

AD-A044 597

FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTE--ETC F/0 1/2
SRDS TECHNICAL PROGRAM DOCUMENT, FISCAL YEAR 1978 ENGINEERING A--ETC(U)
OCT 77

UNCLASSIFIED

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1 OF 2

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The image shows a microfiche card with a grid of frames. The top row contains a title block with the following text: "AD-A044 597 FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTE--ETC F/0 1/2 SRDS TECHNICAL PROGRAM DOCUMENT, FISCAL YEAR 1978 ENGINEERING A--ETC(U) OCT 77". Below the title block, the word "UNCLASSIFIED" is printed on the left and "NL" on the right. The main body of the card is a grid of frames. The first frame in the second row contains the text "1 OF 2" and "AD A044597". The remaining frames contain technical drawings and text, which are mostly illegible due to the high contrast and resolution of the scan.

AD A 044 597

SRDS

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**TECHNICAL
PROGRAM
DOCUMENT**

**FISCAL YEAR 1978
ENGINEERING & DEVELOPMENT APPROVED PROGRAMS**



OCTOBER 1977

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**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Systems Research & Development Service
Washington, D.C. 20590**

7/27/77

TECHNICAL PROGRAM DIRECTIVE

No. 1/ 2/ 3/
78-01-01 through 21

SUBJECT: FY-78 SRDS Annual Technical Program

The enclosed FY-78 SRDS Annual Technical Program Document (TPD) establishes the Subprograms approved for implementation by the Director of SRDS. The implementation of these efforts is subject to the availability of resources.

This Annual Technical Program will be under continuing review and will be updated by means of Technical Program Directives as technical and other requirements dictate. Resumes in this Technical Program are structured according to the FAA Engineering and Development Programs 01 through 21.



DAVID J. SHEFTEL
Director, Systems Research and
Development Service, ARD-1

-
- 1/ Fiscal Year
 - 2/ Sequence of Technical Program Directive Issuance, coded and controlled by ARD-50/54.
 - 3/ FAA ED Programs (per FAA-ED-00-C as amended).

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DDC	Buff Section <input type="checkbox"/>
UNANNOUNCED	<input type="checkbox"/>
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Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.																									
4. Title and Subtitle SRDS TECHNICAL PROGRAM DOCUMENT, Fiscal Year 1978 Engineering and Development Approved Programs		5. Report Date October 1, 1977	6. Performing Organization Code SRDS																								
7. Author(s)		8. Performing Organization Report No. 12/133 p.																									
9. Performing Organization Name and Address U.S. DEPARTMENT OF TRANSPORTATION Federal Aviation Administration Systems Research and Development Service Washington, D. C. 20590		10. Work Unit No. (TRAIS)	11. Contract or Grant No. ARD-50																								
12. Sponsoring Agency Name and Address U.S. DEPARTMENT OF TRANSPORTATION Federal Aviation Administration Systems Research and Development Service Washington, D. C. 20590		13. Type of Report and Period Covered Technical Program Document FY-78																									
14. Sponsoring Agency Code		15. Supplementary Notes <i>This document</i>																									
16. Abstract This Technical Program Document (TPD) contains Research and Technology Resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, accomplishments, requirements, etc. <i>The resumes are arranged</i> The TPD is structured according to the following Engineering and Development Programs: <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">01 System</td> <td style="width: 50%;">11 ATC Systems Command Center</td> </tr> <tr> <td>02 Radar</td> <td>12 Automation</td> </tr> <tr> <td>03 Beacon</td> <td>13 Enroute Control</td> </tr> <tr> <td>04 Navigation</td> <td>14 Flight Service Stations</td> </tr> <tr> <td>05 Airborne Separation Assurance</td> <td>15 Terminal/Tower Control</td> </tr> <tr> <td>06 Communications</td> <td>16 Weather</td> </tr> <tr> <td>07 Approach and Landing Systems</td> <td>17 Technology*</td> </tr> <tr> <td>08 Airport/Airside</td> <td>18 Satellites</td> </tr> <tr> <td>09 Airport/Landside*</td> <td>19 Aircraft Safety</td> </tr> <tr> <td>10 Oceanic***</td> <td>20 Aviation Medicine**</td> </tr> <tr> <td></td> <td>21 Environment, and</td> </tr> <tr> <td></td> <td>22 Support.</td> </tr> </table> <p>*Transferred to OSEM **Not included ***No Program</p>				01 System	11 ATC Systems Command Center	02 Radar	12 Automation	03 Beacon	13 Enroute Control	04 Navigation	14 Flight Service Stations	05 Airborne Separation Assurance	15 Terminal/Tower Control	06 Communications	16 Weather	07 Approach and Landing Systems	17 Technology*	08 Airport/Airside	18 Satellites	09 Airport/Landside*	19 Aircraft Safety	10 Oceanic***	20 Aviation Medicine**		21 Environment, and		22 Support.
01 System	11 ATC Systems Command Center																										
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10 Oceanic***	20 Aviation Medicine**																										
	21 Environment, and																										
	22 Support.																										
17. Key Words Research and Development Research and Technology Resumes Technical Program		18. Distribution Statement Document is available to the U.S., public through the National Technical Information Service, Springfield, Virginia 22151																									
19. Security Classif. (of this report) UNCLASSIFIED	20. Security Classif. (of this page) UNCLASSIFIED	21. No. of Pages 133	22. Price																								

