jun 85	Lt Col Gary B. Koch
12 Oct 61	not manned through 7 Jan 62	22 Dec 86	Lt Col Milton O. Payne, Jr.
8 Jan 62	Lt Col Robert V. McKibban	6 Jul 89	Lt Col William H. Richard
29 May 62	Lt Col John D. Horn	25 Jul 91	Lt Col Brian R. Voorhees

56th WEATHER RECONNAISSANCE SQUADRON INACTIVE

LINEAGE: Constituted the 385th Fighter Squadron, it was activated at Orlando AB, Florida, and assigned to the 355th Fighter Group on 12 November 1942. It moved to Norfolk Municipal Airport, Virginia, on 17 February 1943; to Philadelphia Municipal Airport, Pennsylvania, on 4 March 1943; to Steeple Morden, England, on 8 July 1943; and finally to Gablingen, Germany, on 16 July 1945. It was redesignated the 56th Reconnaissance Squadron, Weather Scouting, on 3 December 1945 and moved to Schweinfurt, Germany, in April 1946. It moved to Mitchel Field, New York, on 1 August 1946 where it was inactivated on 20 November 1946. It was redesignated the 56th Strategic Reconnaissance Squadron, Medium, Weather, on 22 January 1951, activated at Misawa, Japan, and assigned to 2143d Air Weather Wing on 21 February 1951. It moved to Yokota AB, Japan, on 14 September 1951 and was assigned to 1st Weather Wing on 8 February 1954. It was redesignated the 56th Weather Reconnaissance Squadron on 15 February 1954, and assigned to 9th Weather Group on 1 February 1960. The 56th was assigned to 9th Weather Reconnaissance Group on 8 July 1961 and to 9th Weather Reconnaissance Wing on 8 July 1965. It was inactivated on 15 January 1972.

AWARDS: World War II Campaign Streamer: Air Combat, EAME Theater, 7 Dec 1941-11 May 1945; Air Offensive, Europe, 4 Jul 1942-5 Jun 1944; Normandy, 6 Jun-24 Jul 1944; Northern France, 25 Jul-14 Sep 1944; Rhineland, 15 Sep 1944-21 Mar 1945; Ardennes-Alsace, 16 Dec 1944-25 Jan 1945; Central Europe, 22 Mar-11 May 1945. Korean War Campaign Streamers: UN Defensive, 27 Jun-15 Sep 1950; UN Offensive, 16 Sep-2 Nov 1950; First UN Counteroffensive, 25 Jan-21 Apr 1951; CCF Spring Offensive, 22 Apr-8 Jul 1951; UN Summer-Fall Offensive, 9 Jul-27 Nov 1951; Second Korean Winter, 28 Nov 1951-30 Apr 1952; Korea Summer-Fall 1952, 1 May-30 Nov 1952; Third Korean Winter, 1 Dec 1952-30 Apr 1953; Korea Summer-Fall 1952, 1 May-30 Nov 1952; Third Korean Winter, 1 Dec 1952-30 Apr 1953; Korea Summer-Fall 1953, 1 May-27 Jul 1953. Distinguished Unit Citation for Germany, 5 Apr 1944; Air Force Outstanding Unit Awards for Mar-Oct 1956; 1 Mar 1960-28 Feb 1961; 1 Jul 1967-30 Jun 1968; 1 Jan-31 Dec 1971.

FIRST EMBLEM: Approved on 7 July 1943 for the 358th Fighter Squadron. **SIGNIFICANCE:** This emblem is not weather oriented but was used by the 56th Reconnaissance Squadron, Weather Scouting, and its successors from 3 December 1945 until a new emblem was approved in 1952. (Not illustrated in the emblem section.)

SECOND EMBLEM (see square 121): Approved on 26 September 1952 for 56th Strategic Reconnaissance Squadron (Medium) Weather. **SIGNIFICANCE:** The buzzard, the symbol of the code name for this squadron's weather tracks, is preparing to release a dropsonde instrument in order to gather weather data from the squall-line. The dropsonde instrument, a miniature weather station, transmits in Morse Code to the dropsonde analyst in the aircraft the temperature, pressure, and humidity of the vertical column of air through which it descends. The Calabash pipe with the two puffs of smoke expressed the forcefulness, drive, and determination displayed by the Buzzard, a caricature of Sherlock Holmes, while he searches with his magnifying glass for important meteorological data contained within the

squall-line. The aviator's helmet symbolizes the flying mission of the squadron. All of the above, superimposed on the face of the radar scope, indicates radar is one of the most important navigational and weather detecting aids used in aerial weather reconnaissance.

Commanders and Date of Assignment

2 Feb 43	1Lt Theodore B. Marxson	28 May 52	Lt Col Lester R. Ferriss, Jr.
8 Feb 43	Lt Col Raymond B. Myers	25 Apr 55	Lt Col Russell W. Neely
29 Jun 44	Maj Charles J. Rosenblatt	27 Feb 58	Lt Col Lawrence Cometh
10 Jul 44	Capt William J. Hovde	8 Jul 60	Lt Col Eugene D. Wallace
2 Aug 44	Lt Col Emil L. Sluga	20 Jul 63	Lt Col Robert V. McKibban
21 Mar 45	Maj Walter V. Gresham, Jr.	17 Oct 65	Col Arthur L. Moreland
7 May 45	Maj William J. Hovde	10 Apr 66	Lt Col James O. Lykins
8 Oct 45	Capt Kenneth E. Mikalauskas	20 Jul 66	Lt Col Whitney L. Morgan
Dec 45-20 Nov 46	Unknown	6 Jun 69	Lt Col Tedd L. Bishop
21 Feb 51	Col Robert G. David	8 Aug 70	Col Glenn A. Patterson, Jr.

57th WEATHER RECONNAISSANCE SQUADRON INACTIVE

LINEAGE: Constituted the 399th Fighter Squadron on 26 May 1943, it was activated at Hamilton Field, California, and assigned to the 369th Fighter Group on 1 August 1943. The squadron moved to Redding AAF, California, on 1 November 1943; to Hamilton Field, California, on 16 March 1944; to De Ridder AAB, Louisiana on 29 March 1944; and to Stuttgart AAF, Arkansas, on 8 February 1945. Redesignated the 399th Fighter-Bomber Squadron on 5 April 1944, the 399th Fighter Squadron on 5 June 1944, and then the 57th Reconnaissance Squadron, Weather, on 7 July 1945. It was assigned to the III Reconnaissance Command and moved to Will Rogers Field, Oklahoma, on 21 July 1945. It moved to Rapid City AAB, South Dakota, on 29 July 1945 where it was inactivated on 25 January 1946. Redesignated the 57th Reconnaissance Squadron, Very Long Range, Weather, on 3 July 1947 it was activated in the Reserves at Hamilton Field, California, and assigned to the 70th Reconnaissance Group on 1 August 1947. It was inactivated on 27 June 1949. Redesignated the 57th Strategic Reconnaissance Squadron, Medium, Weather, on 22 January 1951 it was activated at Hickam AFB, Hawaii, and assigned to Air Weather Service on 21 February 1951. It was assigned on 20 May 1952 to the 2143d Air Weather Wing and then to the 1st Weather Wing on 8 February 1954. Redesignated the 57th Weather Reconnaissance Squadron on 15 February 1954 it was inactivated on 18 October 1958. Activated and assigned to the Military Air Transport Service on 8 February 1962, the squadron was organized at Kirtland AFB, New Mexico, and further assigned to the 9th Weather Reconnaissance Group on 16 February 1962. The 57th moved to Avalon AF, Australia, on 30 September 1962 and was assigned to the 9th Weather Reconnaissance Wing on 8 July 1965. It moved to Hickam AFB, Hawaii, on 15 September 1965 where it was inactivated on 30 November 1969.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946; Air Force Outstanding Unit Award for Mar-Oct 1956; 1 Jul 1967-30 Jun 1968.

FIRST EMBLEM: Approved on 26 June 1944 for the 399th Fighter Squadron. **SIGNIFICANCE:** This emblem is not weather oriented but was used by the 57th Reconnaissance Squadron, Weather, and its successors from 7 July 1945 until a new emblem was approved in 1953. (Not illustrated in the emblem section.)

SECOND EMBLEM (see square 122): Approved on 2 March 1953 for 57th Strategic Reconnaissance Squadron (Medium) Weather. **SIGNIFICANCE:** The outer circle is orange representing early morning and setting sun, symbolic of the long dawn to dark weather reconnaissance flights, which are the mission of the squadron. Between the outer orange circle and the inner blue circle is a narrow white ring representing the global aspects of reconnaissance operations. The inner circle is blue, the color of the sky and the ocean which is the double home of the Petrels, the bird for which this squadron's flights are named. The shearwater is one species of Petrels which fly the oceans of the world from 85 degrees north to 85 degrees south latitude.

THIRD EMBLEM (see square 123): Approved on 12 September 1962 for 57th Weather Reconnaissance Squadron. **SIGNIFICANCE:** On a background of sky to suggest the primary theater of operations for the U.S. Air

Force, a representation of the earth indicates the global aspects of the mission. The constellation, Southern Cross, indicates the area of responsibility, and the large star pointing south suggests the high altitudes of the missions that are flown in the southern skies. The air-foil, representing the jet aircraft flown by the squadron, is suggestive of a boomerang, a weapon in common use in the southern hemisphere. It bears a symbol representing the chemical and physical elements of the atmosphere. A wide border of red encircles the emblem to represent the unit's mission of sampling the atmosphere for radioactive nuclear particles.

FOURTH EMBLEM (see square 122): Approved on 14 February 1967 (reinstatement of emblem authorized for the 57SRS(M)W on 2 March 1953). **SIGNIFICANCE:** The outer circle is orange representing early morning and setting sun, symbolic of the dawn to dark scope of the squadron's weather reconnaissance mission. Between the outer orange circle and the inner blue circle is a narrow white ring, representing the global aspects of the weather reconnaissance operation. The inner circle is blue, the color of the sky and ocean which is the double home of the wedge-tailed Shearwater, on whose back Donald Duck is riding. The Shearwater represents unit aircraft whose environment is also the sky over the oceans of the world. Donald Duck reading the thermometer and noting the reading on a pad represents, of course, an aerial weather observer performing the primary squadron mission of observing and recording weather data.

Commanders and Date of Assignment

5 Aug 43	Capt Charles W. Hoffman	11 Jan 54	Lt Col Templeton S. Walker
7 May 44	Capt Albert S. Kelly	28 May 54	Lt Col Lawrence Cometh
17 Nov 44	Capt Gentry R. Plunkett	9 Jun 54	Lt Col Templeton S. Walker
21 Nov 44	Maj Douglas H. Buskey	Aug 56	Lt Col John H. Conrad
25 Jun 45	Maj Raymond L. Calloway	16 Feb 62	Col Paul Palmer
Jul 45	Maj Robert E. Williams	7 May 62	Maj John Cooper
6 Nov 45	Capt Clinton H. Deardorff	26 Aug 62	Lt Col Thomas A. Aldrich
2 Jan 46	1Lt Hamilton S. Hering	15 Sep 65	Lt Col John Horn
Aug 47	Lt Col Chase	11 Jun 67	Lt Col William Evans
21 Feb 51	Lt Col Fred C. Simpson	4 Apr 69	Lt Col William Payton
Dec 52	Lt Col Lawrence Cometh		

58th WEATHER RECONNAISSANCE SQUADRON INACTIVE

LINEAGE: Constituted as the 400th Fighter Squadron on 26 May 1943, it was activated at Hamilton Field, California, and assigned to the 369th Fighter Group on 1 August 1943. It moved to Marysville AAF, California, on 3 November 1943; to Oroville AAF, California, on 29 January 1944; to Hamilton Field on 16 March 1944; and then to De Ridder AAB, Louisiana, on 28 March 1944. It was redesignated the 400th Fighter-Bomber Squadron on 5 April 1944 and then the 400th Fighter Squadron on 8 June 1944. It moved to Stuttgart AAF, Arkansas, on 8 February 1945 and was redesignated the 58th Reconnaissance Squadron, Weather, and assigned to the 2d Tactical Air Division on 7 July 1945. On 21 July 1945 the squadron was assigned to the III Reconnaissance Command and moved to Will Rogers Field, Oklahoma. Moving to Rapid City AAB, South Dakota, on 28 July 1945 the 58th was assigned to the Third Air Force on 24 August 1945. On 31 March 1946 it was assigned to the Fifteenth Air Force and inactivated on 31 May 1946. Redesignated the 58th Strategic Reconnaissance Squadron, Medium, Weather, on 22 January 1951, it was activated at Eielson AFB, Alaska, and assigned to the 2107th Air Weather Group on 21 February 1951. The 58th was assigned to the 7th Weather Group on 20 April 1952 and redesignated the 58th Weather Reconnaissance Squadron on 15 February 1954. It was assigned to the 9th Weather Group on 18 April 1958 and inactivated on 8 August 1958. Activated and assigned to the 9th Weather Reconnaissance Group through the Military Air Transport Service on 15 April 1963 the 58th was organized at Kirtland AFB, New Mexico, on 8 June 1963. Reassigned to the 9th Weather Reconnaissance Wing on 8 July 1965, it was inactivated on 30 June 1974.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-8 Nov 1945; Air Force Outstanding Unit Award for 1 Jul 1967-30 Jun 1968; 1 Jan-31 Dec 1971.

FIRST EMBLEM: Approved on 12 January 1944 for the 400th Fighter Squadron (SE). **SIGNIFICANCE:** This emblem is not weather oriented but was used by the 58th Reconnaissance Squadron, Weather, and its successors from 7 July 1945 until a new emblem was approved in 1952. (Not illustrated in the emblem section.)

SECOND EMBLEM (see square 124): Approved on 18 January 1952 for 58th Strategic Reconnaissance Squadron (Medium) Weather. **SIGNIFICANCE:** The polar bear, symbol of endurance, strength, and accomplishment, symbolizes the significant historical accomplishment of the unit in the North Pole "Ptarmigan" flight. The aurora borealis symbolizes the unit's mission and accomplishment in exploring areas of the heretofore unknown places of the earth. The aircraft represents successfully accomplishing the air mission of the organization over the North Pole and over other frozen areas.

THIRD EMBLEM (see square 125): Approved on 26 July 1965 for 58th Weather Reconnaissance Squadron. **SIGNIFICANCE:** Against the background of blue depicting the sky, the primary theater of Air Force operations, the Zia symbol refers to the four points of the compass and with the globe in its center represents the unit's worldwide capabilities. The wings conjoined allude to the squadron's World War II training mission and the star commemorates their service in the American Theater. The aircraft flying over the aurora borealis symbolizes the unit's accomplishment in exploring unknown areas and their historical achievement in the North Pole "Ptarmigan" flight. The rain, cloud, and lightning bolt refer to the unit's quick reaction and response in all weather reconnaissance. The nuclear cloud with atomic nucleus and its escaping particles of gases represents the squadron's primary mission of air testing "hot" sampling after nuclear explosions and providing the invaluable data required. The emblem bears the Air Force colors of red, white, and blue to indicate the patriotism of the personnel and identifies the squadron as a member of the U.S. Air Force.

Commanders and Date of Assignment

5 Aug 43	Capt Robert C. Rogers	1 Feb 52	Lt Col Aubrey D. Taylor
Mar 44	Capt William Paule	5 Dec 53	Lt Col Fort W. Lipe
19 Oct 44	Capt Everette Marcum	6 Jul 55	Lt Col Carl H. Morales
16 Nov 44	Maj Robert c. Fletcher	26 Aug 57	Lt Col John N. Highley
12 Feb 45	Maj Max R. Wiecks	Jan 58	Lt Col Harvey P. Hall
11 Jul 45	Maj Joseph D. Hornsby	8 Jun 63	Lt Col Robert Moeller
18 Jul 45	Capt Harold Olson	Jul 66	Col Donald Wolfe
23 Jul 45	Maj Robert W. Vanderveld	11 Sep 70	Lt Col Douglas Campbell
6 Sep 45	Capt Ray J. Binder	Jul 71	Lt Col Jack Reedy
21 Feb 51	Lt Col Joseph O. Fletcher	30 Jul 71	Col Click Smith
22 Dec 51	Maj Clarence N. Chamberlain, Jr.	18 Sep 73	Col Thomas Strohl

59th WEATHER RECONNAISSANCE SQUADRON INACTIVE

LINEAGE: Constituted the 59th Reconnaissance Squadron, Long Range, Weather, on 1 August 1945, it was activated at Will Rogers Field, Oklahoma, and assigned to the III Reconnaissance Command on 10 August 1945. It moved to Ardmore AAF, Oklahoma, on 20 August 1945, was assigned to the 3d Air Force on 24 August 1945, and moved to Drew Field, Florida, on 7 October 1945. It was redesignated as the 59th Reconnaissance Squadron, Very Long Range, Weather, on 27 November 1945 and on 7 December 1945 it moved to MacDill Field, Florida. It moved to Castle Field, California, on 26 January 1946 and was assigned to the Air Transport Command on 13 March 1946. The 59th was further assigned to Air Weather Service on 20 March 1946, which in turn assigned it to the 308th Reconnaissance Group (Weather) on 17 October 1946. The squadron moved to Fairfield-Suisun AAF, California, on 22 October 1946, and to Ladd Field, Alaska, on 1 June 1947 where it was inactivated on 15 October 1947. Redesignated the 59th Weather Reconnaissance Flight on 3 March 1955, it was activated at Kindley AFB, Bermuda, and assigned to the 9th Weather Group on 8 May 1955. It was redesignated the 59th Weather Reconnaissance Squadron on 1 April 1956 and was discontinued at Kindley AFB, on 18 March 1960. It was organized on 8 July 1963 at Goodfellow AFB, Texas, and assigned to the 9th Weather Reconnaissance Group. The 59th was discontinued and inactivated on 8 May 1964.

AWARDS: None.

FIRST EMBLEM (see square 126): Approved on 14 February 1947 for 59th Strategic Reconnaissance Squadron (Very Long Range) Weather. **SIGNIFICANCE:** The insignia depicts the turbulent conditions encountered by the squadron in fulfilling its mission of providing weather data.

SECOND EMBLEM (see square 127): Approved on 7 March 1956 for 59th Reconnaissance Squadron (Very Long Range) Weather. **SIGNIFICANCE:** A high priority mission of this unit is reconnaissance of Atlantic hurricanes. Because of wide public interest in hurricane activities and as a result of extensive coverage by various news media in recent years, this organization has become well known to the general public and all government agencies as the "Hurricane Hunters." The emblem is in the form of the symbol used by meteorologists to indicate hurricanes on weather charts. The words "Hurricane Hunters" serve to accurately identify the unit and its aircraft. The flags in the center of the emblem signify a hurricane warning. **MOTTO:** PRO BONO PUBLICO translates to FOR THE GOOD OF THE PUBLIC.

THIRD EMBLEM (see square 128): Approved on 9 January 1964 for 59th Weather Reconnaissance Squadron. **SIGNIFICANCE:** The balloons represent the dual collection mission of the squadron. The shaft of lightning is symbolic of the interest of Air Weather Service in all levels of the atmosphere. The blue sky with white clouds alludes to the level of ordinary weather.

Commanders and Date of Assignment

Aug-Dec 45	unknown
7 Dec 45	Maj Paul H. Fackler
3 Jan 46	Lt Col Karl T. Rauk
8 May 55	Lt Col Earl F. Dunphy
15 May 58	Lt Col Fellie F. Robinson
8 Jul 63	Lt Col Robert L. Ray

308th WEATHER RECONNAISSANCE GROUP (WEATHER) INACTIVE

HISTORICAL BACKGROUND: Established as the 308th Bombardment Group (Heavy) on 28 January 1942, it was activated on 15 April 1942 at Gowen Field, Idaho, and moved to Davis-Monthan Field, Arizona, on 20 June 1942. It moved to Wendover Field, Utah, on 1 October 1942 and to Camp Stoneman, California, on 10 February 1943. It departed the U.S. on 16 February 1943. Arriving at Kunming, China, on 20 March 1943, it was assigned to the Fourteenth Air Force. It moved to Hsinching, China, on 10 February 1945 and to Rupsi, India, on 27 June 1945. Departing India in December 1945 it arrived at Camp Kilmer, New Jersey, on 5 January 1946 and was inactivated the following day.

LINEAGE: The 308th Bombardment Group (Heavy) was redesignated the 308th Reconnaissance Group (Weather) on 27 September 1946, activated at Morrison Field, Florida, and assigned to Air Weather Service on 17 October 1946. The 308th Reconnaissance Group (Weather) moved to Fairfield-Suisun AAF, California, on 1 July 1947 and then to Tinker AFB, Oklahoma, on 10 November 1949. It was inactivated on 5 January 1951.

AWARDS: Campaign Streamers for World War II: India-Burma, 2 Apr 1942-28 Jan 1945; China Defensive, 4 Jul 1942-4 May 1945; New Guinea, 24 Jan 1943-31 Dec 1944; Western Pacific, Air, 17 Apr 1944-2 Sep 1945; China Offensive, 5 May 1945-2 Sep 1945; Air Combat, Asiatic-Pacific Theater, 7 Dec 1941-2 Sep 1945; Distinguished Unit Citations: China, 21 Aug 1943; East and South China Seas, Straits of Formosa and Gulf of Tonkin, 24 May 1944-28 Apr 1945.

Commanders and Date of Assignment

17 Oct 46	Col Richard Ellsworth
7 Jun 49	Col Hervey H. Whitfield
30 Apr 50	Lt Col Arthur A. McCartan
17 May 50	Col Hervey H. Whitfield

373d RECONNAISSANCE SQUADRON (VERY LONG RANGE) WEATHER INACTIVE

LINEAGE: Constituted the 373d Bombardment Squadron (Heavy) on 28 January 1942, it was activated at Gowen Field, Idaho, and assigned to the 308th Bombardment Group on 15 April 1942. It moved to Davis-Monthan Field, Arizona, on 20 June 1942; to Alamogordo, New Mexico, on 23 July 1942; to Davis-Monthan Field, Arizona, on 28 August 1942; to Wendover Field, Utah, on 1 October 1942; and to Pueblo AAB, Colorado, on 30 November 1942. It moved overseas to Yangkai, China, on 20 March 1943 and to Luliang, China, on 14 September 1944. It was assigned to the 494th Bombardment Group and moved to Yantan, Okinawa, on 21 July 1945. The 373d was assigned to the 11th Bombardment Group on 11 October 1945 and moved to Vancouver, Washington, on 4 January 1946 where it was inactivated on 7 January 1946. It was redesignated the 373d Reconnaissance Squadron (Very Long Range, Weather) on 16 September 1947, activated at Kindley Field, Bermuda, and assigned to the 8th Weather (later 2108th Air Weather) Group on 15 October 1947. The 373d was inactivated on 21 February 1951.

AWARDS: Campaign Streamers, Asiatic Pacific Theater, World War II, India-Burma, 2 Apr 1942-28 Jan 1945; Air Offensive Japan, 17 Apr 1942-2 Sep 1945; China Defensive, 4 July 1942-4 May 1945; New Guinea, 24 Jan 1943-31 Dec 1944; Western Pacific, 17 Apr 1944-2 Sep 1945; China Offensive, 5 May-2 Sep 1945; Air Combat, 7 Dec 1941-2 Sep 1945. Distinguished Unit Citation: East and South China Seas, Straits of Formosa, Gulf of Tonkin, for 24 May 1944-28 April 1945.

Commanders and Date of Assignment

15 Oct 47	Lt Col Robert G. David
8 Jan 48	Maj John N. Hawley
17 Aug 48	Lt Col Clyde A. Ray
24 Apr 50	Lt Col Stanley I. Hand

374th RECONNAISSANCE SQUADRON (VERY LONG RANGE) WEATHER INACTIVE

LINEAGE: Constituted the 374th Bombardment Squadron (Heavy) on 2 January 1942, it was activated at Gowen Field, Idaho, and assigned to the 308th Bombardment Group on 15 April 1942. It moved to Davis-Monthan Field, Arizona, on 18 June 1942; to Alamogordo, New Mexico, on 24 July 1942; to Davis-Monthan Field on 28 August 1942; to Wendover Field, Utah, on 1 October 1942; and to Pueblo AAB, Colorado, on 30 November 1942. It moved overseas to Chengkung, China, on 20 March 1943; to Kwangan, China, on 18 February 1945; and to Rupsi, India, on 24 June 1945. The 374th moved to Camp Kilmer, New Jersey, on 5 January 1946 and was inactivated on 6 January 1946. It was redesignated 374th Reconnaissance Squadron (Very Long Range, Weather) on 16 September 1947, activated at Fairfield-Suisun AAF, California, and assigned to the 308th Reconnaissance Group on 15 October 1947. One flight operated from Lincolnshire, England, 22 November 1948 to 6 July 1949. One flight operated from Dhahran AF, Saudi Arabia, from 8 May to 4 December 1950, and another from Eielson AFB, Alaska, from 3 July to 28 September 1950. It was assigned to Air Weather Service on 19 December 1950 and inactivated on 21 February 1951.

AWARDS: Campaign Streamers, Asiatic Pacific Theater, World War II, India-Burma, 2 Apr 1942-28 Jan 1945; China Defensive, 4 Jul 1942-4 May 1945; New Guinea, 24 Jan 1943-31 Dec 1944; Western Pacific, 17 Apr 1944-2 Sep 1945; China Offensive, 5 May-2 Sep 1945; Air Combat, 7 Dec 1941-2 Sep 1945; Distinguished Unit Citations: China, 21 Aug 1943; East and South China Seas, Straits of Formosa, and Gulf of Tonkin, 24 May 1944-28 April 1945.

Commanders and Date of Assignment

15 Oct 47	Maj Robert L. Fowley
1 Dec 47	Lt Col Milton D. Willis
29 Nov 48	Lt Col Robert B. Sullivan
5 Feb 50	Maj Aubrey D. Taylor

375th RECONNAISSANCE SQUADRON (VERY LONG RANGE) WEATHER INACTIVE

LINEAGE: Constituted the 375th Bombardment Squadron (Heavy) on 28 January 1942, it was activated at Gowen Field, Idaho, and assigned to the 308th Bombardment Group on 15 April 1942. It moved to Davis-Monthan Field, Arizona, on 18 June 1942; to Alamogordo, New Mexico, on 24 July 1942; to Davis-Monthan Field on 28 August 1942; to Wendover Field, Utah, on 1 October 1942; and to Pueblo AAB, Colorado, on 1 December 1942. It moved overseas to Chengkung, China, on 20 March 1943; to Hsinching, China, on 18 February 1945; and to Rupsi, India, on 27 June 1945. It moved to Camp Kilmer, New Jersey, on 5 January 1946 and was inactivated on 6 January 1946. It was redesignated the 375th Reconnaissance Squadron (Very Long Range, Weather) on 16 September 1947, activated at Ladd Field, Alaska, and assigned to 7th Weather (later the 2107th Air Weather) Group on 15 October 1947. One flight operated from Fairfield-Suisun AAF, California, and later from Shemya AFB, Alaska, 15 October 1947 to 15 May 1949. It moved to Eielson AFB, Alaska, on 6 March 1949, and was inactivated on 21 February 1951.

AWARDS: Campaign Streamers, Asiatic Pacific Theater, World War II, India-Burma, 2 Apr 1942-28 Jan 1945; China Defensive, 4 Jul 1942-4 May 1945; New Guinea, 24 Jan 1943-31 Dec 1944; Western Pacific, 17 Apr 1944-2 Sep 1945; China Offensive, 5 May-2 Sep 1945; Air Combat, 7 Dec 1941-2 Sep 1945; Air Combat, 7 Dec 1941-2 Sep 1945. Distinguished Unit Citation: China, 21 Aug 1943; East and South China Seas, Straits of Formosa, and Gulf of Tonkin, 24 May 1944-19 Apr 1945.

EMBLEM: Approved on 11 January 1943 for the 375th Bombardment Squadron (Heavy). **SIGNIFICANCE:** This emblem is not weather oriented but was used by the 375th Reconnaissance Squadron (Very Long Range, Weather). Not illustrated in the emblem section.

Commanders and Date of Assignment

15 Oct 47	Lt Col Karl T. Rauk
30 Oct 49	Maj Darold K. Barker
21 Feb 50	Maj Joseph O. Fletcher

512th RECONNAISSANCE SQUADRON (VERY LONG RANGE) WEATHER INACTIVE

LINEAGE: Constituted the 512th Bombardment Squadron (Heavy) on 19 October 1942, it was activated at Lydda, Palestine, and assigned to the 376th Bombardment Group on 31 October 1942. It moved to Abu Sueir, Egypt, on 9 November 1942; to Gambut, Libya, on 10 February 1943; to Soluch, Libya, on 25 February 1943; to Bengasi, Libya, on 16 April 1943; and to Enfidaville, Tunisia, on 26 September 1943. A detachment operated from Bengasi, Libia, from 3 through 11 October 1943. It moved to San Pancrazio, Italy, on 19 November 1943. The 512th moved to Harvard AAF, Nebraska, on 8 May 1945, and was redesignated the 512th Bombardment Squadron (Very Heavy) on 23 May 1945. It moved to Grand Island, AAF, Nebraska, on 25 June 1945, and was assigned to the 468th Bombardment Group at Tarrant Field, Texas, on 10 November 1945. The 512th moved to Roswell AAF, New Mexico, on 9 January 1946 and was inactivated on 26 March 1946. It was redesignated the 512th Reconnaissance Squadron (Very Long Range, Weather) on 6 May 1947, was activated at Gravelly Point, Virginia, and assigned to the 376th Reconnaissance Group on 23 May 1947. It was assigned to Air Weather Service on 16 September 1947 and to the 308th Reconnaissance Group on 14 October 1947. It was inactivated on 20 September 1948. The 512th was activated at Fairfield Suisun AAF, California, and assigned to the 308th Reconnaissance Group on 13 February 1949. It was assigned to the 2143d Air Weather Wing on 14 November 1949 and moved to Yokota AB, Japan, on 27 January 1950. It moved to Misawa, Japan, on 11 August 1950, and was inactivated on 20 February 1951.

AWARDS: Campaign Streamers, EAME Theater, World War II, Egypt-Libya, 11 Jun 1942-12 Feb 1943; Air Offensive Europe, 4 Jul 1942-5 Jun 1944; Tunisia, 12 Nov 1942-13 May 1943; Sicily, 14 May-17 Aug 1943; Naples-Foggia, 18 Aug 1943-21 Jan 1944; Anzio, 22 Jan-24 May 1944; Rome-Arno, 22 Jan-9 Sep 1944; Normandy, 6 Jun-24

Jul 1944; Northern France, 25 Jul-14 Sep 1944; Southern France, 15 Aug-14 Sep 1944; North Apennines, 10 Sep 1944-4 Apr 1945; Rhineland, 15 Sep 1944-21 Mar 1945; Central Europe, 22 Mar-11 May 1945; Po Valley, 5 Apr-8 May 1945; Air Combat, 7 Dec 1941-11 May 1945. Korean Theater, Korean War, UN Defensive, 27 Jun-15 Dec 1950; UN Offensive, 16 Sep-2 Nov 1950; Chinese Communist Forces Intervention, 3 Nov 1950-24 Jan 1951; First UN Counter offensive, 25 Jan-21 Apr 1951. Distinguished Unit Citations for: North Africa and Sicily, Nov 1942-17 Aug 1943; Ploesti, Rumania, 1 Aug 1943; Bratislava, Czechoslovakia, 16 Jun 1944. Air Force Outstanding Unit Award for 27 Jun-27 Dec 1950.

EMBLEM: Approved on 6 January 1944 for the 512th Bombardment Squadron (Heavy). **SIGNIFICANCE:** This emblem is not weather oriented but was used by the 512th Reconnaissance Squadron (Very Long Range, Weather). Not illustrated in the emblem section.

Commanders and Date of Assignment

23 May 47 Not manned through 20 September 1948
15 May 49 Lt Col Robert G. David

513th RECONNAISSANCE SQUADRON (VERY LONG RANGE) WEATHER INACTIVE

LINEAGE: Constituted the 513th Bombardment Squadron (Heavy) on 19 October 1942, it was activated at Lydda, Palestine, and assigned to the 376th Bombardment Group on 31 October 1942. It moved to Abu Sueir, Egypt, on 8 November 1942; to Gambut, Libya, on 10 February 1943; to Soluch, Libya, on 25 February 1943; to Bengasi, Libya, on 16 April 1943; and to Enfidaville, Tunisia, on 26 September 1943. A detachment operated from Bengasi, Libya, from 3 through 11 October 1943. The 513th moved to San Pancrazio, Italy, on 19 November 1943. It moved to Harvard AAF, Nebraska, on 8 May 1945 and was redesignated the 513th Bombardment Squadron (Very Heavy) on 23 May 1945. It moved to Grand Island AAF, Nebraska, on 25 June 1945 and to March Field, California, on 1 June 1945. The 513th was assigned to the 497th Bombardment Group on 1 November 1945 and moved to MacDill Field, Florida, on 5 January 1946. It was inactivated on 31 March 1946. It was redesignated the 513th Reconnaissance Squadron (Very Long Range, Weather) on 6 May 1947, activated at Gravelly Point, Virginia, and assigned to the 376th Reconnaissance group on 23 May 1947. It was assigned to Air Weather Service on 26 September 1947 and to the 308th Reconnaissance Group on 14 October 1947. It was inactivated on 20 September 1948. The 513th was activated at Fairfield-Suisun AAF, California, and was assigned to the 308th Reconnaissance Group on 10 August 1949. It moved to Tinker AFB, Oklahoma, on 10 November 1949. A detachment operated from Dhahran, Airfield, Saudi Arabia, from 6 March through May 1950. The 513th was assigned to Air Weather Service on 19 December 1950 and inactivated on 20 February 1951.

AWARDS: Campaign Streamers, EAME Theater, World War II, Egypt-Libya, 11 Jun 1942-12 Feb 1943; Air Offensive Europe, 4 Jul 1942-5 Jun 1944; Tunisia, 12 Nov 1942-13 May 1943; Sicily, 14 May-14 Aug 1943; Naples-Foggia, 18 Aug 1943-21 Jan 1944; Anzio, 22 Jan-24 May 1944; Rome-Arno, 22 Jan-9 Sep 1944; Normandy, 6 Jun-24 Jul 1944; Northern France, 25 Jul-14 Sep 1944; Southern France, 15 Aug-14 Sep 1944; North Apennines, 10 Sep 1944-4 Apr 1945; Rhineland, 15 Sep 1944-21 Mar 1945; Central Europe, 22 Mar-11 May 1945; Po Valley, 5 Apr-8 May 1945; Air Combat, 7 Dec 1941-11 May 1945. Distinguished Unit Citations: North Africa and Sicily, Nov 1942-17 Aug 1943; Ploesti, Rumania, 1 Aug 1943; Bratislava, Czechoslovakia, 16 June 1944.

EMBLEM: Approved on 6 January 1944 for the 513th Bombardment Squadron (Heavy). **SIGNIFICANCE:** This emblem is not weather oriented but was used by the 513th Reconnaissance Squadron (Very Long Range, Weather). Not illustrated in the emblem section.

Commanders and Date of Assignment

23 May 47 Not manned through 20 September 1948
20 Sep 48 Unknown
Jul 49 Capt Earl A. Shaeffer
2 Mar 50 Maj Carlos D. Bonnot
29 Apr 50 Capt Charles H. Silvernail
May 50 Lt Col Arthur A. McCartan

514th RECONNAISSANCE SQUADRON (VERY LONG RANGE) WEATHER INACTIVE

LINEAGE: Constituted the 514th Bombardment Squadron (Heavy) on 19 October 1942, it was activated at Lydda, Palestine, and assigned to the 376th Bombardment Group on 31 October 1942. It moved to Abu Sueir, Egypt, on 8 November 1942; to Gambit, Libya, on 10 February 1943; to Soluch, Libya, on 25 February 1943; to Bengasi, Libya, on 6 April 1943, and to Enfidaville, Tunisia, on 26 September 1943. A detachment operated from Bengasi, Libya, from 3 October through 11 October 1943. The 514th moved to San Pancrazio, Italy, on 18 November 1943. It moved to Harvard AAF, Nebraska, on 8 May 1945 and was redesignated the 514th Bombardment Squadron (Very Heavy) on 23 May 1945 and moved to Grand Island AAF, Nebraska, on 25 June 1945. It moved to MacDill Field, Florida, on 22 December 1945 and was inactivated on 7 March 1946. The 514th moved to March Field, California, and was assigned to the 498th Bombardment Group on 10 November 1945. It moved to MacDill Field, Florida, on 22 December 1945 and was inactivated on 7 March 1946. It was redesignated the 514th Reconnaissance Squadron (Very Long Range, Weather) on 16 September 1947, activated at North Field, Guam, and assigned to the 43d (later 2143d Air) Weather Wing on 15 October 1947. It was inactivated on 20 February 1951.

AWARDS: Service Streamer, Korean Theater, Korean War Campaign Streamers, EAME Theater, World War II, Egypt-Libya, 11 Jun 1942-12 Feb 1943; Air Offensive Europe, 4 Jul 1942-5 June 1944; Tunisia, 12 Nov 1942-13 May 1943; Sicily, 14 May-17 Aug 1943; Naples-Foggia, 18 Aug 1943-21 Jan 1944; Anzio, 22 Jan-24 May 1944; Rome-Arno, 22 Jan-9 Sep 1944; Normandy, 6 Jun-24 Jul 1944; Northern France, 25 Jul-14 Sep 1944; Southern France, 15 Aug-14 Sep 1944; North Apennines, 10 Sep 1944-4 Apr 1945; Rhineland, 15 Sep 1944-21 Mar 1945; Central Europe, 22 Mar-11 May 1945; Po Valley, 5 Apr-8 May 1945; Air Combat, 7 Dec 1941-11 May 1945. Distinguished Unit Citations: North Africa and Sicily, Nov 1942-17 Aug 1943; Ploesti, Rumania, 1 Aug 1943; Bratislava, Czechoslovakia, 16 June 1944.

Commanders and Date of Assignment

15 Oct 47	Lt Col Roy W. Nelson, Jr
1 Jan 48	Maj Paul H. Fackler
10 Mar 48	Maj Leland B. Farnell, Jr
2 Jul 48	Maj Paul H. Fackler
10 May 49	Maj Leland B. Farnell, Jr
6 Jul 49	Maj John P.K. Cavender
24 Jun 50	Maj Donald K. Jelks
28 Aug 50	Lt Col Paul S. Bechtel

2078th WEATHER RECONNAISSANCE SQUADRON (SPECIAL) [MAJCON] INACTIVE

LINEAGE: Designated as the 1st Weather Reconnaissance Squadron (Special) on 19 May 1948, it was organized at Fairfield-Suisun AFB, California, and assigned to the 308th Reconnaissance Group (Weather) through Headquarters Air Weather Service on 1 June 1948. The 1st Weather Reconnaissance Squadron (Special) was redesignated as the 2078th Air Weather Reconnaissance Squadron (Special) on 1 October 1948. It moved to Tinker AFB, Oklahoma, on 10 November 1949 and was discontinued on 20 March 1950.

AWARDS: None.

EMBLEM: Approved on 27 September 1948 for the 2078th Air Weather Reconnaissance Squadron (Special). This unit was authorized to use the emblem of the old Weather Reconnaissance Squadron Test Number 1. (A MAJCON unit is not normally authorized to inherit the emblem of an AFCON unit.) **SIGNIFICANCE:** Same as Weather Reconnaissance Squadron Test Number 1.

Commanders and Date of Assignment

1 Jun 48	Lt Col Robert G. David
6 Jun 49	Lt Col Arthur A. McCartan

COROLLARY (AIR FORCE RESERVE) UNITS, 1949-1951

A Presidential directive of October 1948 gave impetus to an Air Force-wide reserve program, under which Air Weather Service formed corollary Air Force Reserve weather wings, groups, squadrons, and detachments. Those units, made up of reserve officers and enlisted personnel who trained together as units, duplicated active duty weather organizations. The approximately 2,800 reservists (1,743 officers and 1,064 enlisted) were assigned for training to Air Weather Service wings, groups, squadrons, and detachments closest to where they resided.

On 27 June 1949 the 8500th Air Weather Wing and the 8501st and 8502d Air Weather Groups, each corollary Air Force Reserve training units, were organized and assigned to Headquarters Air Weather Service. The 8500th Air Weather Wing was originally located at Tinker AFB, Oklahoma, and moved to Langley AFB, Virginia, on 1 September 1949. On 24 August 1949 the 8503d and 8504th Air Weather Groups were added to Air Weather Services' jurisdiction. The 8504th Air Weather Group, originally located at Robins AFB, Georgia, moved to Westover AFB, Massachusetts, on 1 October 1949. Then, on 3 October 1949, the 13th (Mitchel AFB, New York); 22d (March AFB, California); 32d (Wright-Patterson AFB, Ohio); 33d (McClellan AFB, California); 34th (Scott AFB, Illinois); 35th (Lowry AFB, Colorado); 36th (Kelly AFB, Texas); 37th (Robins AFB, Georgia); and 38th (Brookley AFB, Alabama) Weather Squadrons were activated as corollary Air Force Reserve Units. (The names of the commanders of those corollary squadrons, groups, and wings were unavailable from documents in the Air Weather Service historical archives.)

In early 1951, after Air Force directives severely curtailed Air Weather Service's authority to order to active service members of corollary units (the 571 officers and 1,402 enlisted manning more than 100 corollary units as of April 1951 could only be called up as a unit, not individually), Air Weather Service decided to discontinue the corollary program. Thus, effective 23 June 1951, the 8500th Air Weather Wing, the 8501st, 8502d, 8503d, and 8504th Air Weather Groups, and the 13th, 22d, 32d, 33d, 34th, 35th, 36th, 37th, and 38th Weather Squadrons were discontinued in place.

ARMY AIR FORCES BASE UNIT (AAFBU)

Early in 1944 the Army Air Forces developed a new, temporary organization known as the Army Air Forces Base Unit (AAFBU), usually referred to as "AAF Base Units" or as "no constituted units." The personnel authorizations for these base units came from a Table of Distribution (T/D) document rather than a Table of Organization and Equipment T/O&E. Instead of being constituted and activated, as were TO&E units, the base units were designated and organized by the major commands, numbered air forces (U.S.-based only), and certain large centers located in the United States. (Eventually, the Air Transport Command was authorized to use base units outside the United States, but this privilege was not extended to any other command.) The new units provided overhead personnel to operate bases, depots, schools, wings, air forces, and commands. Most base units replaced several T/O&E units, which were then inactivated or disbanded.

War Department Circular Number 24, 18 January 1944, authorized a new type of organization. A few weeks later, in February, a War Department letter authorized the U.S.-based command, air forces, and centers of the Army Air Forces to designate and organize AAF base units, one for each base in the United States, with separate additional base units to provide personnel overhead for wings, regions, and higher echelons. The letter allocated separate blocks of numbers, from 1 through 4999, to each establishment authorized to employ the base units. To the basic numerical designation and the "AAFBU" designation, the new units could have a parenthetical suffix that indicated the unit's function. Because the base units could be designated, organized, and discontinued by the commands, air forces, and centers, they were in effect major command-controlled (or MAJCON) units, the first of their kind.

About 30 base units were replaced early in 1947 when the AAF established a number of T/D combat wings on a service-test basis. With the groups and squadrons of the T/D wings providing services on the air bases (serviced until then by the base units), the base units were no longer needed. In September 1947, upon establishment of the U.S. Air Force, all AAF base units were redesignated as Air Force Base Units (AFBUs); but by mid-1948 the remaining base units were discontinued or redesignated into a new type of four-digit T/D unit, the direct predecessor of the MAJCON system.²⁸

65th AIR FORCE BASE UNIT (HEADQUARTERS, AIR WEATHER SERVICE) INACTIVE

LINEAGE: Organized the 65th Army Air Forces Base Unit (Headquarters and Headquarters Squadron, Army Air Forces Weather Wing) at Asheville, North Carolina, on 7 September 1944. It was redesignated the 65th Army Air Forces Base Unit (Headquarters Army Air Forces Weather Service) in July 1945. It moved to Langley Field, Virginia, on 7 January 1946 and was redesignated the 65th Army Air Forces Base Unit (Headquarters, Air Weather Service) on 13 March 1946. It moved to Gravelly Point, Virginia, on 15 June 1946 and was redesignated the 65th Air Force Base Unit (Headquarters Air Weather Service) on 26 September 1947. It was discontinued on 18 August 1948.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment
Complete list of commanders not available.

²⁸ Web, *A Guide to United States Air Force Lineage and Honors*, AFHRA, 11 Jun 2009, p. 4. Downloaded from <http://www.afhra.af.mil/shared/media/document/AFD-090611-010.pdf>, 12 Mar 2012

**66th AIR FORCE BASE UNIT (WEATHER TECHNICIAN UNIT)
INACTIVE**

LINEAGE: Organized as the 66th Army Air Forces Base Unit (Weather Technician Unit) at Asheville, North Carolina, and assigned to the Army Air Forces Weather Wing on 7 September 1944. It moved to Harvard University, Cambridge, Massachusetts, on 11 October 1944, and to Seymour Johnson Field, Goldsboro, North Carolina, and was redesignated the 66th Army Air Forces Base Unit (Weather Qualification and Service Group) on 1 May 1945. It was redesignated the 66th Army Air Forces Base Unit (Redeployment and Training Unit) on 26 May 1945. It was assigned to the Headquarters, Continental Weather Wing on 115 November 1945 and moved to Tinker Field, Oklahoma, on 21 January 1946. It was discontinued on 10 May 1946.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

1945 Maj Frank A. Benesh
29 Sep 45 Maj William F. Gannon
Complete list of commanders not available

**67th AIR FORCE BASE UNIT (TUSKEGEE WEATHER DETACHMENT)
INACTIVE**

LINEAGE: Organized the 67TH Army Air Forces Base Unit (Tuskegee Weather Detachment) at Tuskegee, Alabama, on 7 September 1944. It was discontinued and its personnel reassigned to the 71st Army Air Forces Base Unit (4th Weather Region) on 1 June 1945.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

1945 Maj Frank A. Benesh
29 Sep 45 Maj William F. Gannon
Complete list of commanders not available

**67th ARMY AIR FORCE BASE UNIT
(HEADQUARTERS CONTINENTAL WEATHER WING)
INACTIVE**

LINEAGE: Designated the 67th Army Air Forces Base Unit (Headquarters Continental Weather Wing), organized at Asheville, North Carolina, and assigned to the Army Air Forces Weather Service on 1 October 1945. It moved to Tinker Field, Oklahoma, on 16 November 1945 and was redesignated the 67th Air Force Base Unit (Headquarters Continental Weather Wing) on 26 September 1947. The 68th AAFBU (101st Weather Group), 70th AAFBU (103d Weather Group), 71st AAFBU (104th Weather Group), and the 74th AAFBU (102d Weather Group) were assigned to it. The 67th was discontinued on 3 June 1948 when its personnel were transferred to the 59th Weather Wing [MAJCON].

AWARDS: None.

Commanders and Date of Assignment

Complete list of commanders not available

**68th ARMY AIR FORCE BASE UNIT (1st WEATHER REGION)
INACTIVE**

LINEAGE: Designated the 68th Army Air Forces Base Unit (1st Weather Region), organized at Santa Monica, California, and assigned to Headquarters Army Air Forces Weather Wing on 7 September 1944 with personnel from the disbanded 1st Weather Squadron. It moved to Los Angeles, California, on 20 November 1944 and was discontinued on 1 October 1945. It was replaced by the 68th Army Air Forces Base Unit (101st Weather Group).

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

Complete list of commanders not available

**68th ARMY AIR FORCE BASE UNIT (101st WEATHER GROUP)
INACTIVE**

LINEAGE: Designated the 68th Army Air Forces Base Unit (101st Weather Group), organized at Los Angeles, California, and assigned to the 67th Army Air Forces Base Unit (Headquarters Continental Weather Wing) on 1 October 1945 with personnel from the discontinued 68th and 73d Army Air Forces Base Units. It moved to San Francisco, California, on 15 October 1945, and to McClellan Field, California, on 18 June 1946. It was redesignated the 68th Air Force Base Unit (101st Weather Group) on 26 September 1947. It was discontinued on 3 June 1948 and its personnel transferred to the 101st Weather Group.