FOREWORD

This FY-78 Technical Program Document (TPD) contains Research and Technology Resumes which reflect Systems Research and Development Service, Federal Aviation Administration, approved subprograms. These resumes identify the technical objective, approach, milestones scheduled for accomplishment, end-item products, and FY-77 accomplishments, and source of requirements.

The TPD is structured according to the following 21 Engineering and Development Programs:

01 System	11 ATC Systems Command Center Automation
02 Radar	12 Enroute Control
03 Beacon	13 Flight Service Stations
04 Navigation	14 Terminal/Tower Control
05 Airborne Separation Assurance	15 Weather
06 Communications	16 Technology*
07 Approach and Landing Systems	17 Satellites
08 Airport/Airside	18 Aircraft Safety
09 Airport/Landside*	19 Aviation Medicine**
10 Oceanic***	20 Environment
	21 Support

The fourth Arabic number in the Current Number/Code in block 10a of the Resume (i.e., 013-150) identifies the responsible lead division in SRDS, i.e.,

1	=	ARD-100	Air Traffic Control Systems Division
2	=	ARD-200	Communications Division
3	=	ARD-300	Navigation Division
4	=	ARD-400	Airport Division
5	=	ARD-500	Aircraft and Noise Abatement Division
6	=	ARD-60	Spectrum Analysis Staff
7	=	ARD-700	Microwave Landing System Division

Comments and recommendations concerning this TPD may be directed to the Chief, Program Management Staff, ARD-50.

* Transferred to OSEM

** Not included

*** No Program

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01 SYSTEM

02 RADAR

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 021-241			10b. PRIOR NUMBER/CODE 241-021		
11. TITLE RADAR SUSTAINING ENGINEERING					
12. SCIENTIFIC OR TECH AREA NA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. AMOUNT:		18. STATE NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, DC 20590 RESP. INDIV.: Kenneth E. Coonley, ARD-243 TEL: (202) 426-8576			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Performance monitoring, Radar, Statistical detection, Weather analysis, Weather detection					
24. Technical Objective: To provide technical effort in response to requests for R&D or, as indicated by analyses, to sustain an acceptable performance level of the ASR and ARSR systems.					
25. Approach: SRDS, with contractor and NAFEC support, will (a) develop, procure, and test radar monitoring systems to insure that the radars are operating within specified tolerances; (b) develop and test techniques to improve the weather detection capability of ATC radars; and (c) develop and test miscellaneous radar in-service fixes.					
26. Milestones Scheduled for Accomplishment:					
<ul style="list-style-type: none"> . Intermediate and Full Radar Performance Monitor TDP (Hold) . ARSR/CD Alignment and Adjustment procedures Report (Hold) . Contractor report on analysis of weather data for ASR systems complete 2/78 . Functional specs and recommendations for weather mods of ASR systems complete 4/78 . ARSR/WFMU Weather adjustments Final Report complete 4/78 . Functional specs and recommendations for en route system weather mods compl. 4/78 					
26A. Accomplishments FY-77:					
<ul style="list-style-type: none"> . ASR radar adjustments and interim recommendations submitted to AAT . ASR/WSR thunderstorm data collection tests at Tampa completed . ASR weather mods. installed and thunderstorm tests at New Orleans completed . Weather data analysis contract awarded 					
27. Source of Requirement 9550-1 AAT-100-33; Program Plan FAA-ED-02-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