AWARDS: None.

Commanders and Date of Assignment

1 Oct 45	Col Norman C. Spencer, Jr
24 Aug 46	Lt Col Norman E. King
1947	Histories not available
17 May 48	Lt Col Martin F. C. Sebode

**69th ARMY AIR FORCE BASE UNIT (2d WEATHER REGION)
INACTIVE**

LINEAGE: Designated the 69th Army Air Forces Base Unit (2d Weather Region), organized at Patterson Field, Ohio, and assigned to the Army Air Forces Weather Wing on 7 September 1944 with personnel from the disbanded 2d Weather Squadron. It was discontinued on 1 October 1945 and its personnel transferred to the 74th Army Air Forces Base Unit (102d Weather Group).

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

Complete list of commanders not available

**70th ARMY AIR FORCE BASE UNIT (3d WEATHER REGION)
INACTIVE**

LINEAGE: Designated the 70th Army Air Forces Base Unit (3d Weather Region), organized at San Antonio, Texas, and assigned to the Army Air Forces Weather Wing on 7 September 1944 with personnel from the

disbanded 3d Weather Squadron. It moved to Kelly Field, Texas, on 15 January 1945 and was discontinued on 1 October 1945 when it was replaced by the 70th Army Air Forces Base Unit (103d Weather Group).

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

Complete list of commanders not available

**70th ARMY AIR FORCE BASE UNIT (103d WEATHER GROUP)
INACTIVE**

LINEAGE: Designated the 70th Army Air Forces Base Unit (103d Weather Group), organized at Kelly Field, Texas, and assigned to the 67th Army Air Forces Base Unit (Headquarters Continental Weather Wing) on 1 October 1945. It was redesignated the 70th Air Force Base Unit (103d Weather Group) on 26 September 1947 and discontinued on 3 June 1948. Its personnel transferred to the 103d Weather Group.

AWARDS: None.

Commanders and Date of Assignment

1 Oct 45	Col Oscar A. Heinlein
1 Dec 45	Col Cordes F. Tiemann
20 Aug 46	Lt Col Martin F.C. Sebode
10 Mar 47	Maj Louis D. Laurin
11 Apr 47	Lt Col Martin F.C. Sebode

**71st ARMY AIR FORCE BASE UNIT (4th WEATHER REGION)
INACTIVE**

LINEAGE: Designated the 71st Army Air Forces Base Unit (4th Weather Region), organized at Atlanta, Georgia, and assigned to the Army Air Forces Weather Wing on 7 September 1944 with personnel from the disbanded 4th Weather Squadron. It absorbed the personnel of the discontinued 67th Army Air Forces Base Unit (Tuskegee Weather Detachment) on 1 June 1945. It was discontinued on 1 October 1945 when it was replaced by the 71st Army Air Forces Base Unit (104th Weather Group).

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

Complete list of commanders not available

**71st ARMY AIR FORCE BASE UNIT (104th WEATHER GROUP)
INACTIVE**

LINEAGE: Designated the 71st Army Air Forces Base Unit (104th Weather Group), organized at Atlanta, Georgia, and assigned to the 67th Army Air Forces Base Unit (Headquarters Continental Weather Wing) on 1 October 1945. It moved to Robins Field, Georgia, on 21 April 1946 and was redesignated the 71st Air Force Base Unit (104th Weather Group) on 26 September 1947. It was discontinued on 3 June 1948 and its personnel transferred to the 104th Weather Group.

AWARDS: None.

Commanders and Date of Assignment

1 Oct 45	Maj Arthur C. Peterson
6 Oct 45	Maj Robert C. Ross
25 Oct 45	Lt Col Anthony T. Shtogren
2 Nov 45	Lt Col James B. Baker
5 Nov 45	Lt Col Anthony T. Shtogren
30 Nov 45	Lt Col James B. Baker
9 Mar 46	Maj Andrew G. Irick
20 Apr 46	Lt Col Morrill E. Marston
1 Jan 48	Lt Col Archie J. Knight

**72d ARMY AIR FORCE BASE UNIT (23d WEATHER REGION)
INACTIVE**

LINEAGE: Designated the 72d Army Air Forces Base Unit (23d Weather Region), organized at Kansas City, Missouri, and assigned to the Army Air Forces Weather Wing on 7 September 1944 with personnel from the disbanded 23d Weather Squadron. It moved to Topeka AAF, Kansas, on 1 July 1945 and was discontinued on 1 October 1945.

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

15 May 45	Maj John M. Feeley, Jr
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**72d ARMY AIR FORCE BASE UNIT (SPECIAL PROJECTS UNIT)
INACTIVE**

LINEAGE: Designated the 72d Army Air Forces Base Unit (Special Projects Unit), organized at Asheville, North Carolina, and assigned to the Army Air Forces Weather Service on 1 October 1945. It moved to Langley Field, Virginia, on 7 January 1946 and on 1 August 1946 it moved to Patterson Field, Ohio. It was discontinued on 21 April 1947 and its personnel were transferred to the 67th Army Air Forces Base Unit (Headquarters Continental Weather Wing).

AWARDS: None.

Commanders and Date of Assignment

1 Oct 45	Maj Frederick A. Matchinski
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Complete list of commanders not available

**73d ARMY AIR FORCE BASE UNIT (24th WEATHER REGION)
INACTIVE**

LINEAGE: Designated the 73d Army Air Forces Base Unit (24th Weather Region), organized at Seattle, Washington, and assigned to the Army Air Forces Weather Wing on 7 September 1944 with personnel from the disbanded 24th Weather Squadron. It moved to Gowen Field, Idaho, on 10 October 1944 and was discontinued on 1 October 1945. Its personnel were transferred to the 68th Army Air Forces Base Unit (101st Weather Group).

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

8 Sep 44 Capt Lowell R. Todd
unknown Maj Edwin C. McAnelly

**74th ARMY AIR FORCE BASE UNIT (25th WEATHER SQUADRON)
INACTIVE**

LINEAGE: Designated the 74th Army Air Forces Base Unit (25th Weather Region), organized at Lynbrook, New York, and assigned to the Army Air Forces Weather Wing on 7 September 1944 with personnel from the disbanded 25th Weather Squadron. It moved to Mitchel Field, New York, on 1 November 1944. It was discontinued on 1 October 1945 and replaced by the 74th Army Air Forces Base Unit (102d Weather Group).

AWARDS: Service Streamer, American Theater, World War II, 7 Dec 1941-2 Mar 1946.

Commanders and Date of Assignment

Complete list of commanders not available

**74th ARMY AIR FORCE BASE UNIT (102d WEATHER GROUP)
INACTIVE**

LINEAGE: Designated the 74th Army Air Forces Base Unit (102d Weather Group), organized at Mitchel Field, New York, and assigned to the 67th Army Air Forces Base Unit (Headquarters Continental Weather Wing) on 1 October 1945. Redesignated the 74th Air Force Base Unit (102d Weather Group) on 26 September 1947, it was discontinued on 3 June 1948 when its personnel were transferred to the 102d Weather Group.

AWARDS: None.

Commanders and Date of Assignment

1 Oct 45 Col Whiteford C. Mauldin
15 Jul 47 Lt Col James B. Baker

WEATHER REGIONS

A weather region was a geographical area, not an Air Force unit. The region had no lineage and was not entitled to honors or an emblem. For each region the War Department constituted a numbered weather squadron as the organization to which personnel performing weather duty were basically assigned. The commanding officer of the weather squadron was normally the regional control officer. The function of the control officer was to supervise and technically control all weather activities within the region, to coordinate services with other regions, to inspect weather stations, and to make recommendations on matters pertaining to weather service in the region. The numbered weather squadrons were disbanded on 7 September 1944. All previous personnel authorizations were rescinded and a bulk allotment of personnel was authorized for the AAF Weather Wing. The numbered weather squadrons were replaced by MAJCOM-controlled nonconstituted units called Army Air Forces Base Units (AAFBU) with parenthetical functional descriptions immediately following the word "unit." The first AAFBUs were designated AAFBU (numbered weather region) to correspond to the existing continental weather regions. They were discontinued on 1 October 1945 and were replaced by other nonconstituted units called AAFBU (numbered weather group). On 3 June 1948 these organizations were discontinued and were replaced by other nonconstituted units using the same number as appeared in the parenthetical descriptions following the word "Unit."

The map below depicts worldwide weather regions:

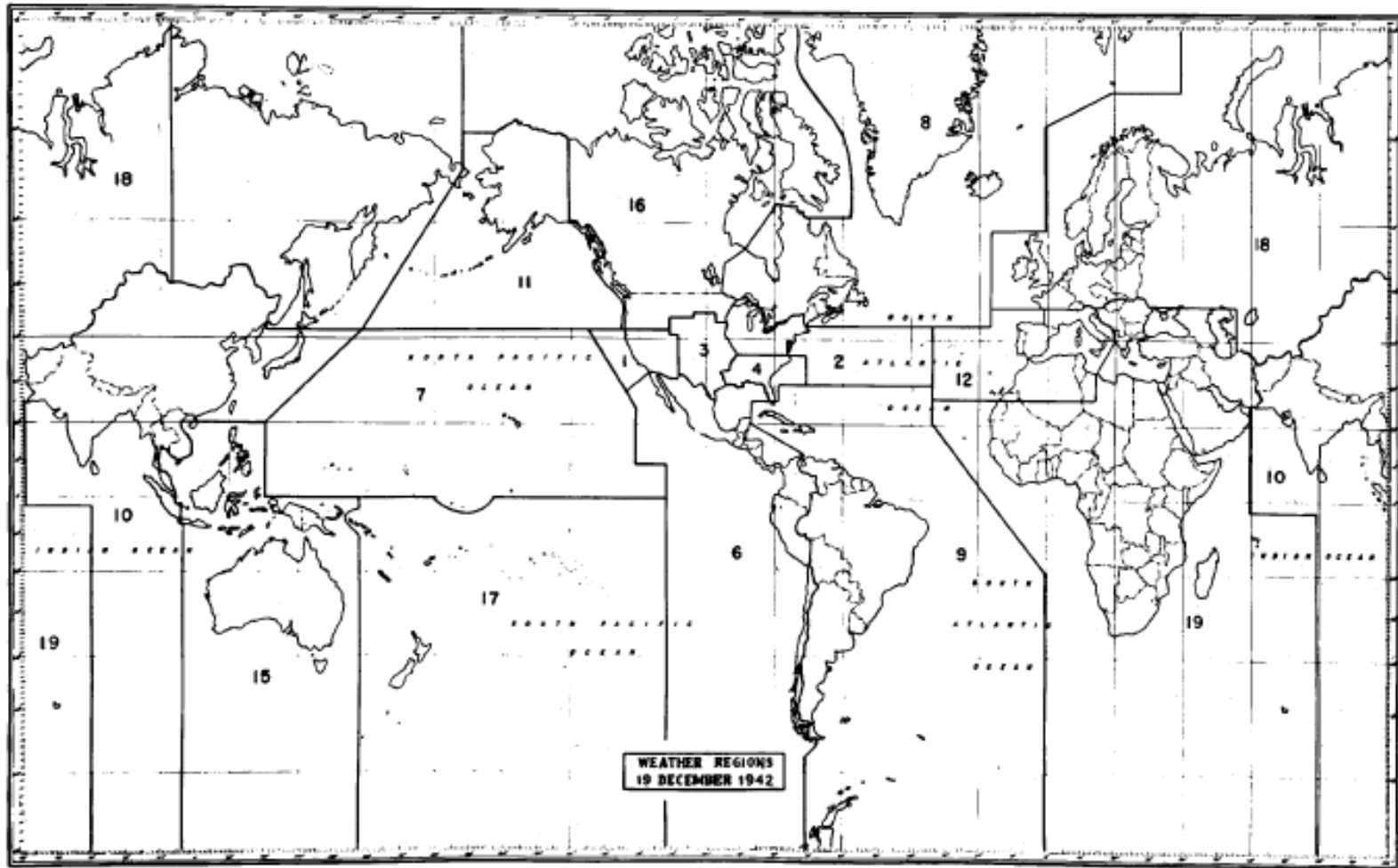


Figure 13-1: Worldwide weather regions, 19 December 1942

APPENDIX A—GLOSSARY

3DNEPH	3-Dimensional Nephanalysis
A1C	Airman First Class
A2C	Airman Second Class
A3C	Airman Third Class
A ² P ²	Air Weather Service Annual Programming Plan
AAC	Army Air Corps
AACS	Army Airways Communications System
AAF	Army Air Forces
AB	Air Base
ABNCP	Airborne Command Post
ACC	Air Combat Command
ACFP	Advanced Computer Flight Plan
ACMES	Advanced Climate Modeling and Environmental Simulations
ACN	Air Force Weather Agency Consolidated Network
ADFS	Automated Digital Facsimile System
ADM	Acquisition Decision Memorandum
ADVCLD	Advect Cloud Model
ADWS	Automated Digital Weather Switch
AEF	American Expeditionary Forces or Aerospace Expeditionary Force
AF	Air Force
AFB	Air Force Base
AFCAC	Air Force Communications Acquisition Center
AFCENT	Air Forces Central Command or Allied Forces Central Europe
AFCRL	Air Force Cambridge Research Laboratory
AFCS	Air Force Communications Service
AFCC	Air Force Communications Command
AFCCC	Air Force Combat Climatology Center
AFCWC	Air Force Combat Weather Center
AFDD	Air Force Doctrine Document
AFOTEC	Air Force Test and Evaluation Center
AFDIGS	Air Force Digital Graphics System
AFFOR	Air Force Forces
AFGWA	Air Force Global Weather Agency
AFGWC	Air Force Global Weather Central (Center)
AFGL	Air Force Geophysics Laboratory
AFI	Air Force Instruction
AFLC	Air Force Logistics Command
AFMC	Air Force Material Command
AFMEA	Air Force Management Engineering Agency
AFMPC	Air Force Military Personnel Center
AFN	American Forces Network
AFNWC	American Forces Network Weather Center
AFOAT-1	AF Office of Atomic Engery-1
AFOTEC	Air Force Operational Test and Evaluation Center

AFPEO	Air Force Procurement Executive Officer
AFRES	Air Force Reserves
AFRL	Air Force Research Laboratory
AFROC	Air Force Requirements Oversight Council
AFSC	Air Force Systems Command or Air Force Specialty Code
AFSOC	Air Force Special Operations Command
AFSPC	Air Force Space Command
AFTAC	Air Force Technical Applications Center
AFN	Armed Forces Network
AFW	Air Force Weather
AFWA	Air Force Weather Agency
AFWIN	Air Force Weather Information Network
AFWSEP	Air Force Weather Standardization and Evaluation Program
AFW-WEBS	Air Force Weather-Web Services
AFWWS	Air Force Weather Weapon System
AGRMET	Agricultural Meteorology
AGU	Airborne Guidance Unit
AIN	Army Installation
ALC	Air Logistics Center
AMC	Air Mobility Command
AMS	American Meteorological Society or Automatic Meteorological Station
AME	Atmospherics Measuring Equipment
AMN	Afghan Mission Network or Airman
AMS	American Meteorological Society
ANG	Air National Guard
ANMCC	Alternate National Military Command Center
AOC	Air and Space Operations Center
AOR	Area of Operations
AOWG	Air Ground Operations Wing
AOY	Airman of the Year
APT	Automatic Picture Transmission
ARCENT	Central Command, Army
ARL	Army Research laboratory
ARPA	Advanced Research Project Agency
ARQ	Automatic Response to Query
ARRS	Aerospace Rescue and Recovery Service
ARWO	Aerial Reconnaissance Weather Officer
ASAT	Air-launched, Antisatellite
ASOS	Automated Surface Observation System
ATC	Air Transport Command or Air Training Command
AUTODIN	Automatic Digital Information Network
AWAPS	Advanced Weather Analysis and Prediction system
AWC	Aviation Weather Center
AWDS	Automated Weather Distribution System
AWE	Advanced Warfighting Experiment
AWN	Automated Weather Network

AWOS	Air War Over Serbia
AWS	Air Weather Service
BCT	Brigade Combat Team
BMT	Basic Military Training
BWOFS	Battlefield Weather Observation and Forecast System
BRAC	Base Realignment and Closure
Brig	Brigadier
C ³	Command, Control, and Communications
C ³ P ²	Command, Control, and Communications Programming Plan
C4I	Command, Control, Communications, and Computers
C4ISR	Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance
CA	Civil Affairs
CACDA	Combined Arms Combat Development Activity
Capt	Captain
CARMISH	Commander, Army Mission
CARP	Computed Aerial Release Point
CAT	Crisis Action Team
CAWSS	Crisis Action Weather Support System
CC	Commander
CCB	Configuration Control Board
CCG	Combat Communications Group
CDD	Capability Development Document
CDFS	Cloud Depiction and Forecast System
CD-ROM	Compact Disc-Read Only Memory
CDS	Container Delivery System
CDT	Central Daylight Time
CES	Civil Engineering Squadron
CENTAF	Central Command Air Forces
CENTCOM	Central Command
CENTRIXS	Combined Enterprise Regional Information Exchange system
CFP	Computer Flight Plan
CFEP	Communications Front-end Processor
CHECKMATE	An Air Force Studies Group
CINC	Commander in Chief
CIS	Commonwealth of Independent States
C/JTMK	Commercial/Joint Mapping Toolkit
CM	Change Management; Configuration Management; or Capability Module
CMEF	Combat Mission Execution Forecast
CMSgt	Chief Master Sergeant
CNO	Chief of Naval Operations
COA	Course of Action
Col	Colonel
COMEDS	CONUS Meteorological Data System

COMET	CONUS Meteorological Teletype
COMIREX	Committee on Imagery Requirements and Exploitation
CONOPS	Concept of Operations
CONUS	Continental United States
COOP	Cooperation
COTS	Commercial-off-the-shelf
CRC	Contingency Response Capability
CRRA	Capabilities Review and Risk Assessment
CRRES	Combined Release and Radiation Effects
CSAF	Chief of Staff of the Air Force
CTECS	Compact Total Electron Content Sensor
CWSS	Combat Weather System Squadron
CWF	Combat Weather Facility
CWT	Combat Weather Team
DAR	Data Automation Requirement
DECCO	Defense Commercial Communications Office
Det	Detachment
DEPFOR	Deputy for
DIFAX	Digital Facsimile
DISS	Digital Ionospheric Sounding System
DIST	Defense Integration Support Tools
DMR	Defense Management Review
DMRD	Defense Management Review Decision
DMSP	Defense Meteorological Satellite Program
DOC	Department of Commerce
DoD	Department of Defense
DOW	Directorate of Weather
DSAP	Defense System Applications Program
DTA	Dust Transport Algorithm
DUAT	Direct User Access Terminal
DWSS	Defense Weather Satellite System
E&I	Engineering and Installation
ECMWF	European Centre for Medium-Range Weather Forecasts
EEC	Enterprise Electronics Corporation
EF	Ensemble Forecasting
ECM	Electronic Counter Measures
EAM	Emergency Action Messages
E-O	Electro-Optical
EOP	Executive Office of the President
EOTDA	Electro-Optical Tactical Decision Aid
ESSA	Environmental Science Services Administration
ESC	Electronic Systems Center
ESD	Electronic Systems Division
ESG	Environmental Scenario Generator

ETAC	Environmental Technical Applications Center
Eurfax	European Facsimile
EURDIGS	European Digital Graphics System
FA	Forecaster apprentice
FAA	Federal Aviation Administration
FASCAP	Fast Payback Capital Investment Program
FITL	Forecaster-in-the-loop
FMH	Federal Meteorological Handbook
FNMOC	Fleet Numerical Meteorology and Oceanography Center
FOA	Field Operating Agency
FOC	Full Operational Capability
FORSCOM	Forces Command
FY	Fiscal Year
GAO	Government Accounting Office or Government Accountability Office
GCCS	Global Command and Control System
Gen	General
GFS	Global Forecast System
GHQ	General Headquarters
GIS	Geospatial Information System
GLCM	Ground Launched Cruise Missile
GMGO	German Military Geophysical Office
GMS	Geostationary Meteorological Satellite
GOC	Ground Observer Corps
GOES	Geostationary Operational Environmental Satellite
GOR	General Operational Requirement
GOSG	General Officer Steering Group
GPS	Global Positioning System
GSA	Government Services Administration
GSM	Global Spectral Model
GTWAPS	Global Theater Weather Analysis and Prediction system
GWC	Global Weather Central
GWIP	Global Weather Intercept Program
HAF	Headquarters Air Force (Air Staff)
HF	High Frequency
HFRB	High Frequency Regional Broadcast
HIRAS	High Resolution Analysis System
HPC	High Performance Computing
HQ	Headquarters
HWD	Horizontal Weather Depiction
IBM	International Business Machines
ICAMR	Interdepartmental Committee for Applied Meteorological Research
ICAO	International Civil Aviation Organization

ICBM	Inter-Continental Ballistic Missile
ICD	Initial Capabilities Document
ICMS	Interdepartmental Committee for Meteorological Services
ICMSSR	Interdepartmental Committee for Meteorological Services and Supporting Research
IDPS	Interface Data Processing Segment
IFOR	Implementation Force (NATO)
IG	Inspector General
IMA	Individual Mobilization Augmentee
IMETS	Integrated Meteorological System
IOC	Initial Operational Capability
IOP	Input/output Processor
IOT&E	Initial Operational Test and Evaluation
IP	Interservice Publication or Internet Protocol
IPADS	Interactive Product and Display System
IPOMS	International Polar Orbiting Meteorological Satellite
IRTSS	Infrared Target Scene Simulation
ISC	Initial Skills Course
ISOON	Improved Solar-Optical Observing Network
IWEDA	Integrated Weather Effects Decision Aid
ITWR	Interim Tactical Weather Radar
IWR	Improved Weather Reconnaissance
IWSM	Integrated Weapon System Management
JAAWIN	Joint Air Force and Army Weather Information Network
JADOCS	Joint Automated Deep Operations Coordination System
JCB	Joint Capabilities Board
JCF	Joint Contingency Force
JCS	Joint Chiefs of Staff
JCSDA	Joint Center for Satellite Data Assimilation
JEFS	Joint Ensemble Forecast System
JET	Joint Environmental Toolkit
JFACC	Joint Force Air Component Commander
JFLCC	Joint Force Land Component Commander
JFSOCC	Joint Force Special Operations Component Commander
JMCC	Joint METOC Coordination Cell
JMCCB	Joint METOC Configuration Control Board
JMCO	Joint METOC Coordination Organization
JMIB	Joint METOC Interoperability Board
JMIST	Joint METSAT Ingest, Software, and Terminals
JMTC	Joint Multinational Training Command
JNWPU	Joint Numerical Weather Prediction Unit
JPADS	Joint Precision Airdrop System
JPSS	Joint Polar Satellite System
JROC	Joint Requirements Oversight Council
JSTARS	Joint Surveillance Target attack Radar System

JTFEX	Joint Task Force Exercise
JTF-SWA	Joint Task Force-Southwest Asia
JTWC	Joint Typhoon Warning Center
JUON	Joint Urgency Operational Need
KBG	Kiewit Building Group
KIA	Killed in Action
KFOR	Kosovo Force
LAR	Launch Acceptability Region
LDAS	Land Data Assimilation System
LEADS [®]	Leading Environmental Analysis & Display System
LIS	Land Information System
LLC	Limited Liability Corporation
Lt	Lieutenant
MAC	Military Airlift Command
Maj	Major
MAIS	Military Aircrew Information System
MAJCOM	Major Air Command
MARCENT	Marine Forces Central Command
MATS	Military Air Transport Service
MDS	Meteorological Data System as used with AN/GMD-5
MEDS	Meteorological Data System as used in COMEDS and other weather communication dedicated circuits
MES	Meteorological Enhancement Seminars
MET	Management Engineering Team
METAR	Meteorological Aerodrome Report [ICAO] [Aviation Routine Weather Report (AFM 15-111)]
METOC	Meteorological and Oceanographic
METSAT	Meteorological Satellite
METTIPS	Meteorological Technical Information Publication System
MFSC	Military Flight Service Center
MIA	Missing in Action
MILCON	Military Construction
MIST	Meteorological Information Standard Terminal
MM5	Mesoscale Model 5
MNS	Mission Need Statement
MOA	Memorandum of Agreement
MOC	Meteorological Operations Capability
MOS	Model Output Statistics or Manual Observing System
MOU	Memorandum of Understanding
MP	Mission Planning
MSEA	Air and Space Natural Environment Modeling & Simulations Executive Agent
MSgt	Master Sergeant
MSI	Mission Success Indicators

MSP	Mission Support Plan
MTA	MAC Training Advisory
MWWC	Military Weather Warning Center
NACA	National Advisory Committee for Aeronautics
NASA	National Aeronautics Space Administration
NATO	North Atlantic Treaty Organization
NAVAF	Navy and Air Force (as used in coordination efforts)
NCAR	National Center for Atmospheric Research
NCEP	National Center for Environmental Prediction
NCO	Non-Commissioned Officer
NECC	Network Enabled Command and Control
NEO	Noncombatant Evacuation Order
NESS	NMCC Environmental Support System
NITES	Naval Integrated Tactical Environmental System
N-TFS	New-Tactical Forecast System
NATO	North Atlantic Treaty Organization
NextGen	Next Generation
NEXRAD	Next Generation Weather Radar
NGA	National Geospatial-intelligence Agency
NGB	National Guard Bureau
NIPRNET	Non-Classified Internet Protocol Router Network
NMCC	National Military Command Center
NOAA	National Oceanic and Atmospheric Administration
NOGAPS	Navy's Operational Global Atmospheric Prediction System
NORAD	North American Air Defense Command
NOTAM	Notice to Airmen
NOWS	Night Vision Goggle Operations Weather Software
NPOESS	National Polar Orbiting Environmental Satellite System
NPP	NPOESS Preparatory Project
NRO	National Reconnaissance Office
NVG	Night Vision Goggle
NWP	Numerical Weather Prediction
OA	Operational Assessment
OID	Operator Interface Display
OIF	Operation IRAQI FREEDOM
OEF	Operation ENDURING FREEDOM
OFCM	Office of the Federal Coordinator for Meteorological Services and Supporting Research
OL	Operating Location
O&M	Operation and Maintenance
OMB	Office of Management and Budget
OND	Operation NEW DAWN
OPS	Operational Production System
OPUP	Open Principal User Processor

OpVer	Operational Verification
ORD	Operational Requirements Document
ORDA	Open Radar Data Acquisition
OS21	Observing System 21 st Century
OSD	Office of Secretary Defense
OSR	Occupational Survey Report
OSS	Operational Support Squadron
OTH-B	Over the Horizon Backscatter (radar)
OUE	Operational Utility Evaluation
OWS	Operational Weather Squadron
PA	Public Affairs
PACAF	Pacific Air Forces
PAD	Program Action Directive
PADS	Precision Airdrop System
PAR	Point Analysis Reengineering
PBD	Program Budget Decision
PCS	Permanent Change of Station
PDP	Program Development Plan
PDR	Portable Doppler Radar
PGSS	Persistent Ground Surveillance System
PGS/S	Program Generation Scheduler/Server
PIBAL	Pilot Balloon
PI	Point of Impact
PIP	PADS Interface Processor
PIREPS	Pilot Reports
PKI	Public Key Infrastructure
PMD	Program Management Directive
POG	Psychological Operations Groups
POM	Program Objective Memorandum
PRESSURS	Pre-Strike Surveillance/Recon System
PSS	Persistent Surveillance System
PSU	Pennsylvania State University
PTDS	Persistent Threat Detection System
PUP	Principal User Processor
QOR	Qualitative Operational Requirement
QOT&E	Qualification Operational Test and Evaluation
RCA	Radio Corporation of America
RDJTF	Rapid Deployment Joint Task Force
RDT&E	Research Development Testing and Engineering
REIP	Reengineered Enterprise Infrastructure Program
RGR	Ranger Regiments
ROC	Required Operational Capability
ROS	Representative Observation Site

RSTN	Radio Solar Telescope Network
RTNEPH	Real-Time Nephanalysis
RVN	Republic of Vietnam
RVR	Runway Visual Range
RWM	Relocatable Window Model
SAC	Strategic Air Command
SAES	Special Assistant for Environmental Services
SAGE	Semi-Automatic Ground Environment
SAF	Secretary of the Air Force
SAFSP	Secretary of the Air Force for special Projects
SAF/US	Under Secretary of the Secretary of the Air Force
SAIC	Science Applications International Corporation
SAMSO	Space and Missile Systems Organization
SAR	Synthetic Aperture Radar
SATCOM	Satellite Communications
SCA	Satellite Control Authority
SCOMP	Strategic Communications Program
SDC	System Development Corporation
SDDS	Satellite Data Support System
SDHS	Satellite Data Handling System
SEA	Senior Enlisted Advisor or Southeast Asia
SELS	Severe Local Storm
SEON	Solar Electro-optical Observing Network
SESS	Space Environmental Support System
SFG	Special Forces Groups
SFMR	Stepped-Frequency Microwave Radiometer
Sgt	Sergeant
SIDAS	Satellite Imagery Display and Analysis
SIPRNET	Secret Internet Protocol Router Network
SLAM	Swedish Limited Area Model
SLFCS	Survivable Low Frequency Communications System
SMC	Space and Missile System Center
SMSgt	Senior Master Sergeant
SOAR	Special Operations Aviation Regiments
SOF	Special Operations Forces
SOFNET	Solar Observing and Forecasting Network
SOFWOC	Special Operations Weather Operations Center
SOS	System Operations Squadron
SOWT	Special Operations Weather Team
SPACEWOC	Space Weather Operations Center
SPO	System Program Office
SrA	Senior Airman
SRS	Space Radio Spectrograph
SSgt	Staff Sergeant
SSM/I	Special Sensor Microwave/Imager

SSM/IS	Special Sensor Microwave/Imager Sounder
START	Strategic Arms Reduction Treaty
STRATCOM	Strategic Command
STS	Space Transport System
STT	Small Tactical Terminal
SWA	Southwest Asia
SWAFS	Space Weather Analysis and Forecast System
SWO	Staff Weather Officer
SWTG	Special Warfare Training Groups
SWWC	Severe Weather Warning Center
SYNCoC	Synchronization Council of Colonels
TAC	Tactical Air Command
TACC	Tanker Airlift Control Center
TACAMO	Take Charge and Move Out
TAF	Terminal Aerodrome Forecast
TAFVER	Terminal Aerodrome Forecast Verification
TAWS	Target Acquisition Weather System
TAMDAR	Tropospheric Airborne Meteorological Data Reporting
TCTCO	Time Compliance Technical Change Order
TDA	Tactical Decision Aids
TDAS	Tactical Decision Aid Support
TDL	Techniques Development Laboratory
TECAM	Technical Conference on Aviation Meteorology
TFS	Tactical Forecast System
TFU	Tactical Forecast Unit
TIROS	Television Infrared Observation Satellite
TMOS	Tactical Meteorological Observing System
TPMS	Transition Power Maintenance Shelter
TRADOC	Training and Doctrine Command
TSgt	Technical Sergeant
TTP	Tactics, Techniques, and Procedures
TWESO	TRADOC Weather and Environmental Support Office
TWA	Trailing Wire Antenna
TWR	Tactical Weather Radar
UAS	Unmanned Aerial System
UAV	Unmanned Air Vehicle
UAWS	U.S. Army Europe Automated Weather System
UKMO	United Kingdom Meteorological Office
UM	Unified Model
URL	Uniform Resource Locator
U.S.	United States
USA	United States Army
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

USAF	Headquarters, United States Air Force
USAFA	United States Air Force Academy
USAFE	United States Air Forces in Europe
USAFETAC	USAF Environmental Technical Applications Center
USAREUR	United States Army Europe
USSPACECOM	United States Space Command
USTRANSCOM	United States Transportation Command
USMC	United States Marine Corps
USS	United States Ship
USSOCOM	United States Special Operations Command
VCSAF	Vice Chief of Staff of the Air Force
VHF	Very High Frequency
VLR	Very Long Range
VoIP	Voice over Internet Protocol
VSAT	Very Small Aperture Terminal
WAC	Women's Army Corps
WAF	Women in the Air Forces
WAG	World Aeronautical Grid
WASP	Women Airforce Service Pilots
WBAN	Weather Bureau-Air Force-Navy
WBAWS	Weather Briefing Advisory and Warning System
WDA	Weather Data Analysis
WDCADS	Weather Data Collection and Dissemination System
WF	Weather Flight
WEBS	Web Services
WEM	Weather Effects Matrix
WG	Wing or Weather Group
WGP	Weather Group (Provisional)
WICU	Weather Intercept Concentrator Unit
WIN	WWMCCS Intercomputer Network
WIPS	Weather Information Processing System
WIPS-R	Weather Information Processing System-Replacement
WMO	World Meteorological Organization
WRF	Weather Research and Forecasting (model)
WRS	Weather Reconnaissance Squadron
WS	Weather Squadron
WSSC	Weather Systems Support Cadre
WSR	Weather Search Radar
WSU	Weather Support Unit
WWMCCS	World-Wide Military Command and Control System
WWW	World-Wide Web
Y2K	Year 2000

APPENDIX B—FOOTNOTES

This appendix lists the notes and footnotes used throughout the document. If a chapter or section did not contain a note or footnote it is not listed. The following abbreviations were used to denote the type of source material:

AFI = Air Force Instruction

Art. = Article—Information appearing in a periodical, newspaper, or on-line magazine (e-zine)

Bio. = Biography

CRM = Cross Reference Matrix

Doc. = Document

E-mail = Electronic mail

Hbk = Handbook

Hist. = History—a document prepared by a named historical office, e.g., AFWA/HO

Inst. = Instruction

JP = Joint Publication

Ltr. = Letter

Memo. = Memorandum

MOU = Memorandum of Understanding

Msg. = Message—a form of transmitting information electronically. Used before the advent of e-mail.

PP = Point Paper

PDD = Presidential Decision Directive

Reg. = Regulation

Rpt. = Report

SSS = Staff Summary Sheet

Ud = Undated

Web = Reference to documents found on the World Wide Web network.

Dedication:

¹ Hist. of 1st WW, 1 Jul -31 Dec 66, Appendix 1, p 12; e-mail, Try, Paul, Col, USAF, Ret., [Remembering Vietnam](#), 8 Dec 2010.

² *Ibid.*

³ DD Form 13, *Statement of Service*, AFWA/HO archives [Note: Statement of Service indicated highest rank held was Colonel but at time of accident the grade was Lt Col]

⁴ Study, Nawyn, William E., Dr., "Mission Accomplished: The Air Weather Service in DESERT SHIELD/DESERT STORM, August 1990 - April 1991," pp xvi and 22, Dec 1992, AFWA/HO archives

⁵ Art., Wise, Lindsay, "Airman from Harris among 8 Killed in Afghanistan." *Houston Chronicle*, 29 Apr 2011, downloaded from <http://www.chron.com/disp/story.mpl/metropolitan/7543561.html>

Chapter 1—Roots:

¹ Note: This section was significantly rearranged from previous historical studies to define Air Force Weather, a functional arrangement of forces, from its beginnings to the current organizational alignment. Previous studies intimated that Air Weather Service, a named organization, was synonymous with Air Force Weather. This study corrects the relationship

² *Air Force Weather Agency Historical Highlights*, Air Force Weather History Office, Hq AFWA, Offutt AFB, NE, Nov 2004, p. 1

³ *Ibid.* Note: Col Charles French, AWS commander in 2000, introduced the term Air Force Weather in his introduction to *Air Force Weather A Brief History 1937-2000*, but the historical study still reflected the "birth of AWS" as occurring on 1 Jul 1937.

Chapters 2—1937-1946:

¹ Hist., Corrected date to 9 Dec 1942 from 9 Mar 1943 based on review of official 1942 AWS history.

² Study, Moyers, Al, AFWA/HO, *Air Force Weather Heritage – Air Force Director of Weather*, AFWA/HO Brochure, Nov 2004

³ Doc., *Joint Electronics Type Designation System*, MIL-STD-196D, 17 Feb 1998. [This standard provides a method of deciphering type designation of weather systems. AF weather systems were typed using this standard.]

⁴ Rpt., Porush, Irving I., Maj, Air Corps, Army Hurricane Weather Officer and Spencer, Otha C. 1stLt Air Corps, Pilot, Army Hurricane Reconnaissance Unit, *Report on Hurricane Reconnaissance Operations During 1944*, Hq AAF Weather Wing, circa 1945, pp 4-5. [Note. Report provided by Bernard C. Barrish, LtCol, USAF, Ret., Historian of the Air Weather Reconnaissance Association]

⁵ *Ibid.*, Forward, p 3.

⁶ Art., Bryson, Reid A., *The Discovery of the Jet Stream*, Wisconsin Academy Review, Summer 1994.

⁷ Note: Research completed in 2013 by CMSgt Craig Kirwin revealed that a total of 168 AFW Airman died during WW II from various causes.

⁸ Rpt., Krick, Irving P. Dr., *War and Weather: A Report of the AAF Scientific Advisory Group*, Dec 1945, HQ Air Materiel Command, Publications Branch, Intelligence T-2, Wright Field, Dayton, OH, 1 May 1946. Declassified EO 12958, Rel, 7 Dec 1987, Abstract

⁹ *Ibid.*, p, 3

Chapter 3—1947-1956:

¹ Art., Welch, Mary, *AFTAC Celebrates 50 Years of Long Range Detection*, AFTAC Monitor: Oct. 1997, p.12.

² Hist., Hall, R. Cargill, Civ, NRO/HO, *A History of the Military Polar Orbiting Meteorological Satellite Program*, NRO, Sep 2001, p.1.

³ Web, slim84, *Story Behind the Jump*, 82nd Airborne Division Association NEWSLETTER, Mar-Apr, 1992, downloaded from <http://www.paratrooper.net/commo/Topic275712.aspx>

⁴ Pamphlet, *Air Weather Service, Exercise LONGHORN*, 2220th Field Printing Plant, Apr 1952, p. 7.

⁵ Study, Spink, Barry L., *A Chronology of the Enlisted Rank Chevron of the United States Air Force*, Air Force Historical Research Agency, 19 Feb 1992, p. 3

⁶ Art., Lewis J. Neyland, Maj and Cornelius J. Callahan, Maj, *Weathervision*, Weatherwise, Vol 10, Issue 2, 1957.

Chapter 4—1957-1966:

¹ Web, *The History of the Looking Glass*, 2ACCS, downloaded 28 Jul 2011, from <http://2accs.com/history.html>;
Web, *Operation Looking Glass*, Wikipedia The Free Encyclopedia, downloaded 28 Jul 2011 from
http://en.wikipedia.org/wiki/Operation_Looking_Glass

² Hall, *op. cit.* p. 1. In addition, Art., McCormack, Noel A., *The Rescue of Apollo 11*, Ctr. for the Study of National Reconnaissance, un-dated, p. 1, identified the DMSP weather satellite program had a succession of numeric and alphabetic names, including Program II, P-35, 698BH, 417, and Defense Systems Applications Program. In order to avoid confusion, this chronology uses the designation of DMSP throughout.

³ *Ibid.*, p 2

⁴ *Ibid.*, p. 4 and 5.

⁵ Art., Scheeren, Frederrick A., Lt Col, USAF Ret., *India Saga*, downloaded from <http://rowf.info/india-saga.htm>, 27 Feb 2011

⁶ E-mail, Scheeren, Frederrick A., Lt Col, USAF Ret., to George Coleman, *India Saga*, 22 Oct 2011

⁷ Web, *Operation Dominic I and II*, Wikipedia, the free encyclopedia, downloaded from
http://en.wikipedia.org/wiki/Operation_Dominic_I_and_II, 17 Jul 2011

⁸ Hall, *Op. cit.*, p.11

⁹ Personal reflection of Coleman, George N. III, CMSgt, USAF, Ret., based on experience in the late 70s as AWS added emphasis to radar operations.

¹⁰ Hist., Frank J. Griffith, Col, USAF, *History of the Air Force Technical Applications Center (AFTAC)*, 1 Jul – 31 Dec 1964, p. vi, 9 and 25. Document classification changed to UNCLAS, 7 May 1999. Downloaded 19 Jul 2011 from <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB26/12-12.htm>

¹¹ Hall, *Op. cit.*, p. 14. In previous studies 10 Sep 1965 was used as the “First DMSP launch.” Hall’s document does list a Sep launch but it was not the first DMSP launch. In addition, AFGWC had been receiving satellite data from DMSP since “flight number three launched on 19 Feb 63.” p.7.

¹² *Ibid.*, p.18

¹³ Note, Grimes, Keith, Col, USAF, AFWA Historical Files. [Note was prepared as an explanation of a photograph showing MSgt Watson and A1C Wilder dressed in distinctive air commando bush hats.]

¹⁴ Hall, *Op. cit.*, pp. 30 and 31.

¹⁵ Rpt., Porter, Melvin F., Capt, USAF, *Second Defense of LIMA SITE 36*, Hq PACAF Dir, Tac Eval, CHECO Division, 28 Apr 1967, p 1. [Note: The forward references the 17-19 Feb 1966 attack.]

¹⁶ Grimes, *Op. cit.*,

¹⁷ Personal reflection, Coleman, George N. III, CMSgt, USAF, Ret., of events as they developed while assigned to Det. 3, 1WW from 1966-1969.

Chapter 5—1967-1976:

¹ Note: Due to the highly classified nature of DMSP, Gen. Momyer was probably “holding” an APT weather satellite picture but was actually referring to the DMSP imagery he reviewed on a daily basis. [George Coleman’s supposition]

² Web, *USNS Private Joe E. Mann (T-AK-253)*, downloaded 25 Jul 2011 from
[http://en.wikipedia.org/wiki/USNS_Private_Joe_E._Mann_\(T-AK-253\)](http://en.wikipedia.org/wiki/USNS_Private_Joe_E._Mann_(T-AK-253)), [Note: ship was renamed USNS Richfield in 1960]

³ Msg., Rusk, State Department to AWS, et. al., *Project QUICK DIP*, 17 Sep 1965, p. 1. Document was downloaded 19 Jul 2011 from <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB7/ae11-1.htm> [Note: message, declassified on 28 Feb 1991, describes QUICK DIP and SKIN DIVER.

⁴ Hist., *The AWS 1967 unclassified history*, AFWA/HO, Vol I, p. 402 [Note: describes deployment of personnel. SKIN DIVER was an ongoing contingency effort.]

⁵ Art., Brandli, Henry W., Lt Col, USAF, Det 11, 6th WW, Patrick AFB, *Picture of the Month, Aurora Borealis and City Lights*, Monthly Weather Review, AMS, Boston, MA, Vol 2, Jul 1974, p. 533; note, information came from Brandli's reference AFCRL, Newsletter, 6 April 1973, No. 444.

⁶ E-mail, Pfeffer, Gene, Col, USAF, Ret. to Coleman, George N., III, CMSgt, USAF, Ret., *Re: Additional Events*, 11 Jul 2011; Personal recollection of Gene Pfeffer who was involved in this effort.

⁷ Hall, *Op. cit.*, pp. 31 and 32.

⁸ *Ibid.*, p 16.

⁹ Hist., Fuller, John, AWS/HO, *AWS History, 1975-1976*, Vol I, pp. 117-118 [Information was extracted from AFWA/HO file copy]

¹⁰ Study, Demmert, Paul, Maj, USAF Ret., *Summary of Cold Fog Systems, ud.* [Document appears as an attachment to e-mail, Paul Demmert, *Chronology 1967-1976*, 18 May 2012]

Chapter 6—1977-1986:

¹ Personal reflections of Coleman, George N. III, CMSgt, USAF, Ret, who used the system while assigned to Griffiss AFB, NY, 1970-1972

² Art., *Maine Guard Units to Join EMPIRE GLACIER '78*, Lewiston Evening Journal, Lewiston-Auburn, ME, 16 Jan 1978. [Photograph of 5WW/CC, Col Joe O'Neal led to the 5WW reference.]

³ E-Mail, Pfeffer, Gene, Col, USAF Ret., *Re: Review of Heritage Document*, 14 Apr 2011. [Manpower spaces changed from "a single" [as stated in the 1937-1987 document] to "two" based on the personal reflection of Col Gene Pfeffer, USAF, Ret, who was assigned to the major position in 1979. Office didn't become XOORF until 1 Jun 1980]

⁴ Ltr, Glenn, Capt, USAF, *MAC 508-78, GOR for PRESSURS*, HQ MAC/XP, 28 Dec 1978

⁵ E-mail, Demmert, Paul, Maj, USAF Ret., *RE: Review of Document*, 29 Jun 2011. [First assigned personnel added based on personal reflection of Maj Demmert]

⁶ Art., Dunnavan, George M., LtJg, USN, JTWC, *Super Typhoon Tip (23), 1979 Annual Typhoon Report*, JTWC, p. 77.

⁷ Memo, Wells, Frank H., Maj USAF, *History of Special Support to Det 2, Hq AWS*, AFGWC History 1 Jan – 30 Jun 1980, Tab 2-54.

⁸ Web, *Operation EAGLE CLAW*, Wikipedia, the free encyclopedia, downloaded from http://en.wikipedia.org/wiki/Operation_Eagle_Claw, 25 May 2012. [The go-ahead for the operation was ordered by President Carter on 24 April 1980. The operation was an attempt to put an end to the Iranian hostage crisis by rescuing 52 Americans held captive at the U.S. Embassy in Tehran.]

⁹ E-mail, Mongeon, Al, "Air Force Weather Updates," 23 Aug 2012. [Note: deleted the word "undetected." Al Mongeon was the project lead for the operation and reported, "The wind forecast provided to the 82d Airborne was briefed as 17kts (this was considered a marginal forecast based on limits at that time). The go/no-go decision was an 82d Airborne decision. As observed at the DZ [drop zone], the AFGWC (A-team) forecast was verified."

¹⁰ Hist., *2nd WxWg History*, AWS, 1986

¹¹ Art., Boyne, Walter J., *El Dorado Canyon*, Air Force Magazine, Mar 1999, p. 56-62

¹² Hist., *AWS History*, 1986, p. xxvi. [Note: Added date; corrected the country from Columbia to Bolivia; and identified the organizations supporting the operation.]

Chapter 7—1987-1996:

¹ AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*, Attachment 3, p. 174, 18 Jul 2011, Included full title of badge to improve clarity of the event.

² E-mail, Frederick, George, Col, USAF Ret., *RE: Review of Document*, 30 Jun 2011. [Personal reflection of Col Frederick who was on the Air Staff during this period. He recalls that Bill “White Shoes” Johnson was the point man in the Pentagon for the badge approval. “It was considered a real coup at the time since no one thought it would make it and we were told all along that it had no chance. Perseverance and good timing with other career fields interested in the same thing made it happen.”]

³ Extract, Coleman, George N. III, CMSgt USAF Ret, Operation ELF ONE, 25 May 2012. [The document contains information about ELF ONE from various sources]

⁴ E-mail, Kappert, John, CMSgt USAF Ret, to Coleman, 27 Jul 2011 and Kandler, Raymond, Lt Col, USAF Ret to Coleman, 27 Jul 2011. Note: These e-mails represent the personal recollections of an AFCC and AWS representative that were involved in the management of DMSP operations for AFCC and AWS respectively.

⁵ Extract, *Op. cit.*, Coleman [AWS history extract]

⁶ Moore, T.C., *19891219-SE US/Operation JUST CAUSE*, Military Utility of METOC input to Operational Planning, USAF/A3O-W, Day Without Weather Vignette, 19 Dec 1989. Additional information for: Operation JUST CAUSE available at Joint History Office, <http://www.dtic.mil/doctrine/doctrine/history/justcaus.pdf>.

⁷ E-mail, McLellan, Mac, ESC/HBAJ, to Coleman, *AWDS Downselect*, 1 Aug 2011

⁸ Msg., MAC/CC to MAJCOM/CCs, *Review of AWS Structure and Operations*, 22 Jun 1990

⁹ E-mail, Misciasci, Frank, Col, USAF Ret, to Coleman, *DMR and AF Restructure*, 27 Jul 2011, p 1. [Personal recollection of Col Misciasci who was at AF/XOORF as this event evolved. The 30 Jun message is referenced in the 20 Jul MAC/CC message to PACAF/CC.]