I 021-241

Items 1 to 26 identical to
DD Form 149B and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 11/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 022-241			10b. PRIOR NUMBER/CODE 241-022		
11. TITLE IMPROVED RADAR SUBSYSTEMS					
12. SCIENTIFIC OR TECH AREA NA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA A. DATE: A. TYPE: A. AMOUNT:		18. NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, DC 20590 RESP. INDIV.: Kenneth E. Coonley, ARD-243 TEL: (202) 426-8576			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Antenna, Radar, Pattern, Gain, Beacon					
24. <u>Technical Objective:</u> To improve radar performance in detecting aircraft through the development of advanced antenna techniques.					
25. <u>Approach:</u> SRDS, with contractor and NAFEC support, will provide for the development of an advanced antenna for ASR-() that will use polarization diversity techniques to permit radar and beacon operation with the same feed and reflector. This antenna will provide a constant gain with altitude radar pattern which will permit more uniform detection in all parts of the beam and will also provide an independent beacon coverage pattern with monopulse capability.					
26. <u>Milestones Scheduled for Accomplishment:</u> • Program authorization to proceed 10/78					
26A. <u>Accomplishments FY-77:</u> • None - Project deferred until FY-79					
27. Source of Requirement Program Plan FAA-ED-02-01			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		
I 022-241					

Items 1 to 26 identical to
DD Form 1499 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. GOVT ACCESSION NA	2. AGENCY ACCESSION NA	REPORTS IDENT. SYM. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL
10A. CURRENT NUMBER/CODE I 022-242		10B. PRIOR NUMBER/CODE NA		
11. TITLE HAZARDOUS WEATHER DETECTION				
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. AMOUNT:	NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, DC 20590 RESP. INDV.: Kenneth E. Coonley, ARD-243 TEL: (202) 426-8576		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA		
23. KEYWORDS: Digital Video Integrator Processor (DVIP) Radar, Weather detection, Pulse doppler, Contouring, Formatting, Display				
24. <u>Technical Objectives:</u> Develop techniques to detect hazardous weather using existing ATC radars.				
25. <u>Approach:</u> SRDS, with contractor and NAFFEC support, will provide for an analysis and experimentation effort to determine the applicability of and methods for implementing the MID processor to detect hazardous weather. The techniques developed will be applicable to ASR and ARSR systems equipped with MID. In addition, techniques for contouring and display of hazardous weather on ATC radars will be investigated.				
26. <u>Milestones Scheduled for Accomplishment:</u>				
<ul style="list-style-type: none"> • MID/pulse doppler hazardous weather det. for ASR systems Rpt. complete 12/78 • Report on the formatting of weather displays complete 12/79 • DVIP contouring of ASR weather displays Report complete 3/80 • MID/pulse doppler ASR weather detection TDP complete 10/81 • MID en route weather system TDP complete 4/81 • DVIP interface with automated systems TDP complete 6/81 				
26A. <u>Accomplishments FY-77:</u>				
<ul style="list-style-type: none"> • MID/pulse doppler detection system contract awarded 				
27. Source of Requirement ADA-1/ARD-1/ARD-1/2 direction 6/25/76		28. Blank		
29. Blank		30. Precedence Blank		
		31. Relevant Project Code NA		
I 022-242				