¹⁰ Extract, Bates, Charles C. and Fuller, John F., *America’s Weather warriors 1814-1985*, Texas A&M University Press, College Station, TX, 1986, p. 138. [This extract appears as attachment 3 in the AWS/CC memo to CINCMAC, 5 Nov 1990.]

¹¹ Art., *Combined Release and Radiation Effects Satellite—Press Kit*, NASA, Jul 1990

¹² Art., Manni, Richard A., *Artificial Auroras*, Popular Science, Oct 1991, p. 38,

¹³ Msg., MAC/CC to USAF/CC and PACAF/CC, *Review of AWS Structure and Operations*, 20 Jul 1990, (2035Z)

¹⁴ Msg., MAC/CC to MAJCOM/CCs, *AF DMR Round II*, 20 Jul 1990 (2300Z)

¹⁵ Looking Glass, *Op. cit.*

¹⁶ Ltr., Williams, Mike, LtCol, AFFSA/XON, *Weather and NOTAM support to ANG Aviation Units*, 8 Aug 1995; Ltr., Baca, Edward D., LtGen, USA, Chief NGB, *Weather and NOTAM Support to ANG Aviation Units*, 17 Jul 1995; Ltr., Whitlow, Mark, LtCol, AFRES/DOTS, *Air Reserve Component (ARC) Weather Support*, 20 Mar 1995

¹⁷ Art., Cunningham, Charles, R., Capt, USAF SMSgt DeCorte, Christopher M., SMSgt, USAF, *Quietly Serving for 70 Years, Special Operations Weather Teams*, *Air Commando Journal*, Vol 1: Issue 2: Winter 2011/12, pp. 26.

¹⁸ Hist., Nawyn, William E., Dr., AWS/HO, *Mission accomplished: The Air Weather Service in DESERT SHIELD/DESERT STORM, August 1990 – April 1991*, AWS Scott AFB, IL, Dec 1992, p. xvi.

¹⁹ PP, Eadon, Ed, Lt Col, USAF, *Status of DMR 994 (Consolidation of Weather Services)*, HQ AWS/XTP, 5 Nov 90 [Point paper is attachment 1 to AWS/CC memo for CINCMAC, 5 Nov 90]

²⁰ *Ibid.*

²¹ *Ibid.*

²² Web, *CSAF*, Wikipedia, the free encyclopedia, 29 Jul 2011, down loaded from http://en.wikipedia.org/wiki/Chief_of_Staff_of_the_United_States_Air_Force

²³ Misciasci, *Op. cit.*, p.2

- ²⁴ PP, Overall, Jim, Col, USAF, *Benefits of Current Air Weather Service Organization*, AWS/XT, 5 Nov 90. [Point paper is attachment 2 to AWS/CC memo for CINCMAC, 5 Nov 90] [In addition, Col Frederick, AWS/CV at the time, remarked in a 2 Aug 11 e-mail to Coleman, “We were frustrated that the AF history did not give us more ammunition as we were fighting this but we assumed that it was intuitively obvious at the time that weather did not respect command lines and crossed geographic and command boundaries with impunity and required centralized command and coordination to be efficient.]
- ²⁵ E-mail, Frederick, George, Col, USAF Ret., to Coleman, *Re: Review of DMR and AWS Streamlining*, 31 Jul 2011, 1540 CDT. In addition, op. cit., Misciasci, p.2 eludes to this capitulation.
- ²⁶ Eadon, *Op. cit.*
- ²⁷ Ltr, Fischer, Eugene, Maj Gen, USAF Reorg Task Force, *HQ USAF Restructure*, 21 Nov 1990, atch 2
- ²⁸ E-mail, Pfeffer, Gene, Col, USAF Ret. to Coleman, *Review of DMR and AWS Streamlining*, 31 Jul 2011. [Personal recollections of Col Pfeffer who was at AWS as these events transpired.]
- ²⁹ E-mail, Frederick, George., Col, USAF Ret., to Coleman, *Re: Review of DMR and AWS Streamlining*, 31 Jul 2011, 1811 CDT. [Note: Difficult to pin down actual briefing date. AFWA/HO files contain a set of briefing slides that were dated 14 Mar 91. The content of the slides cover the subject matter. Since Col Frederick assumed command of AWS on 21 March and the FOA stood up on 1 Apr, I presume the briefing took place sometime in April.]
- ³⁰ Msg., AF/XO to AWS/CC, *Air Weather Service Reorganization*, 1 Apr 1991
- ³¹ Misciasci, *Op. cit.*, p. 2
- ³² Spink, *Op. cit.*, p.21
- ³³ Ltr., Kopps, William J. Capt, USAF, Chief, Readiness Branch, 1st Wea Wg to AWS/DOJ, *Operation SEA ANGEL Final After Action Report*, 1 Jul 1991
- ³⁴ Rpt., *Air Weather Service Contribution to Winning the War—The Value of Weather Support Operation DESERT STORM/DESERT SHIELD Report 1*, 23 May 1991, p. i.
- ³⁵ Web, Ap, *Geomagnetic Disturbance Index*, NorthWest Research Associates (NWRA), downloaded from <http://www.nwra.com/spawx/ap.html>, 24 Jun 2011.[Ap is a measure of the general level of geomagnetic activity over the globe for a given day]
- ³⁶ Hist., Pagliaro, Daniel, E., *The History and Legacy of the 20th Operational Weather Squadron*, 2006.
- ³⁷ Rpt., *Air Weather Service Contribution to Winning the War— Lessons Learned Operation DESERT STORM/DESERT SHIELD Report 2*, Executive Summary, 6 Dec 1991, pp i-iv.
- ³⁸ E-mail, Frederick, George, Col, USAF Ret., to Pfeffer, Gene, Col, USAF Ret., *Re: Review of 1990-1995 Period*, 5 Aug 2011, 1358 CDT; e-mail, Frederick, to Coleman, *Re: CC Visit to USAFA*, 5 Aug 2011, 1938 CDT.
- ³⁹ E-mail, Frederick, George, Col, USAF Ret., to Pfeffer, *Re: Review of 1990-1995 Period*, 5 Aug 2011, 0740 CDT; e-mail, Demmert, Paul, Maj, USAF Ret., to Coleman, *Re: Review of 1990-1995 Period*, 4 Aug 2011, 2047 CDT; and e-mail Pfeffer, Gene, Col, USAF Ret., to Demmert, *Re: Review of 1990-1995 Period*, 4 Aug 2011, 2056 CDT
- ⁴⁰ Art, Rhodes, William M. TSgt, USAF, Editor, *Class Roster, Observer Special Edition*, AWS, Scott AFB, IL, 1993, p. 4.
- ⁴¹ PDD, Clinton, William J., POTUS, *Convergence of U.S. Polar-Orbiting Operation Environmental Satellite Systems, PDD/NTSC-2*, 5 May 1994, down loaded from <http://www.fas.org/spp/military/docops/national/cnvrgprf.htm>
- ⁴² Comoglio, Ronald, Capt, USAF, 31OSS/OSW, *Operation DENY FLIGHT*, Weather Call for Fighter Recovery Operation DENAY FLIGHT Vignette, USAF/A3O-W, Fall 1994.
- ⁴³ Memo., Shaffer, Al, Lt Col, USAF and Hopkins, Charlie, Cdr, USN, *Navy-Air force Cooperation Initiative Discussion*, joint memo CNO (N096)—AF/XOW, 10 Jan 1995.

⁴⁴ Paper, Vinson, James M., SSgt, *A White Paper on The Weather Observation Network for JTF-SAFE BORDER*, Apr 1995. Faxed 24th Weather Squadron to AF/XOW 23 Apr 1995; filed in AFWA/HO 1996-2000 supplemental folder.

⁴⁵ Memo, Widnall, Sheila, SAF to Dir. Defense Performance Review, *Establishment of CWF as a Reinvention Laboratory*, 25 May 1995. [See enclosure]

⁴⁶ Web, *Government Accountability Office*, Wikipedia, downloaded from http://en.wikipedia.org/wiki/Government_Accountability_Office, 15 Jan 2012. [GAO is the audit, evaluation, and investigative arm of the U.S. Congress. Prior to 2004, the name was General Accounting Office.]

⁴⁷ Rpt, *Weather Forecasting, Radar Availability Requirement Not Being Met*, GAO/AMID-95-132, GAO, May 1995.

⁴⁸ Memo, Clark, Ray, Maj, USAF, Follow-up on GAO Report: "Weather Forecasting: Radar Availability Requirement Not Being Met" (DDR&E/ELS memorandum, 27 Oct 95), AF/XOW, 14 Nov 1995

⁴⁹ Memo, Ronald R. Fogleman, Gen, USAF, *Outsourcing and Privatization*, HQ USAF/CC, 30 Nov 1995

⁵⁰ Memo, John M. Haas, Col, USAF, *Outsourcing and Privatization*, HQ USAF/XOWR, 4 Jan 1996 [Note: This is the cover letter that has USAF/CC memo above attached along with briefing XOWR provided AF/CVA on 3 Jan 96.]

⁵¹ Windall, *Op. cit.*

⁵² PP, Tasso, William, Maj, USAF, Incorporating "Own the Weather" into PME Curriculums, AWS/XOOR, 5 Jan 96

⁵³ Web, *USAF 10th CWS*, SpecWarNet, downloaded from http://www.specwarnet.net/americas/10th_cws.htm, 14 Jan 2012.

⁵⁴ Doc., *Performance Specifications for MAIS*, 23 May 1996

⁵⁵ Ltr., Lennon, Thomas J., BGen, USAF, Director of Weather, Memo to General Ronald R. Fogleman, AF/CC, 28 Jun 1996

⁵⁶ The Ku band is a portion of the electromagnetic spectrum in the microwave range of frequencies ranging from 11.7 to 12.7GHz. (downlink frequencies) and 14 to 14.5GHz (uplink frequencies). (<http://www.tech-faq.com/ku-band.html>)

⁵⁷ E-mail, Lewis, Fred, BGen, USAF, to MAJCOM/DOWs, et al., AFW Reengineering Update #1, AF/XOW, 3 Dec 96, p. 3.

⁵⁸ Memo, George Yurchak, Jr., Col, USAF, *XENA – Air Force Weather Communications Vision*, OL-B SSG, Tinker AFB, OK, 13Sep 96

⁵⁹ Lewis, *Op. cit.*, 3 Dec 96

⁶⁰ *Ibid.*, p. 4

⁶¹ *Ibid.*

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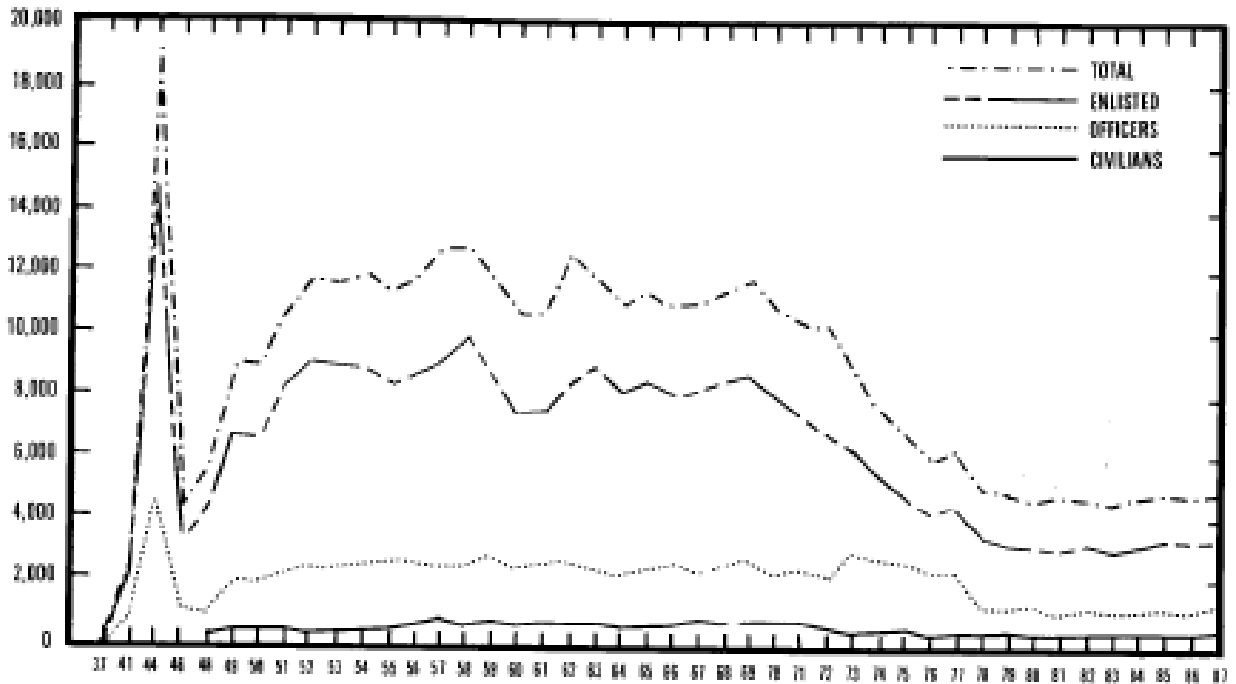
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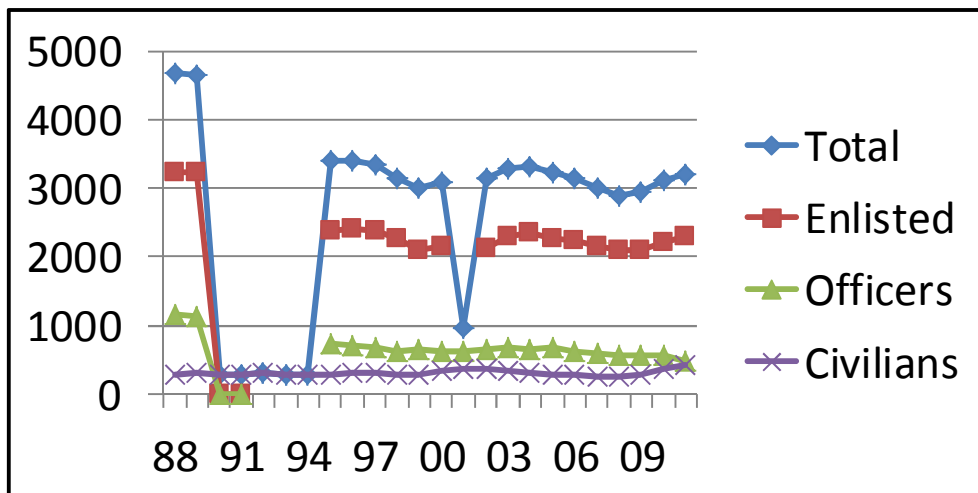
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APPENDIX D—AIR FORCE WEATHER MANNING 1937-2012

1937 – 1987¹



1988 – 2011²



¹ Extracted from AWS: *Our Heritage 1937-1987*, p 164

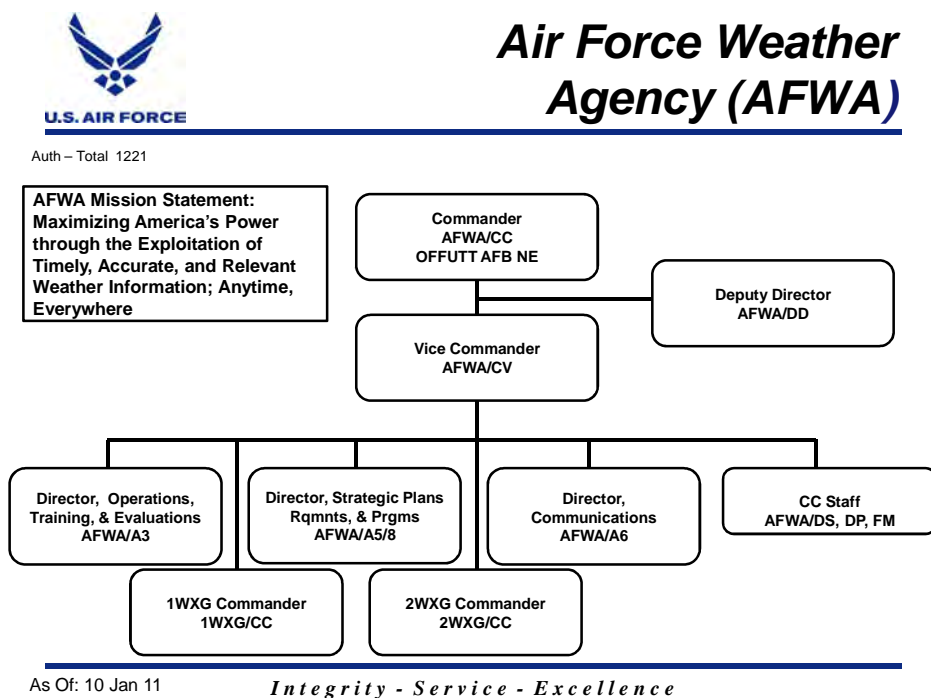
² E-mail, Dahlstrom, Tonya, AFWA/DPB, *AFW Personnel*, 3 Jun 2011. [Prepared from available data in AF personnel data systems MPES (Manpower Programming and Execution System) and THRMS.] [Missing data created the two extreme dips in the chart.]

APPENDIX E—ORGANIZATION

The organization of Air Force Weather over the past 75 years has been varied and alignment changed to reflect needs of the Air Force. However, from 1946 until 1991 the vast majority of Air Force weather forces were organized within one organization, Air Weather Service (AWS). Since October, 1991 the weather forces have been spread across the total Air Force. This appendix provides a snapshot of the Air Force Weather Agency (AFWA) organization in 2011, the disposition of AFW forces and their location in 2010, and, for comparison, a location of AWS units at the end of 1959.

AFWA ORGANIZATIONAL CHARTS

(as of 10 Jan 2011)

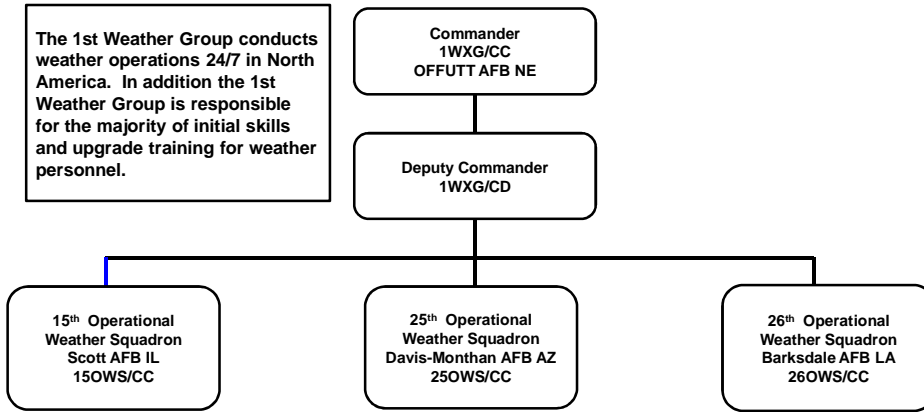




U.S. AIR FORCE

1st Weather Group (AFWA)

Auth - Total 492



As Of: 10 Jan 11

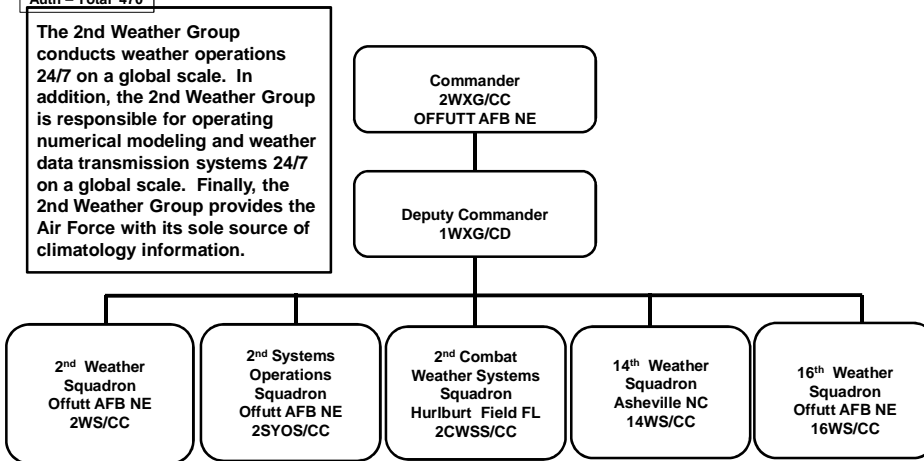
Integrity - Service - Excellence



U.S. AIR FORCE

2nd Weather Group (AFWA)

Auth - Total 470



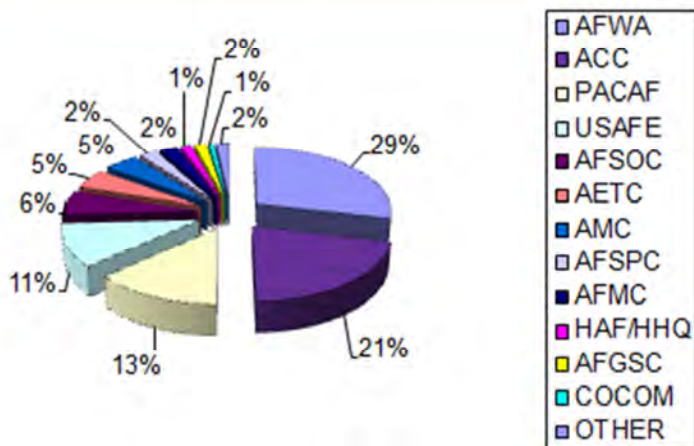
As Of: 10 Jan 11

Integrity - Service - Excellence

2010



Forces Disposition



Fly - Fight - Win

AIR FORCE WEATHER LOCATIONS

[Compiled from Air Force Weather Directory April 2010
Current as of 30 Mar 2010]

Organization	Location
Air Force Weather Agency	Offutt AFB, NE
OL-K	Norman, OK
1st Weather Group	Offutt AFB, NE
15th OWS	Scott AFB, IL
25 th OWS	Davis-Monthan AFB, AZ
26 th OWS	Barksdale AFB, LA
2nd Weather Group	Offutt AFB, NE
Det. 3, 2nd Weather Group	Wright-Patterson AFB, OH
2nd CWSS	Hurlburt Field, FL
OL-A, 2nd CWSS	Camp Blanding, FL
2nd SYOS	Offutt AFB, NE
2nd WS	Offutt AFB, NE
San Vito Solar Observatory	San Vito, Italy
OL-P, 2nd WS	Boulder, CO
Det. 1, 2nd WS	Learmonth, Australia
Det. 2, 2nd WS	Hamilton, MA
Det. 4, 2nd WS	Holloman AFB, NM

Organization	Location
Det. 5, 2nd WS	Palehua, HI
14 th WS	Ashville, NC
16th WS	Offutt AFB, NE
Air Combat Command (ACC)/A3W	
HQ ACC AEFC/AESOO	Langley AFB, VA
HQ ACC IGS/IGBO	Langley AFB, VA
U.S. Army Intelligence Center Weather Team	Langley AFB, VA
ACC AOS/AOSW	Fort Huachuca, AZ
OL-K	Langley AFB, VA
1st OSS/OSW	Fort McPherson AIN, GA
1st ASOG/WSO	Langley AFB, VA
3rd ASOG/DOW	Fort Lewis, WA
3rd WS	Fort Hood AIN, TX
3rd WS/DOO	Fort Hood AIN, TX
Det. 2, 3rd WS	Fort Hood AIN, TX
Det. 3, 3rd WS	Fort Riley, KS
OL-A, 3rd WS	Fort Bliss, TX
OL-B, 3rd WS	Ft Sam Houston, TX
4th OSS/OSW	Fort Leonard Wood, MO
6th WF	Seymour Johnson AFB, NC
OL-A, 6th WF/3DRC	Fort Rucker AIN, AL
7th OSS/OSW	Troy, AL
9th OSS/OSW	Dyess AFB, TX
12th AF/A3W	Beale AFB, CA
12th CTS/DOC	Davis Monthan AFB, AZ
13th ASOS/WF	Fort Irwin, CA
15th ASOS/OSW	Fort Carson AIN, CO
17th ASOS 3DRC	Fort Stewart AIN, GA
18th ASOG	Fort Benning, GA
18th WS	Pope AFB, NC
18th WS/ASE	Fort Bragg, NC
Det. 2, 18th WS	Simmons AAF, Fort Bragg, NC
Det. 3, 18th WS	Fort McPherson, GA
Det. 4, 18th WS	Hunter AAF, GA
OL-B, 18th WS	Fort Campbell, KY
OL-C, 18th WS	Fort Eustis, VA
OL-D, 18th WS	Fort Knox, KY
20th ASOS/E Flight	Fort Polk, LA
20th OSS/OSW	Fort Drum, NY
23rd OSS/OSW	Shaw AFB, SC
	Moody AFB, GA

Organization	Location
28th OSS/OSW	Ellsworth AFB, SD
28th OWS/9th AF/USAFCENT Weather	Shaw AFB, SC
49th OSS/OSW	Holloman AFB, NM
55th OSS/OSW	Offutt AFB, NE
57th OSS/OSW	Nellis AFB, NV
122nd OSF/OSW	Fort Wayne, IAP, IN
144th OSF/WX	Fresno, CA
150th OSF/OSW	Kirtland AFB, NM
175th OSF/OSW	Baltimore, MD
188th OSF/OSW	Fort Smith, AR
355th OSS/OSW	Davis Monthan AFB, AZ
366th OSS/OSW	Mountain Home AFB, ID
432nd OSS/OSW	Creech AFB, NV
505th OS/DOR	Nellis AFB, NV
612th ABS	Soto Cano AB, Honduras
612th AOC/WST	Davis Monthan AFB, AZ
612th SPTS/OWF	Davis Monthan AFB, AZ
84th Radar Eval. Sq.	Hill AFB, UT
93rd AGOW	Moody AFB, GA
Det. 1, 548th CTS	Fort Polk AIN, LA
Det. 2, AGOS	Fort Irwin, CA
Fort Belvoir Weather Operations	Fort Belvoir, VA
Fort Huachuca Weather Operations	Fort Huachuca, AZ
Fort Sill Weather Operations	Fort Sill, OK
Pacific Air Forces (PACAF)/A3AW	Hickam AFB, HI
Joint Typhoon Warning Center	Pearl Harbor, HI
1st WS	Fort Lewis AIN, WA
OL-B, 1st WS	Camp Zama, Japan
Det. 1, 1st WS	Fort Shafter, HI
Det. 2, 1st WS	Wheeler AAF, HI
OL-A, Det 2, 1 st WS	Bradshaw AAF, HI
Det. 3, 1st WS	Fort Wainwright, AK
3rd OSS/OSW	Elmendorf AFB, AK
7th AF/A3W & KAOC Weather Team	Osan AB, Korea
8th OSS/OSW	Kunsan AB, Korea
13th AF/A3X - Air Forces Pacific	Hickam AFB, HI
15th OSS/OSW	Hickam AFB, HI
17th OWS	Hickam AFB, HI
18th OSS/OSW	Kadena AB, Japan
35th OSS/OSW	Misawa AB, Japan
36 th OSS/OSW	Andersen AFB, Guam

Organization	Location
51st OSS/OSW	Osan AB, Korea
354th OSS/OSW	Eielson AFB, AK
374th OSS/OSW	Yokota AB, Japan
607th WS	Yongsan AIN, Korea
Det. 1, 607th WS	Camp Red Cloud, Korea
Det. 2, 607th WS	USAG-Camp Humphreys, Korea
OL-A, Det. 2, 607th WS	Seoul AB, Korea
611th AOC Weather	Elmendorf AFB, AK
613th AOC Weather Team	Hickam AFB, HI
U.S. Air Forces in Europe (USAFE)/A3W	Ramstein AB, Germany
7th EWS	Camp Bondsteel, Kosovo
7th WS	Heidelberg, Germany
OL-A, 7th WS	Coleman Barracks, Germany
Det. 1, 7th WS	Wiesbaden, Germany
Det. 2, 7th WS	Grafenwoehr AAF, Germany
Det. 3, 7th WS	Caserma Ederle, Italy
Det. 4, 7th WS	Katterbach Kaserne, Germany
Det. 5, 7th WS	Illesheim, Germany
21st OWS	Sembach AB, Germany
31st OSS/OSW	Aviano AB, Italy
39th OS/OSW	Incirlik AB, Turkey
48th OSS/OSW	Lakenheath, United Kingdom
52nd OSS/OSW	Spangdahlem AB, Germany
65th OSS/OSW	Lajes Field, Azores, Portugal
86th OSS/OSW	Ramstein AB, Germany
100th OSS/OSW	Mildenhall, United Kingdom
496th ABS/OSWX	Moron AB, Spain
603rd AOC/CODW	Ramstein AB, Germany
Air Force Special Operations Command (AFSOC)/A3W	Hurlburt Field, FL
STTS	Hurlburt Field, FL
Det. 1, 623rd AOC	Offutt AFB, NE
1st SOSS/OSW	Hurlburt Field, FL
3rd SOS/WX	Cannon AFB, NM
10th CWS	Hurlburt Field, FL
Det. 1, 10th CWS	Fort Lewis, WA
Det. 2, 10th CWS	Fort Campbell, KY
OL-A, Det. 2, 10th CWS	Hunter AAF, GA
Det. 3, 10th CWS	Fort Carson AIN, CO
Det. 4, 10th CWS	Fort Benning AIN, GA

Organization	Location
Det. 5, 10th CWS	Fort Bragg AIN, NC
23rd WS	Hurlburt Field, FL
24th STS	Pope AFB, NC
27th SOSS/OSW	Cannon AFB, NM
320th STS	Kadena AB, Japan
353rd OSS/OSW	Kadena AB, Japan
321st STS	RAF Mildenhall, United Kingdom
125th STS	Portland, OR
352nd OSS/A3W	RAF Mildenhall, United Kingdom
720th OSS/OSK	Hurlburt Field, FL
Air Education and Training Command (AETC)/A3OW	Randolph AFB, TX
Air Force Institute of Technology	Wright-Patterson AFB, OH
12th OSS/OSW	Randolph AFB, TX
14th OSS/OSW	Columbus AFB, MS
37th OSS/OSW	Lackland AFB, TX
42nd OSF/AOW	Maxwell AFB, AL
47th OSS/OSW	Laughlin AFB, TX
56th OSS/OSW	Luke AFB, AZ
71st OSS/OSW	Vance AFB, OK
80th OSS/DOW	Sheppard AFB, TX
97th OSS/OSW	Altus AFB, OK
306th OSS/OSW	USAF Academy, CO
325th OSS/OSW	Tyndall AFB, FL
335th TRS/UOA	Keesler AFB, MS
Air Mobility Command (AMC)/A3W	Scott AFB, IL
6th OSS/OSW	MacDill AFB, FL
15th AMOS/XR	Travis AFB, CA
19th OSS/OSW	Little Rock AFB, AR
21st AMOS/CCE	McGuire AFB, NJ
22nd OSS/OSW	McConnell AFB, KS
43rd OSS/OSW	Pope AFB, NC
60th OSS/OSW	Travis AFB, CA
62nd OSS/OSW	McChord AFB, WA
92nd OSS/OSW	Fairchild AFB, WA
133rd OSF/WX	St. Paul, MN
133rd ALCF WX Element	St. Paul, MN
146th OSF/OSW	Port Hueneme, CA
319th OSS/OSW	Grand Forks AFB, ND
305th OSS/OSW	McGuire AFB, NJ

Organization	Location
375th OSS/OSW	Scott AFB, IL
436th OSS/OSW	Dover AFB, DE
437th OSS/OSW	Charleston AFB, SC
570 th GMS/DOM	Travis AFB, CA
571st GMS/DOC	Travis AFB, CA
572nd GMS/DOC	Travis AFB, CA
618th TACC/XOW	Scott AFB, IL
816th CRG	McGuire AFB, NJ
817th CRG	McGuire AFB, NJ
818th GMS/DOM	McGuire AFB, NJ
Air Force Space Command Weather Operations Branch (AFSPC/A3FW)	Peterson AFB, CO
GC/AMOW	Thule AB, Greenland
SMC/WXT	Peterson AFB, CO
14th AF/A33W	Vandenberg AFB, CA
21st OSS/OSW	Peterson AFB, CO
30th WS	Vandenberg AFB, CA
45th WS	Patrick AFB, FL
45th WS/DOR	Cape Canaveral AFS, FL
614th AOC/CODW	Vandenberg AFB, CA
Air Force Materiel Command (AFMC)/A30W	Wright-Patterson AFB, OH
Air Force Office of Scientific Research	Arlington, VA
Ogden Air Logistics Center, Weather System Support Management	Hill AFB, UT
AFRL/DES	Kirtland AFB, NM
AFRL/IFOM	Rome, NY
AFRL/VSBY	Hanscom AFB, MA
Det. 2, AFRL/MLQL	Tyndall AFB, FL
MDA/ALZW	Kirtland AFB, NM
46th WS	Eglin AFB, FL
72nd OSS/OSW	Tinker AFB, OK
75th OSS/OSW	Hill AFB, UT
78th OSS/OSW	Robins AFB, GA
88th OSS/OSW	Wright-Patterson AFB, OH
377th MXG/MXOW	Kirtland AFB, NM
412th OSS/OSW	Edwards AFB, CA
651st ELSS	Hanscom AFB, MA
846th TS/TGTPW	Holloman AFB, NM

Organization	Location
Air Force Global Strike Command/Weather Operations Branch (AFGSC)/A3BW	Barksdale AFB, LA
2 nd OSS/OSW	Barksdale AFB, LA
5 th OSS/A-3W	Minot AFB, ND
8 th Air Force Staff Weather Officer	Barksdale AFB, LA
90th OSS//OSW	F.E. Warren AFB, WY
341 st OSS/OSW	Malmstrom AFB, MT
509 th OSS/OSW	Whiteman AFB, MO
Air Force Reserve Command (AFRC)/DOVA	Robins AFB, GA
12th OWF	Scott AFB, IL
53rd WRS (Hurricane Hunters)	Keesler AFB, MS
94th OG/OGW	Dobbins ARB, GA
434th OSS/ATW	Grissom ARB, IN
439th OSS/OSAW	Westover ARB, MA
452nd OSS/OSAW	March ARB, CA
482nd OG/OSAW	Homestead ARS, FL
914th OG/OSW	Niagara Falls ARS, NY
Air National Guard (ANG)/A3OS-A3J	Arlington, VA
CSR Inc. [Alpena]	Alpena, MI
CSR Inc. [Buckley]	Buckley AFB
CSR Inc. [Kingsley Field]	Klamath Falls, OR
CSR Inc. [Los Alamitos AAF]	Los Alamitos AAF, CA
CSR Inc. [Otis ANGB]	Otis ANGB, MA
CSR Inc. [Pease ANGB]	Pease ANGB, NH
CSR Inc. [Selfridge ANGB]	Selfridge ANGB, MI
NEADS/WE	Rome, NY
Volk Field Weather	Camp Douglas, WI
Weather Readiness Training Center	Camp Blanding, FL
6th WF, OL-B/3DRC	Andalusia, AL
104th OSF/OSW	Barnes ANGB, MA
104th WF	Baltimore, MD
105th WF	Nashville, TN
107th WF	Selfridge ANGB, MI
111th OSF/OSW	Willow Grove ARS, PA
111th WF	Ellington Field, TX
113th WF	Terre Haute, IN
115th FW	Madison, WI

Organization	Location
116th WF	McChord AFB, WA
122nd WF	Hammond, LA
123rd STS	Louisville, KY
123rd WF	Portland, OR
125th WF	Tulsa, OK
126th WF	Milwaukee, WI
127th WF	Topeka, KS
137th ALCF WX	Will Rogers ANGB, Oklahoma City, OK
140th OSS/DOW	Buckley AFB, CO
146th WF	Corapolis, PA
148th OSF/OSW	Duluth, MN
152nd AOG/Ops Wx	Syracuse, NY
154th WF	Little Rock AFB, AR
156th WF	Charlotte, NC
159th OSF/WX	NAS-JRB New Orleans, LA
159th WF	Camp Blanding Joint Training Center, Starke, FL
163rd OSF/OSW	March ARB, CA
164th WF	Columbus, OH
169th FW/SW	Eastover, SC
174th OSF/OSW	Syracuse (Hancock Field ANG Base), NY
177th OSF/OSW	Egg Harbor Township, NJ
178th FW/DOWS	Springfield, OH
180th OSF/OSW	Swanton, OH
181st WF	Fort Worth, TX
183rd OSF/OSW	Capital Airport, Springfield, IL
187th OSF/OSW	Montgomery, AL
193rd SOW/DOSW	Fort Indiantown Gap, PA
195th WF	Port Hueneme (Channel Islands ANGS), CA
199th WF	Hickam AFB, HI
200th WF	Sandston, VA
202nd WF	Otis ANGB, MA
203rd WF	Annville, PA
207th WF	Indianapolis, IN
208th WF	St. Paul, MN
209th WF	Austin (Camp Mabry), TX
210th WF	March ARB, CA

Organization	Location
HQs Air Force/Higher HQs	
Deputy Chief of Staff for Intelligence, Army/HQ DAMI-POB	Washington, DC
HQ Department of the Army, DAMI-OPS	Washington, DC
Joint Chiefs of Staff/J-39 reconnaissance Ops Div	Washington, DC
Defense Threat Reduction Agency (AFELM)	Fort Belvoir, VA
Deputy for Federal and National Programs (AFELM)	Washington, DC
AVTEG/J2-WX (AFELM)	Fort Bragg, NC
HQ TRADOC Staff Weather Office (AFELM)	Fort Monore, VA
NPOESS Integrated Program Office (AFELM)	Silver Spring, MD
Federal Aviation Administration (AFELM)	Washington, DC
Combined Arms Center Staff Weather Office (AFELM)	Fort Leavenworth, KS
Fleet Numerical Meteorology and Oceanography Center, AFW Liaison (AFELM)	Monterey, CA
National Geospatial-Intelligence Agency/SMO (AFELM)	Reston, VA
Office of the Federal Coordination for Meteorological Services and Supporting Research (AFELM)	Silver Spring, MD
316th OSS/OSW (AFELM)	Andrews AFB, MD
121st WF (AFELM)	Andrews AFB, MD
Air Force Operations Group (AF/A3O- AOAW)	Washington, DC
OL-A, AFOG	Fort Detrick, MD
Air Force Operational Test Evaluation Center(AFOTEC)/Staff Met	Kirtland AFB, NM
Air Force Personnel Center/DPAO (Officer Assignments)	Randolph AFB, TX
Air Force Personnel Center/DPAAD3 (Enlisted Assignments)	Randolph AFB, TX
Air Force Technical Application Center (AFTAC)/Staff Met	Patrick AFB, FL
U.S. Air Force Academy Dept. of Economics and Geosciences	USAF Academy, CO

Organization	Location
Combatant Command/Other	
U.S. Southern Command/SMO (12 th AF)	Miami, FL
U.S. Special Operations Command/SMO	Hurlburt Field, FL
Special Operations Command Europe (SOCEUR)	Stuttgart, Germany
HQ NORAD-USNORTHCOM/J33 METOC	Peterson AFB, CO
HQ USEUCOM/EPOC-CCPD	Stuttgart/Patch Barracks, Germany
NATO Headquarters, International Military Staff	Brussels, Belgium
Supreme Headquarters Allied Powers Europe, Environmental Section (NATO)	Mons, Belgium
HQ SFOR (NATO)	Sarajevo, Bosnia-Herzegovina

AIR WEATHER SERVICE UNITS, 31 Dec 1959

Hq AWS, Scott AFB, Illinois

- Det 2, Suitland Hall 4 ADM, Maryland
- Det 3, Washington, D. C.
- Det 4, Puerto Montt Cy, Chile
- Det 5, Recife Airport, Brazil

Hq 1st Weather Wing, Wheeler AFB, Hawaii

- Det 3, Wheeler AFB, Hawaii
- Det 4, Hickam AFB, Hawaii

54th WRS, Anderson AFB, Guam (to be inactivated 18 Mar 60)

56th WRS, Yokota AB, Japan

10th Weather Group, Fuchu ASN, Japan

- Det 1, Fuchu ASN, Japan
- Det 2, Andersen AFB, Guam
- Det 3, Clark AB, Philippine Islands
- Det 4, Camp Zama AI, Japan
- Det 5, Eniwetok Atoll AFD, Marshall Islands
- Det 6, Johnson AB, Japan
- Det 7, Kadena AB, Ryukyus Islands
- Det 9, Kunsan AB, Korea
- Det 10, Itazuke AB, Japan
- Det 11, Iwo Jima AB, Volcano Islands
- Det 12, Kimpo AB, Korea
- Det 13, Misawa AB, Japan
- Det 14, Naha AB, Ryukyus Islands
- Det 15, Osan AB, Korea
- Det 16, Tachikawa AB, Japan
- Det 17, Uijongbu AI, Korea
- Det 18, Yokota AB, Japan
- Det 19, Ashiya AB, Japan
- Det 20, Seoul AAD, Korea

Hq 2nd Weather Wing, Lindsey ASN, Germany

- Det 1, High Wycombe ASN, England (to be inactivated 8 Jan 60)

7th Weather Squadron, Heidelberg AI, Germany

- Det 1, Bosco Montico AI, Italy
- Det 2, Hanau AI, Germany
- Det 3, Heidelberg AI, Germany
- Det 4, Orleans Hq Zone AI, France
- Det 5, Poitiers AI, France
- Det 6, Stuttgart AB, Germany

18th Weather Squadron, Wiesbaden AB, Germany

- Det 11, Athenai Airport, Greece
- Det 12, Wiesbaden AB, Germany
- Det 13, Dreux AB, France
- Det 14, Ciampino AB, Italy
- Det 15, Evreux Fauville AB, France
- Det 17, South Ruislip AB, England
- Det 29, Rhein Main AB, Germany
- Det 48, Orly AB, France
- Det 59, Chateauroux ASN, France
- Det 62, Prestwick Airport, Scotland

21st Weather Squadron, Torrejon AB, Spain

- Det 1, Torrejon AB, Spain
- Det 5, Sidi Slimane AB, Morocco
- Det 6, Nouasseur AB, Morocco
- Det 7, Benguerir AB, Morocco
- Det 9, Sale Hq ADM, Morocco
- Det 11, Torrejon AB, Spain
- Det 12, Dhahran AFD, Saudi Arabia
- Det 13, Wheelus AB, Libya
- Det 14, Moron AB, Spain
- Det 17, Zaragoza AB, Spain
- Det 19, Incirlik AB, Turkey

28th Weather Squadron, Bushy Park, ADM, England

- Det 2, Hillingdon RAF, England
- Det 3, Lakenheath RAF, England
- Det 5, Sculthorpe RAF, England
- Det 8, Mildenhall RAF, England
- Det 9, Bruntingthorpe RAF, England

28th Weather Squadron (Cont'd)

Det 10, Chelveston RAF, England
Det 12, Brize Norton RAF, England
Det 14, Bentwaters RAF, England
Det 15, Wethersfield RAF, England
Det 16, Woodbridge RAF, England
Det 17, Upper Heyford RAF, England
Det 24, Fairford RAF, England
Det 25, Greenham Common RAF, England
Det 26, Bovingdon RAF, England
Det 36, Alconbury RAF, England
Det 40, High Wycombe ASH, England (to be activated 8 Jan 60)

31st Weather Squadron, Ramstein AB, Germany

Det 1, Bitburg AB, Germany
Det 2, Ramstein AB, Germany
Det 5, Toul-Rosieres AB, France
Det 7, Laon AB, France
Det 8, Chaumont AB, France
Det 11, Spangdahlem AB, Germany
Det 13, Etain AB, France (to be inactivated 8 Apr 60)
Det 14, Hahn AB, Germany
Det 18, Phalsbourg AB, France
Det 19, Aviano AB, Italy
Det 20, Sembach AB, Germany
Det 21, Ramstein AB, Germany

53rd WRS, Mildenhall RAF, England (to be inactivated 18 Mar 60) 5

Hq 3rd Weather Wing, Offutt AFB, Nebraska

Det 1, Offutt AFB, Nebraska
Det 2, Offutt AFB, Nebraska
Det 3, Vandenberg AFB, California

5th Weather Group, Westover AFB, Massachusetts

Det 3, Homestead AFB, Florida
Det 4, Goose AB, Canada
Det 5, Ernest Harmon AFB, Canada

5th Weather Group (Cont'd)

Det 6, Hunter AB, Georgia
Det 8, MacDill AFB, Florida
Det 9, McCoy AFB, Florida
Det 10, Ramey AFB, Puerto Rico
Det 11, Turner AFB, Georgia
Det 16, Sondrestrom AB, Greenland
Det 19, Dow AFB, Maine
Det 22, Lockbourne AFB, Ohio
Det 23, Loring AFB, Maine
Det 24, Thule AB, Greenland
Det 26, Plattsburg AFB, New York
Det 27, Pease AFB, New Hampshire
Det 29, Westover AFB, Massachusetts
Det 30, Westover AFB, Massachusetts

26th Weather Squadron, Barksdale AFB, Louisiana

Det 6, Forbes AFB, Kansas
Det 9, Chennault AFB, Louisiana
Det 10, Columbus AFB, Mississippi
Det 11, Barksdale AFB, Louisiana
Det 13, Little Rock AFB, Arkansas
Det 14, Blytheville AFB, Arkansas
Det 15, Laughlin AFB, Texas
Det 16, Altus AFB, Oklahoma
Det 17, McConnell AFB, Kansas
Det 19, Barksdale AFB, Louisiana
Det 21, Clinton Sherman AFB, Oklahoma
Det 22, Carswell AFB, Texas
Det 24, Bergstrom AFB, Texas
Det 25, Whiteman AFB, Missouri
Det 26, Bunker Hill AFB, Indiana
Det 27, Clinton County AFB, Ohio (to be activated 8 Jan 60)
Det 29, Lincoln AFB, Nebraska

Hq 4th Weather Wing, Ent AFB, Colorado

Det 1, Ent AFB, Colorado
Det 4, Pepperrell AFB, Canada
Det 5, USAF Academy TNG, Colorado

4th Weather Squadron, Hamilton AFB, California

- Det 1, Geiger Field, Washington (to be inactivated 8 Apr 60)
- Det 4, McChord AFB, Washington (to be inactivated 8 Apr 60)
- Det 5, Hamilton AFB, California
- Det 6, Norton AFB, California
- Det 9, Oxnard AFB, California
- Det 10, Paine Field, Washington (to be inactivated 8 Apr 60)
- Det 11, Portland IAP, Oregon (to be inactivated 8 Apr 60)
- Det 14, Kingsley Field, Oregon (to be inactivated 8 Apr 60)
- Det 19, McChord AFB, Washington (to be inactivated 8 Apr 60)
- Det 20, Adair AFS, Oregon (to be inactivated 8 Apr 60)
- Det 22, Larson AFB, Washington (to be inactivated 8 Apr 60)

11th Weather Squadron, Elmendorf AFB, Alaska

- Det 1, Ladd AFB, Alaska
- Det 2, Eielson AFB, Alaska
- Det 3, Ft. Greeley AI, Alaska
- Det 4, Sparrevohn Mt. AFS, Alaska
- Det 5, Tatalina AFS, Alaska
- Det 6, Indian ht. AFS, Alaska
- Det 7, Galena Airport, Alaska
- Det 8, Northeast Cape AFS, Alaska
- Det 9, Cape Lisbourne AFS, Alaska
- Det 10, Cape Newenham AFS, Alaska
- Det 11, Cape Romanzof AFS, Alaska
- Det 12, Tin City AFS, Alaska
- Det 13, Elmendorf AFB, Alaska
- Det 14, Middleton Island AFS, Alaska
- Det 15, King Salmon APT, Alaska

12th Weather Squadron, Hancock Field, Syracuse, N.Y. 9

- Det 1, Ethan Allen AFB, Vermont (to be inactivated 26 May 60)

12th Weather Squadron (Cont'd)

- Det 4, McGuire AFB, New Jersey
- Det 5, Niagara Falls MAP, New York
- Det 9, Suffolk County AFB, New York
- Det 11, Stewart AFB, New York
- Det 12, Otis AFB, Massachusetts
- Det 27, Hancock Field, Syracuse, N.Y.
- Det 41, Ft. Lee AFS, Virginia
- Det 42, Topsham AFS, Maine