RESEARCH AND TECHNOLOGY RESUME				1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram		
10A. CURRENT NUMBER/CODE I 022-243				10B. PRIOR NUMBER/CODE 023-241, 241-027			
11. TITLE MOVING TARGET DETECTOR (MTD)							
12. SCIENTIFIC OR TECH AREA NA				13. START DATE NA	14. CRIT COMPL DATE NA	15. FUNDING AGENCY NA	
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE: NA				
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, DC 20590 RESP. INDIV.: Kenneth E. Coonley, ARD-243 TEL: (202) 426-8576				20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA				22. COORDINATION NA			
23. KEYWORDS Target detection, Tracking, Blind speed, Signal processing, Digital filtering, Radar, Pulse doppler, Clutter, Micro-programmable processor.							
24. <u>Technical Objective:</u> Develop an advanced radar processor which will greatly improve the radar detection capability in all adverse radar clutter environments and present a target message output virtually free of false alarms.							
25. <u>Approach:</u> SRDS, with contractor and NAFEC support, will provide for the development, test, and evaluation of a Moving Target Detector (MTD) for terminal and en route radar systems. The MTD is an advanced radar signal processor that provides greatly improved detection of aircraft in the presence of ground and precipitation clutter and also greatly improved radar tracking capability for automated systems.							
26. <u>Milestones Scheduled for Accomplishment:</u>							
• Terminal MTD-II installed at field evaluation site						3/78	
• En Route MTD-II installed at field evaluation site						5/78	
• MTD-II Technical Data Package submitted to AAF						9/78	
26A. <u>Accomplishments FY-77:</u>							
• MTD-I Breadboard T&E final report completed							
• MTD-II terminal and en route systems contract awarded							
27. Source of Requirement Program Plan FAA-ED-02-1				28. Blank			
29. Blank				30. Precedence Blank			
31. Relevant Project Code NA				31. Relevant Project Code			
				NA			
I-022-243							

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYM: RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 023-241		10B. PRIOR NUMBER/CODE NA			
11. TITLE LIMITED SURVEILLANCE RADAR (LSR)					
12. SCIENTIFIC OR TECH AREA NA		13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: B. DATE: D. AMOUNT:	18. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS: PRINCIPAL: ASSOCIATE: TEL: TYPE:			
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, DC 20590 RESP. INDIV: Kenneth E. Coonley, ARD-243 TEL: (202) 426-8576		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS: PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS Radar, Surveillance, Short range					
24. <u>Technical Objective:</u> To develop a radar system that meets the surveillance requirements of VFR airports that do not qualify for full ASR operation.					
25. <u>Approach:</u> SRDS, with contractor and NAFEC support, will develop and test a low power, low cost, solid state radar system that will employ state-of-the-art radar techniques. This radar will be a single channel terminal surveillance radar which will operate up to a range of 20 nautical miles with a smaller antenna than present ASR systems.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> • Engineering Requirement and PR issued • Contract Award • T&E complete on Engineering Model • Technical Data Package forwarded to AAF 					7/78 2/79 7/82 10/82
26A. <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> • Cost/Benefits Analysis completed 					
27. Source of Requirement		ATF-1 letter 2/2/76		28. Blank	
29. Blank		30. Precedence		Blank	
		31. Relevant Project Code			
		NA			
		I 023-241			

03 BEACON

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 031-241			10b. PRIOR NUMBER/CODE 242-008		
11. TITLE ATCRBS SUSTAINING ENGINEERING					
12. SCIENTIFIC OR TECH AREA NA		13. BINARY DATA NA		14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE:		A. DATE B. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, DC 20591			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS ATCRBS - Aircraft Antennas - ATCRBS Interference - Transponder - Altimeter Digitizer					
24. <u>Technical Objective:</u> To provide technical effort in response to requests for R&D or as indicated by analyses to sustain an acceptable performance level of the ATC Radar Beacon System.					
25. <u>Approach:</u> SRDS and NAPEC with the support of Regions and contractors will (1) investigate and analyze technical problems that affect the ATCRBS system operational capability, (2) design and test "fixes" for correcting equipment or facility site problems, and (3) prepare project reports and production procurement data packages.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
. Respond to field site problem investigation requests				as requested	
. Respond to requests for R, D & E effort				as requested	
. Report on T&E of Transponders and Digitizers				3/78	
26A. <u>Accomplishments FY-77:</u>					
. Mobile Siting Van completed					
. Report completed on 1976 collected transponder data					
27. Source of Requirement R&D Program Plan FAA-ED-03-2			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

I 031-241

Items 7 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 032-241			10b. PRIOR NUMBER/CODE		
11. TITLE ATCRBS MONITORING & POLICING					
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:	18. DATE NA	19. AMOUNT NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D. C. 20590		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TELEPHONE: TYPE:			
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS ATCRBS - ATCRBS Interference - Interrogation Density - Suppression Rates - Monitor					
24. Technical Objective: To provide the instrumentation and capability to measure the beacon environment in order to detect system interference and to collect and analyze pertinent system performance indicators.					
25. Approach: SRDS, with NAPEC and contractor support, will provide systems analysis of potential and measured interference to ATCRBS, either self-generated or from external sources. The means to avoid, eliminate or minimize such interference will be examined and solutions recommended.					
26. Milestones Scheduled for Accomplishment:					
<ul style="list-style-type: none"> . In-house Analysis of Collected Interrogation Environment Data On-going . Award Contract for Analysis of Inter-system Interference Potential 11/78 . Analysis Completed & Report Issued 3/80 					
27a. Accomplishments FY-77: NA					
27. Source of Requirement E&D Program Plan FAA-ED-03-2			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code NA			
		I 032-241			

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 033-241			10B. PRIOR NUMBER/CODE 242-001		
11. TITLE ATCRBS TRANSMITTER SITE EQUIPMENT					
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE: C. DATE: D. AMOUNT:				
19. SOURCE OF INSTALLATION ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St. SW Washington, DC 20591			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS ATCRBS - Decoder - Interrogator - Receiver - Antenna - Monitor - Monopulse					
24. <u>Technical Objective:</u> To improve the system performance, capability, and reliability of the ATCRBS to meet present and future ATC systems requirements through the development of new equipment and/or modifications for existing ATCRBS components and subsystems.					
25. <u>Approach:</u> SRDS, with contractor and NAFEC assistance, will develop, test and evaluate a new monopulse receiver/processor and enhanced models of ATCRBS antennas to provide improved beacon coverage and quality of reported surveillance data for Terminal and En Route ATC. A Technical Data Package will be prepared for the new processor subsystem in order to permit procurement of the equipment for field implementation. Reports and specification change recommendations will be prepared upon completion of the range tests of the improved ATCRBS antennas.					
26. <u>Milestones Scheduled For Accomplishment:</u> <ul style="list-style-type: none"> . Monopulse NADIF Tech Data Package delivered 12/77 . ATCRBS Monopulse Processing System (AMPS) Field Eval Initiated 10/77 . AMPS Tech Data Package Delivered 4/78 					
26A. <u>Accomplishments FY-77:</u> <ul style="list-style-type: none"> . Report completed on Improved Beacon Feed . Improved Open Array (5-ft.) Field Eval completed . Monopulse NADIF T&E completed . AMPS delivered 					
27. Source of Requirement R&D Program Plan FAA-ED-03-2			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code NA			
I 033-241					