19th Weather Squadron, Richards-Gebaur AFB, Missouri

- Det 1, Richards-Gebaur AFB, Missouri 10
- Det 5, Snelling AFS, Minnesota (to be inactivated 8 Jan 60)
- Det 9, Oklahoma City AFS, Oklahoma
- Det 12, Sioux City LAP, Iowa
- Det 14, Kirtland AFB, New Mexico

29th Weather Squadron, Malmstrom AFB, Montana

- Det 1, Glasgow AFB, Montana
- Det 2, Grand Forks AFB, North Dakota
- Det 3, Malmstrom AFB, Montana
- Det 5, Minot AFB, North Dakota

32d Weather Squadron, Dobbins AFB, Georgia

- Det 1, Dobbins AFB, Georgia
- Det 2, Gunter AFB, Alabama
- Det 3, Eglin #9 AAF, Florida
- Det 5, Tyndall AFB, Florida

33d Weather Squadron, Truax Field, Wisconsin

- Det 1, Duluth MAP, Minnesota
- Det 2, K.I. Sawyer AFB, Michigan
- Det 3, Custer AFS, Michigan
- Det 4, Kincheloe AFB, Michigan

33d Weather Squadron (Cont'd)

- Det 5, Selfridge AFB, Michigan
- Det 6, Truax Field, Wisconsin
- Det 9, Wurtsmith AFB, Michigan 11
- Det 10, Youngstown LAP, Ohio (to be inactivated 26 Mar 60)

35th Weather Squadron, McChord AFB, Wash. (to be activated 8 Apr 60)

- Det 1, Adair AFS, Oregon (to be activated 8 Apr 60)
- Det 2, Kingsley Field, Oregon (to be activated 8 Apr 60)
- Det 3, Geiger Field, Washington (to be activated 8 Apr 60)
- Det 4, McChord AFB, Washington (to be activated 8 Apr 60)
- Det 5, Paine Field, Washington (to be activated 8 Apr 60)
- Det 6, Larson AFB, Washington (to be activated 8 Apr 60)
- Det 7, Portland IAP, Oregon (to be activated 8 Apr 60)
- Det 8, Stead AFB, Nevada (to be activated 8 Apr 60)

Hq 2d Weather Group, Langley AFB, Virginia

- Det 2, Langley AFB, Virginia

3d Weather Squadron, Shaw AFB, South Carolina

- Det 3, Myrtle beach AFB, South Carolina
- Det 4, Shaw AFB, South Carolina
- Det 12, Seymour Johnson AFB, North Carolina
- Det 16, Sewart AFB, Tennessee
- Det 18, Miami IAP, Florida 13
- Det 19, Clinton County AFB, Ohio (to be inactivated 8 Jan 60)
- Det 20, Pope AFB, North Carolina
- Det 23, Mitchel AFB, New York

16th Weather Squadron, Ft. Monroe AI, Virginia

- Det 1, Ft. Campbell AI, Kentucky
- Det 2, Ft. Belvoir AI, Virginia
- Det 3, Ft. Bragg AI, North Carolina
- Det 4, Ft. George G. Meade AI, Maryland
- Det 5, Ft. Knox AI, Kentucky
- Det 6, Ft. Lewis AI, Washington
- Det 7, Ft. Ord AI, California
- Det 8, Ft. Riley AI, Kansas
- Det 9, Ft. Rucker AI, Alabama
- Det 10, Ft. Benning AI, Georgia
- Det 11, Ft. Sill AI, Oklahoma

25th Weather Squadron, Waco 12th AF Hq Off ADM, Texas

- Det 21, England AFB, Louisiana
- Det 22, Cannon AFB, New Mexico
- Det 23, George AFB, California
- Det 27, Long Beach MAP, California
- Det 28, Ellington AFB, Texas
- Det 29, Gray AFB, Texas
- Det 30, Luke AFB, Arizona
- Det 31, Nellis AFB, Nevada
- Det 32, Williams AFB, Arizona

Hq 4th Weather Group, Andrews AFB, Maryland

- Det 1, Wright-Patterson AFB, Ohio
- Det 2, Andrews AFB, Maryland
- Det 3, Bolling AFB, Washington, D. C.
- Det 4, Kansas City ADM, Missouri
- Det 5, Tinker AFB, Oklahoma
- Det 6, Laurence G. Hanscom Field, Massachusetts
- Det 8, Vernalis RCS, Calif. (to be activated 15 Jan 60) 14
- AFB, Florida Det 10, Eglin
- Det 11, Patrick AFB, Florida
- Det 12, Olmstead AFB, Pennsylvania
- Det 13, Robins AFB, Georgia
- Det 14, McClellan AFB, California

Hq 4th Weather Group (Cont'd)
Det 15, Griffiss AFB, New York
Det 16, Maxwell AFB, Alabama
Det 17, Hill AFB, Utah
Det 18, Lowry AFB, Colorado
Det 19, Dugway Proving Ground AI,
Utah
Det 21, Edwards AFB, California
Det 23, Kirtland AFB, New Mexico
Det 24, Holloman AFB, New
Mexico
Det 251 Washington Cy, D. C.
Det 28, Suitland. Hall 4 ADE,
Maryland

6th Weather Squadron (Mobile), Tinker
AFB, Oklahoma

Hq 8th Weather Group, Randolph AFB,
Texas

Det 2, Amarillo AFB, Texas
Det 3, Chanute AFB, Illinois
Det 5, Sheppard AFB, Texas
Det 6, Keesler AFB, Mississippi
Det 7, Webb AFB, Texas
Det 9, Craig AFB, Alabama
Det 12, Harlingen AFB, Texas
Det 13, James Connally AFB, Texas
Det 14 Laredo A.FB, Texas
Det 15, Greenville AFB, Mississippi
Det 16, Mather AFB, California
Det 17, Reese ATB, Texas
Det 18, Vance AFB, Oklahoma
Det 20, Moody AFB, Georgia
Det 22, Perrin AFB, Texas
Det 25, Stead AFB, Nevada
Det 26, Randolph AFB, Texas
Det 29, Kelly AFB, Texas
Det 30, Brooks AFB, Texas
Det 31, Albrook AFB, Canal Zone

Hq 9th Weather Group, Scott AFB,
Illinois

Det 1, Scott AFB, Illinois
Det 3, Lajes Field, Azores
Det 4, Dover AFB, Delaware
Det 10, Kindley AFB, Bermuda
Det 13, Keflavik Airport, Iceland
Det 17, Donaldson AFB, South
Carolina
Det 18, Larson AFB, Washington (to
be inactivated 8 Jan 60)
Det 20, Travis AFB, California
Det 22, McGuire AFB, New Jersey
Det 27, Brookley AFB, Alabama
Det 52, Charleston AFB, South
Carolina

55th WRS, McClellan AFB, California

Det 1, Ladd AFB, Alaska
Det 2, Hickam AFB, Hawaii

59th NM, Kindley AFB, Bermuda (to be
inactivated 18 Mar 6

Prepared by TSgt C. A. Ravenstein,
Historical Division, AW3DI, Hq AWS,
from 1959 DAF, MATS and ANS General
Orders. (28 January 1960)

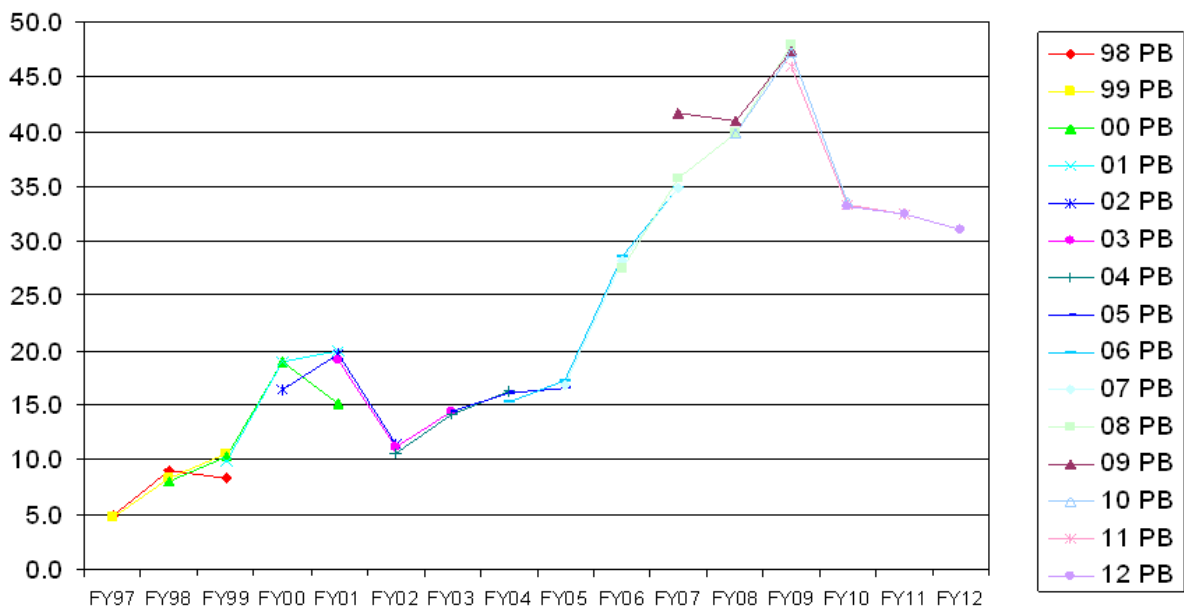
(Information compiled 22 Jan 2012 from electronic document created from paper file copy
by George N. Coleman III, CMSgt, USAF, Ret., member Air Weather Association.)

**APPENDIX F—AIR FORCE WEATHER PROGRAM 15-YEAR
HISTORICAL INVESTMENT FUNDING LEVELS¹**

The purpose of this appendix is to show the changes in investment funding levels for the Air Force’s Weather Program during a 15-year period when the Air Force was engaged in significant conflicts around the globe. During this period the investment in weather operations evolved to keep pace with the Joint community’s need for timely and relevant environmental intelligence. By 2012 DoD was entering into a period of reduced budgets based on a revised National Strategy with future years projected to be significantly less than the 2009 peak. As in the past, the future of AFW will depend on decisions rendered in response to the strategy and budgets.

3600 Appropriation
(Millions of dollars)

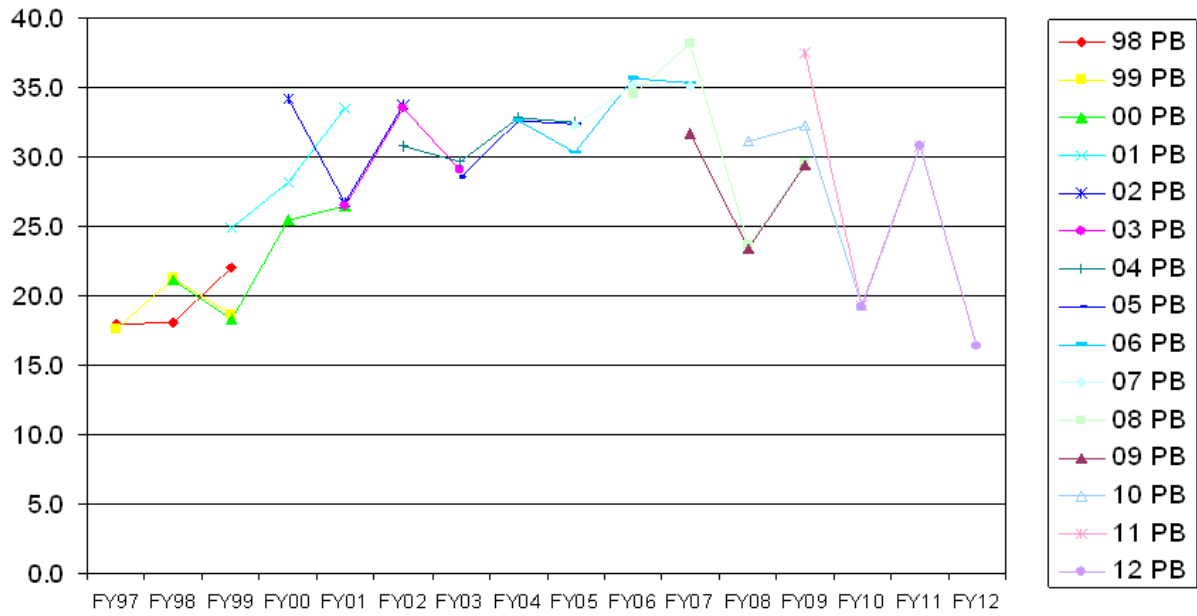
PE 35111F RDT&E Funding History



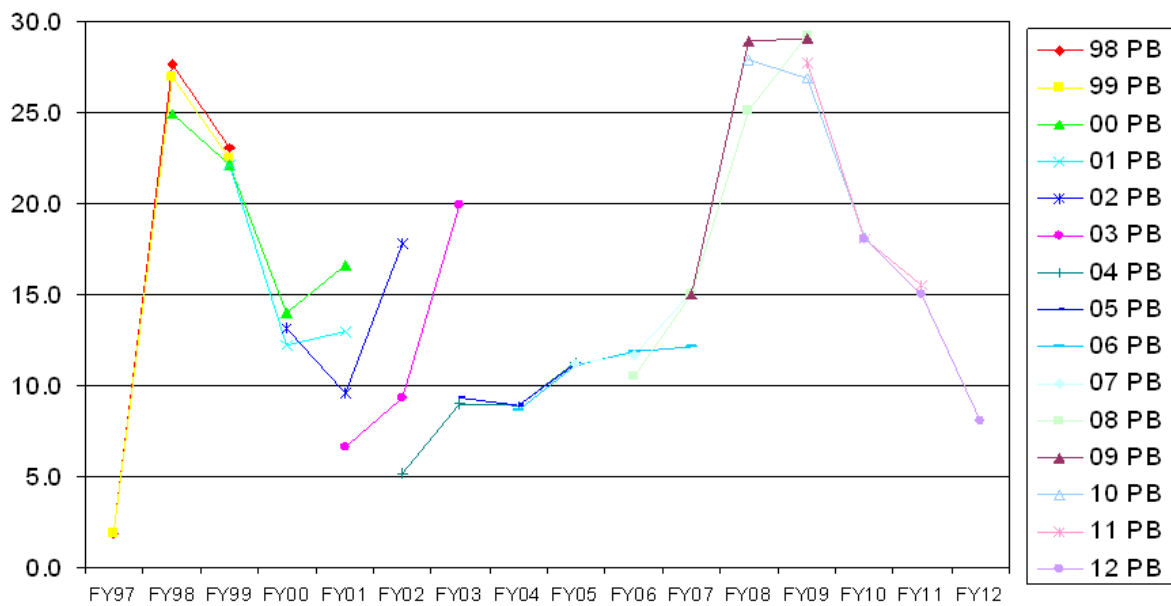
¹ Keene, Charles, Dr., A8X, A5/8 *Semi-annual Historical Activity Report, 1 Jan -30 Jun 2011*. The Operations and Maintenance appropriation (3400) was not included since AFWA Comptroller only manages the AFWA account not the entire AFW 3400 appropriation.

3080 Appropriation (Other Procurement) (Millions of dollars)

PE 35111F Acquisition Funding History



PE 35111F Modification Funding History



**APPENDIX G—CONGRATULATIONS
FROM AROUND THE WORLD**

75th ANNIVERSARY



**SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000**

2 Jul 2012

Dear Air Force Weather Professionals:

For 75 years, Air Force Weather has provided outstanding support to the Nation. The daily efforts of your superb men and women have helped to guide the course of history.

Since your beginnings on July 1, 1937, in the Army Air Corps, we have benefitted from weather warriors operating in all of our major combat and humanitarian relief operations. In addition, your leadership in areas ranging from hurricane reconnaissance to observing and forecasting solar activity has saved countless lives and allowed us to evaluate and plan for impacts to our numerous air and space systems.

You have a distinguished heritage, and the Air Force Weather team can be justifiably proud as you celebrate this significant milestone. I am confident that Air Force Weather's future will be characterized by the same high standards of excellence that have marked your performance in the past. Happy 75th!

A handwritten signature in black ink, appearing to be "Johnston".



THE SECRETARY OF THE AIR FORCE
WASHINGTON

JUN 27 2012

Dear Air Force Weather Professionals:

Congratulations on the 75th Anniversary of Air Force Weather. During peace and war, our Services depend on the expertise of Air Force Weather professionals for accurate and timely weather information.

As we reflect on three-quarters of a century of dedicated service, we will never forget the sacrifices of our weather professionals who were proudly in the fight – from the beaches of Normandy, to the jungles in Vietnam, to the deserts of Southwest Asia. The contributions of Air Force Weather professionals have been critical to mission success across the spectrum of combat and humanitarian operations, and I am confident you will build on this distinguished heritage for years to come.

Sincerely,

A handwritten signature in black ink that reads "Michael B. Donley". The signature is written in a cursive style with a long, sweeping tail on the letter "y".

Michael B. Donley




CHIEF OF STAFF
UNITED STATES AIR FORCE
WASHINGTON
JUN 21 2012

Dear Air Force Weather Professionals:

I extend heartfelt congratulations on 75 impressive years of support to the United States Air Force and United States Army. During that time, the accomplishments of the men and women of Air Force Weather have been an integral element of U.S. airpower. Your weather team has directly supported combat and humanitarian operations around the world, giving us an operational edge. You have been leaders in weather support from the very first tornado warning issued in the United States on March 25, 1948, which saved lives and protected aircraft at Tinker Air Force Base, Oklahoma, to the employment of the highest resolution operational weather model in the world to support combat operations in Afghanistan.

Thank you for your dedicated service over the last 75 years. I look forward to your continued outstanding contributions in the years to come.

Sincerely,


NORTON A. SCHWARTZ
General, USAF
Chief of Staff



UNITED STATES ARMY
THE CHIEF OF STAFF
17 May 2012

The Men and Women of Air Force Weather:

For 75 years the Men and Women of Air Force Weather have provided crucial support to our military efforts, and throughout its proud history the U.S. Army and Air Force Weather have had a vitally close relationship.

From its roots under the U.S. Army Signal Corps in 1917 to its transfer to the Army Air Corps in 1937, and finally to its permanent home in the Air Force, the Men and Women of Air Force Weather have contributed to and supported every major military operation in our modern history.

Whether it was preparing the forecast and then parachuting, gliding and wading onto the shores of Normandy on 6 Jun 1944, forecasting for bomb drops over Japan, or recently supporting operations in Afghanistan or Iraq, Air Force Weather has been a critical partner in our military successes.

On this 75th Anniversary of Air Force Weather, I thank each member, past and present, for their service to our Nation and their support to our Army. Army Strong!

Sincerely,

A handwritten signature in black ink, appearing to read "Ray Odierno". The signature is stylized and written in a cursive-like font.

RAYMOND T. ODIERNO
General, United States Army



COMMANDER
UNITED STATES TRANSPORTATION COMMAND
SCOTT AIR FORCE BASE IL 62225-5357

17 May 2012

Dr. Fred P. Lewis
Director of Weather, USAF
1490 Air Force Pentagon
Washington D.C. 22030

Dear Dr. Lewis,

On this 75th anniversary of Air Force Weather, please extend my sincere congratulations to the men and women of your team for the world-class support they provide to our Joint Force. From the establishment as the Army Air Corps Weather Service in 1937, Air Force Weather has earned a well-deserved legacy of excellence, which has been fundamental to delivering world-class capability to the warfighter.

Thank you for your leadership and congratulations to you and your team on this tremendous milestone.

Sincerely

A handwritten signature in black ink, appearing to read "William M. Fraser III".

WILLIAM M. FRASER III
General, USAF



DEPARTMENT OF DEFENSE
UNITED STATES STRATEGIC COMMAND

Reply to:
USSTRATCOM/J0CC
901 SAC BLVD STE 2A1
OFFUTT AFB NE 68113

4 Jun 12
SM# 1059-12

Dr. Fred P. Lewis
AF/A3O-W
1490 Air Force Pentagon
Washington, D.C. 22030

Dear Dr. Lewis, *Fred*

Congratulations to you and everyone within Air Force Weather on your 75th anniversary!

From the earliest days of the Army Air Corps in the First and Second World Wars, to the crucial strategic deterrence campaigns of the Cold War and beyond, accurate and timely weather information has been vital to the success of American airpower. No matter the challenge, we have always been able to rely on Air Force Weather professionals to give us the information we need to accomplish the mission and keep our troops safe.

On behalf of the men and women of the United States Strategic Command, thank you for your outstanding support and best wishes for your continued success.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Robert Kehler".

C. ROBERT KEHLER
General, USAF
Commander



AIR EDUCATION AND TRAINING COMMAND
UNITED STATES AIR FORCE
Office of the Commander
1 F Street Ste 01
RANDOLPH AIR FORCE BASE TEXAS 78150-4324

21 May 2012

Dr. Fred P. Lewis
HQ USAF/A3O-W
1490 Air Force Pentagon
Washington DC 22030

Dear Mr. Lewis

Congratulations to all of the members of the Air Force Weather family, both past and present, on 75 years of service! Without the many sacrifices of our weather teams through the years, we would not be successful in accomplishing our many missions.

Since July 1, 1937, your organization (then called the Army Air Corps Weather Service) has strived to provide timely and reliable weather information to American's Airmen. During peace and war, your mission is critical. From enabling the safe passage of unmanned aerial vehicles safe passage to the protection of government assets to the safety of life and limb, Air Force Weather continues to meet the challenges of an ever-changing environment.

I proudly join the men and women of Air Education and Training Command in saluting you all. Congratulations on a proud past and I forecast even brighter days ahead.

Sincerely

Well done!


EDWARD A. RICE, JR.
General, USAF



Commander
AIR MOBILITY COMMAND
Scott Air Force Base, Illinois

7 May 2012

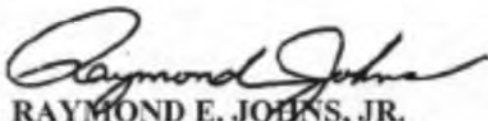
Dr. Fred P. Lewis
Director of Weather
1490 Air Force Pentagon
Washington DC 20330-1490

Dear Dr. Lewis

I sincerely applaud Air Force Weather on 75 years of exceptional service to our grateful nation. The men and women across all eras of your weather organization deserve praise for being a key component of the greatest Air Force on the planet.

On behalf of Air Mobility Command, I congratulate Air Force Weather and wish your organization a happy anniversary with many more to come.

Sincerely


RAYMOND E. JOHNS, JR.
General, USAF



PACIFIC AIR FORCES
Commander
Joint Base Pearl Harbor-Hickam, Hawaii

MAY 17 2012

Dr. Fred P. Lewis
AF/A3O-W
1490 Air Force Pentagon
Washington D.C. 22030

Dear Dr. Lewis

Congratulations to the Air Force Weather organization and all of its personnel of the last 75 years for your remarkable service to our nation! Your constant diligence and commitment has allowed the men and women of Pacific Air Forces to excel in our missions on the ground and in the air.

Best wishes to all our Weather Airmen on this occasion.

Sincerely

GARY L. NORTH
General, USAF

*Congrats to
all!*



AIR FORCE SPECIAL OPERATIONS COMMAND
Commander
Hurlburt Field, Florida

13 JUN 2012

Dr. Fred P. Lewis
AF/A3O-W
1490 Air Force Pentagon
Washington DC 22030

Dr. Lewis,

Congratulations to Air Force Weather on 75 years of outstanding support to the United States Army and Air Force! Weather forecasting in support of special operations forces, especially over the last 10 years of war, has been nothing short of spectacular. Recent events, including standing up the Special Operations Weather Team pipeline and getting the 23d Weather Squadron established further highlight the benefit weather brings to special operations.

On behalf of the men and women of Air Force Special Operations Command, I recognize the true impact your superb work has made on our mission success. I sincerely thank you for your past efforts, and anticipate the same unparalleled support in the coming 75 years.

Sincerely

ERIC E. FIEL
Lieutenant General, USAF

AIR COMMANDOS – QUIET PROFESSIONALS



NATIONAL GUARD BUREAU
1636 DEFENSE PENTAGON
WASHINGTON DC 20301-1636

JUN 22 2012

Chief, National Guard Bureau

Dr. Fred P. Lewis
AF/A3O-W
1490 Air Force Pentagon
Washington, DC 20330-1490

Dear Dr. Lewis:

Congratulations to the world-class Air Force Weather Agency (AFWA) and its outstanding personnel on their 75th Anniversary of service to the nation. AFWA has continually provided meritorious performance in war and peace. They should be very proud of this amazing accomplishment.

On behalf of the National Guard, please pass along my congratulations to everyone at the AFWA. Thank you for your hard work and dedication in providing this critical capability to our Service members.

Sincerely,

Best wishes!


Craig R. McKinley
General, US Air Force
Chief, National Guard Bureau



Lt Gen Harry M. Wyatt III
Director, Air National Guard

Dr. Fred P. Lewis
AF/A3O-W
1490 Air Force Pentagon
Washington D.C. 22030

Dear Dr. Lewis

Congratulations to the men and women of the Air Force Weather Agency on your 75 years of outstanding service! The Air National Guard could not have maintained its mission success and safety without your agency's professionalism, selfless service and dedication to our nation.

The weather mission is one of National and Domestic importance. As you know, no element of operational planning is as dynamic as weather. By delivering reliable worldwide weather products to both Air and Army operators, you enable Commanders around the world to make accurate decisions. On behalf of the men and women of the Air National Guard, I salute the immense effect of your venerable organization.

Sincerely

A handwritten signature in black ink, appearing to read "H. M. Wyatt III", with a stylized flourish at the end.

Harry "Bud" Wyatt III
Lieutenant General, USAF
Director, Air National Guard



AIR FORCE RESERVE COMMAND
Office of the Commander
ROBINS AFB, GA 31098-1635

7 May 2012

Dr. Fred P. Lewis
AF/A3O-W
1490 Air Force Pentagon
Washington, DC 22030

Dear Dr. Lewis

Fred

Congratulations to you and your Air Force Weather team for 75 years of outstanding support! Your stellar history spans numerous conflicts in which you have demonstrated the importance of your agency and the value of your personnel.

On behalf of the men and women of Air Force Reserve Command I would like to acknowledge all of those who have served to make Air Force Weather the unrivaled organization it is today. Please accept our heartiest congratulations and happy anniversary!

CHARLES E. STENNER, JR., Lt Gen, USAF
Commander

50th ANNIVERSARY

*In 1987, the following letters were sent to
Brig. Gen. George E. Chapman and the men and women of AWS.¹*

**THE WHITE HOUSE
WASHINGTON, District of Columbia**

1 July 1987

I am pleased to send my congratulations to the men and women who comprise the Air Weather Service as you celebrate your Golden Anniversary.

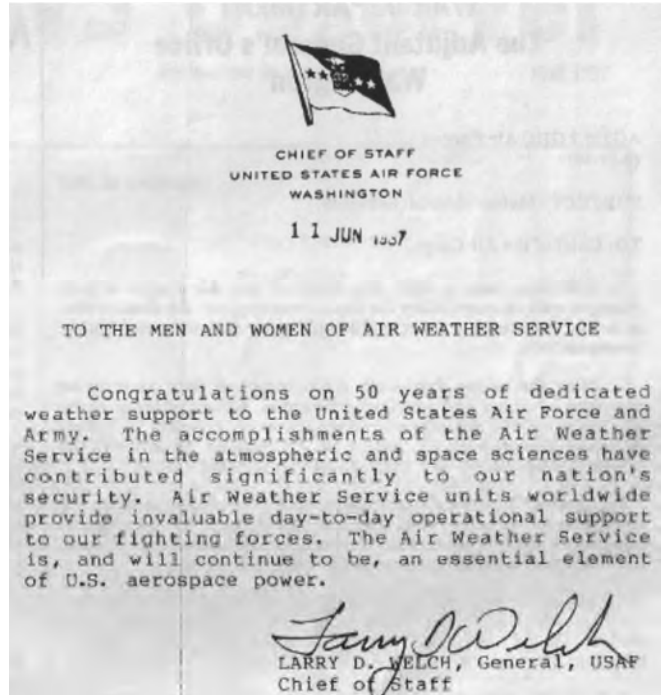
For 50 years you have done an outstanding job supporting America's military forces and originating many of the major advances in the science of meteorology. The Air Weather Service plays a vital role in the decision making process of military commanders by providing necessary weather information. You also perform a crucial function by aiding civilian meteorologists with accurate and timely weather reports through the use of, satellites, radar, and air reconnaissance.

I salute the men and women of Air Weather Service for a job well done. With your continued dedication and professionalism I am sure that the forecast of the Air Force will always be "clear and a million." Again, congratulations and God bless you.

Ronald Regan



¹ Note: These letters were extracted from *AWS Observer*, Vol.34 No.6 Hq AWS, June 1987



MAC

July 1st is a great day for the Air Weather Service and the United States Air Force. You and your people can be justifiably proud of a distinguished heritage and extensive contributions made in the defense of our country.

I join the men and women of the Military Airlift Command in saluting you and your many accomplishments as you celebrate this special day. All our best for a grand 50th anniversary.

Gen. Duane H. Cassidy

SAC

On the occasion of the 50th anniversary of the Air Weather Service, I extend my heartiest congratulations to you and all the men and women of Air Weather Service. During the past years, I have observed your continued progress in providing weather service tailored to our many complex weapon systems. The high degree of professionalism and dedication displayed by your people, in particular those of the 3rd Weather Wing here at Offutt, has given us the weather support necessary to keep pace with the rapid process of change in today's developing aerospace era. I am confident that the future of your organization will be characterized by the same high standards of efficiency that have marked its performance in the past.

Gen. John T. Chain, Jr.

TAC

Congratulations to the men and women of the Air Weather Service on the occasion of your 50th anniversary. Since 1 July 1937, you have provided outstanding weather support that has contributed to our ability to win wars and preserve peace. I am confident the next 50 years will be even more productive. Happy anniversary.

Gen. Robert D. Russ

USAFE

On behalf of the United States Air Forces in Europe, I congratulate you on the 50th anniversary of Air Weather Service. Weather is a critical consideration in planning and executing military operations, particularly in the European theater. Because of this, the men and women of the Air Weather Service, who have served so diligently through the years, have had a special importance in helping guide the course of history. Thankfully, they have done their job superbly, and their record of accomplishment in supporting our military forces and our NATO allies is exemplary. Today that fine tradition is alive and well in Europe, through the dynamic efforts of the men and women of your 2nd Weather Wing. They are top professionals, and we need and appreciate them.

Air Weather Service has compiled a proud record of 50 years of outstanding service. May you meet the challenge of the future with the same fine spirit and dedication. Happy Birthday!

Gen. Charles L. Donnelly, Jr

PACAF

On behalf of the PACAF family, I extend my hearty congratulations to you and all members of your command as you celebrate 50 years of outstanding service. The many significant achievements of the men and women of Air Weather Service have contributed to the successful accomplishment of the Air Force mission in the Pacific. Your programming efforts to improve equipment and support to the weather-sensitive technology of this command are particularly praiseworthy. I have full confidence in the ability of Air Weather Service and the 1st Weather Wing to continue your outstanding support to this war-fighting command.

Gen. Jack I. Gregory

AFSC

Congratulations to the men and women of the Air Weather Service as you celebrate your command's 50th anniversary on 1 July 1987. AWS personnel contribute significantly to the successful accomplishment of the systems acquisition mission. Our dependence upon the weather service continues to grow; from the effects of icing on cruise missiles and B1-B development, to atmospheric scattering and absorption of laser beams, we rely heavily upon accurate, reliable weather data. AFSC is grateful for your fine record of support, and I have every confidence you'll rise to the challenges of the future.

Gen. Lawrence A. Skantze

AFLC

The men and women of the Air Force Logistics Command join me in extending our heartiest congratulations during your 50th anniversary celebration. Air Weather Service has met the challenge of military weather support around the world and into space. May your future efforts be as distinguished as the first half century.

Gen. Earl T. O'Loughlin

AAC

Throughout my flying career I have been keenly aware of the invaluable contribution of the members of the Air Weather Service. Weather forecasting is a cornerstone to safe flying operations. Here in Alaska, where the weather is traditionally hostile to both ground and air operations, we are especially dependent upon timely and accurate environmental data.

Due to the increasing recognition of Alaska's strategic importance, we are being asked to perform increasingly challenging missions. We must operate aircraft routinely in some of the world's worst flying weather; maintain and improve our long-range detection capability through a series of radar upgrades; and the newly formed 6th Infantry Division (Light) must train in arctic field conditions to support JTF-AK operations. The men and women of the 11th Weather Squadron have consistently responded superbly to the ever-increasing demands placed upon them, and will, no doubt, excel in the future.

Thus, it is with the greatest of pleasure that I congratulate the Air Weather Service for 50 years of distinguished support to Air Force and Army operations. Please accept the sincere best wishes of the Alaskan Air Command for continued success.

Lt. Gen. David L. Nichols

ATC

On behalf of the Air Training Command, I congratulate you and the personnel of Air Weather Service as you celebrate your 50th Anniversary on 1 July 1987. We in the "First Command" can certainly speak to the criticality of weather support to our business. I can also attest to the superb job your people in the 24th Weather Squadron have done in supporting our flying training mission for more than 25 years. As we look to the challenge of the future, I am confident the Air Weather Service will continue to display the same dedication, enthusiasm and professional competence it has shown these past 50 years. Again, my personal congratulations on this noteworthy achievement.

Lt. Gen. John A. Shaul

AU

My heartiest congratulations to you and the men and women of Air Weather Service on your organization's 50th Anniversary. Air University and its predecessor, the Air Corps Tactical School, have greatly benefited from the superb support provided by Air Weather Service during the last half-century. The truly outstanding support by your staff weather officers, weather forecasters, and weather observers has been indispensable to our management of the U.S. Air Force's professional education system. My best wishes for the continued success of your proud organization, and for another half-century of close cooperation.

Lt. Gen. Truman Spangrud

AFCC

On behalf of the men and women of the Air Force Communications Command, I congratulate Air Weather Service on its 50th Anniversary of dedicated service to our nation. Our people serve side-by-side with yours around the globe, meeting the challenge of supporting myriad commands with widely varied, constantly changing missions. We are deeply proud of our long, close association with Air Weather Service and its people; and have accomplished much during your rich history and have served our nation well. Again, congratulations on this momentous occasion and best wishes for continued success.

Maj. Gen. John T. Stihl

ESC

On behalf of the Electronic Security Command, I congratulate you and the dedicated men and women of Air Weather Service on the occasion of your 50th anniversary. The professional and dedicated weather support that Air Weather Service has provided to ESC in our first eight years is greatly appreciated. With units scattered at 90 locations in 11 countries around the world, we are very dependent on the day-to-day weather service provided by your detachments. Tasking adjustments, resource allocation, and mission management all rely on timely, accurate, and comprehensive weather data. Without question, this support has been outstanding.

Again, congratulations on this notable occasion, and best wishes for continued success.

Maj.Gen. Paul H. Martin

SPACECOM (USAF)

Air Force Space Command extends sincere congratulations to all members of Air Weather Service on the occasion of the 50th Anniversary of your organization.

For half a century, Air Weather Service has been a leader in technological innovation in support of operational forces. As the military way in space environmental support to the sensor and satellite systems which are key to the Air Force Space Command mission. Currently, our cooperative roles in the Defense Meteorological Satellite Program stand as prime examples of the use of space as a medium for military support activities.

Air Force Space Command extends their best wishes for the next 50 years to the men and women of the Air Weather Service.

Maj. Gen. Maurice C. Padden

NORAD

Our warmest congratulations to you and all your people on the occasion of the 50th Anniversary of the Air Weather Service. This year also has special significance to us in NORAD as we celebrate the 30th Anniversary of our binational command. Since our inception in 1957, Air Weather Service has provided superb support to our many weather sensitive aerospace defense operations.

We look forward to your continued support in the future. From your many U.S. and Canadian friends in NORAD, our best wishes for continued success.

Gen. Julia L. Piotrowsk

USEUCOM

On behalf of all United States servicemen and servicewomen in the United States European Command, I extend my congratulations on the occasion of the half century anniversary of the Air Weather Service, and add my personal best wishes for the future.

Your services have been valuable to all of us — from the soldiers in the field during exercises to the airmen supporting flying operations. Perhaps more visible, but no less important to morale, have been the daily contacts on the Armed Forces Radio and Television Service and in the Stars and Stripes. On several recent occasions, our joint operations have required the support of the Air Weather Service resources and personnel. The results have been predictably professional and contributed to successful operations.

May your next 50 years be equally prosperous as we work together in the defense of our nation and our allies.

Gen. Thomas C. Richards

FORSCOM

It is my great pleasure and honor to offer my personal congratulations to Air Weather Service on its 50th anniversary.

During the past I have observed the continued growth of tailored weather service support to the U.S. Army. Forces Command is particularly indebted to all the personnel of the "Fighting" Fifth Weather Squadron who have supported our operations and field exercises in the Far East, Europe, the Caribbean, and the United States.

Your people have kept pace with our changing requirements in the face of a growing threat and have greatly contributed to the successful worldwide operations of this Command.

Gen. Joseph T. Palustra Jr.

REDCOM

Please accept my sincere congratulations on the occasion of the 50th anniversary of the Air Weather Service. Your organization has a long history of providing exceptional support to the United States Readiness Command. We have consistently received accurate weather support tailored to our requirements in diverse environments from the Arctic to Central America. I want to particularly congratulate the First Weather Squadron, my staff weather office. Their support, both in garrison and in the field, has been outstanding, and will undoubtedly continue as we transition to the United States Special Operations Command.

Gen. James J. Lindsay

U.S. Army Europe and 7th Army

Congratulations to you and the members of your command on the 50th anniversary of the Air Weather Service. Your hard work and professionalism have made weather service in the United States Army, Europe, the best ever. I thank you for your support and wish you continued success.

Gen. Glenn K. Otis

U.S. Forces, Korea

The United States Forces Korea is made up of soldiers, sailors, airmen and Marines. We all rely heavily on accurate, timely weather information to make our operations flow smoothly, effectively, and safely — in peace as well as war.

I want to add my heartfelt congratulations to the men and women of the Air Weather Service for so faithfully assisting us here in Korea. Fifty years and going strong. Keep up the good work!

Gen. William J. Livsey

Air Force Academy

It is a pleasure to extend our sincere congratulations to you and all members of your command as you observe the 50th Anniversary of the Air Weather Service. For half a century, the services of your command have contributed immeasurably to the successful accomplishment of the Air Force mission. Such an achievement is possible only through the superior professionalism and dedication of all the people of Air Weather Service. I am confident the coming years will see your command achieve ever greater successes as it adds to its proud tradition.

From all of us at the United States Air Force Academy, our sincerest congratulations and best wishes.

Lt. Gen. Winfield W. Scott Jr.

CENTCOM

All soldiers, sailors, Marines and airman of U.S. Central Command join me in extending a hearty congratulations to you and all members of the Air Weather Service on your 50th anniversary. I also note that July 1, 1987 marks the 50th anniversary of the First Weather Squadron. They have provided superb weather support to the United States Central Command, to include an extensive exercise program which has taken us from the Southwest United States to Southwest Asia. In all instances, your forecasters provided the weather assessments necessary for this command to make sound operational decisions. Again, congratulations on this memorable occasion; meet the challenges of the future with the same spirit of outstanding service.

Maj. Gen. H.D. Penzler

USSOUTHCOM

We at United States Southern Command extend our heartfelt congratulations to you and all the men and women of the Air Weather Service on the occasion of your 50th anniversary. Here in Panama, we are particularly indebted to the members of Detachment 25, 5th Weather Wing. As our operations greatly expanded in recent years, these professionals provided outstanding command and field support to Headquarters, USSOUTHCOM, as well as our Army and Air Force components. Having responsibility for Central and South America, we have a diverse mission. The on-going war in El Salvador and the conflict in Nicaragua are certainly top priorities. Recently, we supported counterdrug operations in Bolivia and provided earthquake disaster relief in Ecuador. Weather was often a critical factor, and Det. 25's support was key to operational success. On routine missions in 1986, we made a documented savings of over 1.5 million dollars due to accurate forecasts. I'm sure a lot of effort by many members of your organization helped make this possible. We appreciate your invaluable support, and offer best wishes of continued success ... congratulations!

Rear Admiral Richard C. Ustick

7th AF (PACAF)

The Air Weather Service has made full use of the technological advances during the last 50 years by being farsighted and by continually upgrading their product. The increased ability of the AWS to provide accurate critical mission planning data has precipitated a direct increase in the safety and efficiency of combat air power.

My personal thanks are echoed throughout Seventh Air Force as we congratulate you on the 50th anniversary of the Air Weather Service. Your knowledge gives us power.

Lt. Gen. C.C. Rogers Jr.

Kansas ANG

I wish to take this opportunity to extend my congratulations to you and all members of your command on the upcoming 50th anniversary of the Air Weather Service. The members of your command have always demonstrated outstanding professionalism and dedication to the difficult task of serving and forecasting the weather. The 35L_Infantry Division has always received excellent support from the 127th Weather Flight. I have been most appreciative of their fine efforts since I spent a very rewarding civilian career in the weather field.

I am sure the quality men and women of the Air Weather Service will make the future of weather support as progressive and outstanding as the first 50 years has been.

Once again, I extend the congratulations and best wishes for the Kansas National Guard to you and your command on this remarkable achievement.

Maj. Gen. Ralph T. Tice

NOAA

We at the National Oceanic and Atmospheric Administration (NOAA) are honored to acknowledge the celebration of the United States Air Force's Air Weather Service 50th Anniversary.

This is an occasion of introspection on one's achievements. Throughout its history the Air Weather Service has earned a stature within the international meteorological community that is of the highest order and has few peers. It is the individuals of your organization both in the United States and abroad, their dedication, devotion, sacrifices, and quality of work that have produced a weather service worthy of the highest praise. The citizens of our great Nation are more secure and more safe because of the diligent efforts of the Air Weather Service.

We can predict another 50 years of great achievements, and we hope that the strengthening partnership of NOAA and the Air Weather Service can facilitate that.

Congratulations on the 50th Anniversary of the Air Weather Service.

Anthony J. Calio

Canadian Forces Weather Service

On behalf of the Canadian Forces Weather Service, congratulations and all best wishes to Brig. Gen. George E. Chapman and staff on the occasion of the fiftieth anniversary of the Air Weather Service of the United States Air Force.

During your first 50 years you have built a record and tradition of service of which you can be justifiably proud. Moreover, we note with much satisfaction the excellent spirit of cooperation that exists between our representative services both at the local person to person level as well as at more formal levels such as the Meteorological Subcommittee of the CANUS Military Cooperation Committee. We wish you continued success during your second 50 years and look forward to many more years of fruitful cooperation.

Dr. Richard Asselin
Dir. of Met and Oceanography

Korea Meteorological Service

The Korea Meteorological Service proudly sends a big congratulation to the US Air Weather Service for 50 outstanding years of service to aviation. Over the years your mission has expanded, and you've grown to meet these new challenges.

We look forward to the day that we can celebrate your 100th birthday.
Keep up the good work.

H.J. Son
Administrator

German Military Geophysical Service

On behalf of the German Military Geophysical Service (GMGS), it is our pleasure to congratulate you most warmly on the 50th Anniversary of the USAF Air Weather Service. The close ties between these services became even closer when the 13th Detachment of the 2nd Weather Wing began to operate at the German Military Geophysical Office on the Moselle River at Traben-Trarbach. Besides, there have been many other occasions on which we have been cooperating successfully on a bilateral basis as well as within the frame-work of the NATO Alliance.

Services consist of — and are run by — people which, at first glance, seems a rather trivial and superfluous statement. However, it is the people of a service who account for its image and for its ability to establish cordial relations with colleagues of other nations. And here we gladly take the opportunity to congratulate you, especially on the fine people that make up your service, with many of which many of us have established close relationships and friendships.

We trust that these close relations will continue to contribute to maintaining a friendly and mutually fruitful cooperation between our services well into the third millennium.

Dr. H.U. Groening
For the Minister of Defense
Dr. H. Leese
For the GMGS

National Meteorological Service of Honduras

The National Meteorological Service of Honduras, which is a Department of the General Direction of Civil Aeronautics, has kept, since its creation in 1950, a close and decisive cooperation with the AWS of the United States Air Force. This association has permitted the training of professional personnel and technicians in meteorology.

We wish to take the opportunity to reiterate our appreciation to the AWS authorities and congratulations for the work developed in its 50 years of existence.

Saul A. Zuniga Lopez
Director

**APPENDIX H—AIR WEATHER SERVICE
AIRCRAFT INVENTORY, 1943-1975**

WEATHER RECONNAISSANCE AIRCRAFT

Aircraft Type	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
B-25	6	15	15	4	2												
B-24		16	22														
B-17		6	22	18	12	10	4	4	3	3	2	2	2				
WB-29				25	39	67	52	60	59	46	67	80	71	39	2		
WB-50													16	59	66	66	69
WB-47																	
WC-130																	
WB-57																	
WC-135																	
Total:	6	36	59	47	53	77	56	64	62	49	69	82	89	98	68	66	69

Aircraft Type	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
B-25																
B-24																
B-17																
WB-29																
WB-50	46	43	43	43	14	12	9									
WB-47				33	33	32	32	25	24	24						
WC-130			5	5	5	11	9	12	14	14	23	22	28	27	26	23
WB-57		28	38	32	19	26	29	18	22	26	26	25	25	14	13	
WC-135						8	10	10	10	10	10	10	10	8	8	7
Total:	46	71	86	113	71	89	89	65	70	74	59	57	63	49	47	30

1975 Figures as of 31 August

APPENDIX I—AIR WEATHER SERVICE SONG

Second Lieutenant Eugene Devereaux wrote the Air Weather Service Song in the 1940s while assigned to Fort Warren, Massachusetts. He was assisted by Bob Skinner and Walter Hastermann. Hastermann is said to have sung the song on a Boston radio station in 1942. The last three verses were written by Mrs Barbara Istvan, a weather wife stationed at Guam in the 1950s, to recognize weather reconnaissance. It is sung to the well-known tune of “McNamara’s Band.”

I’ll never forget the day was wet
the General wanted to fly
He said, “My Boy is it O.K.
For me to go on high?”
When I said, “No, its going to snow,”
You should have seen him frown,
Say I’m the only guy who’s ever
Kept the general down

CHORUS:
We are the men
The Weather men
We may be wrong
Oh, now and then,
But when you see
Our planes on high--
Just remember we’re the ones
Who let them fly.

I read the codes and spot the plot
My maps are very neat.
With isotherms and millibars
These charts are most replete.
I slip the slide-rule, check the graph,
Consult the weather vane,
I order sunshine every day
But all I get is rain.

CHORUS
We are the men
The Weather men
We may be wrong
Oh, now and then,
But when you see
Our planes on high--
Just remember we’re the ones
Who let them fly.

The teletype’s hot, synoptic shots
Anemometer’s going around
My pressure lines are intertwined
The fronts are underground.
The winds that blow from high to low
Have blown me off the track
I’ll have to throw my books away
And use the almanac.

CHORUS
We are the men
The Weather men
We may be wrong
Oh, now and then,
But when you see
Our planes on high--
Just remember we’re the ones
Who let them fly.

I fly reconnaissance every day
In my Baker-Twenty-Nine;
My double drifts and ascent rates
Are always out of line.
The “naviguesser” missed his fix
The crew is all a-fright

CHORUS
We are the men
The Weather men
We may be wrong
Oh, now and then,
But when you see

But that's the way it always is
On a weather recon flight.

Our planes on high--
Just remember we're the ones
Who let them fly.

In Hurricane's and Typhoon's eyes
I ride the thermals through,
And by the time we're halfway there
My seat is black and blue.
The lightning strikes, the thunder roars,
The sea looks awfully rough,
The wind is blowing a hundred knots,
I swear, I've had enough.

CHORUS
We are the men
The Weather men
We may be wrong
Oh, now and then,
But when you see
Our planes on high--
Just remember we're the ones
Who let them fly.

Oh we're the weather boys, you see
We catch it in the slats
From passing out misleading dope
To people down in MATS.
But you'll always find us singing
For we're never ever blue;
Oh we're the weather boys you see
And who the H_ _ _ are you?