Items 1 to 26 identical to
DD Form 1499 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 034-241			10b. PRIOR NUMBER/CODE N/A		
11. TITLE DISCRETE ADDRESS BEACON SYSTEM (DABS)					
12. SCIENTIFIC OR TECH AREA N/A			13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE: 19. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, DC 20590 RESP. INDIV.: P.D. Hodgkins, ARD-240 TEL: (202) 426-4085			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION N/A			22. COORDINATION NA		
23. KEYWORDS Discrete Address Beacon System(DABS), ATCRBS, Data Link, IPC, Air Traffic Control, Surveillance, Communications, Transponder					
24. <u>Technical Objective:</u> To develop a Discrete Address Beacon System, compatible with ATCRBS, which will have greater capacity, accuracy, and flexibility than the existing terminal and en route ATCRBS. Two-way data transmission via data link will be inherent in the design. The DABS will meet the ATC needs of the 1980's time period.					
25. <u>Approach:</u> SRDS, NAFEC and TSC resources, with contractor support, will be utilized in carrying out the three-phase multi-year development effort in accordance with the DABS Technical Development Plan (TDP): Phase I, System Validation and Definition; Phase II, System Engineering and Evaluation; Phase III, Production-Deployment.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> . 1st DABS Sensor Delivered 4/78 . Single-site T&E initiated 6/78 . Single-site Technical Data Package Complete 7/80 . Multi-site T&E initiated 6/80 . Multi-site Technical Data Package complete 7/82 					
<u>Accomplishments FY-77:</u>					
. Sensor Development Contract Critical Design Review Completed					
27. Source of Requirement ATCAC Report and E&D Program Plan FAA-ED-03-1			28. Blank N/A		
29. Blank			30. Precedence Blank N/A		
			31. Relevant Project Code N/A		

I 034-241

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 034-242			10B. PRIOR NUMBER/CODE N/A		
11. TITLE Intermittent Positive Control (IPC)					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. DATE: E. AMOUNT:	N/A			
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV.: Dan L. Hopson TEL: (202) 426-8340			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS IPC, DABS, Upgraded Third Generation ATC System					
24. <u>Technical Objective:</u> To develop a new safety assurance service called Intermittent Positive Control (IPC) for the projected 1995 traffic environment which allows for evolutionary implementation at low user cost by providing automatic ground-based proximity warning information conflict detection and resolution to aircraft via two way Data Link.					
25. <u>Approach:</u> SRDS and NAFEC, with TSC and contractor support, will carry out a multi-year effort including development of concept and algorithms, simulation, ATC operational definition, special purpose IPC/DABS site processor design, hardware procurement, terminal and en route system interface, test and evaluation, and preparation of specifications. Phase I. system engineering consisted of IPC flight tests at the DABS experimental facility. The IPC Hardware/Software Engineering Model is being developed under subprogram 034-241 (DABS). Phase II tests at NAFEC will demonstrate, refine and validate Phase I.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> • IPC Software coded for sensor operation 2/78 • First IPC Ground Systems Delivered 3/78 • Begin Single Site Tests 7/78 • Begin Field Trials at Philadelphia 7/79 • Tech Data Package Handoff (Single Site) 7/80 • Tech Data Package Handoff (Multi-Site) 7/82 					
26A. <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> • IPC Software Design Critical Design Review (CDR) • Completion of Phase I Flight Tests at Lincoln Laboratory 					
27. Source of Requirement: DOT ATCAC Report & Program Plan FAA-ED-01-3			28. N/A		
29. N/A			30. Precedence N/A		
N/A			31. Relevant Project Code N/A		

I 034-242

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

04 NAVIGATION

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 041-305		10b. PRIOR NUMBER/CODE NA			
11. TITLE: VOR Maintenance/Sustaining Engineering					
12. SCIENTIFIC OR TECH AREA NA			13. STARTY DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: B. DATE: D. AMOUNT:		NA		
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Str. S.W. Wash., D.C. 20590 RESP. INDV.: Robert Fletcher, ARD-331 TEL: (202) 426-8596			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Navigation, VORTAC System, VOR, DVOR, NDB					
24. <u>Technical Objective:</u> In response to requests for R&D services or system needs, SRDS will provide technical efforts and products for the correction or alleviation of system performance limitations. <u>Approach:</u> SRDS, in conjunction with NAFEC and contractor support, as appropriate, will perform analysis and develop, test, and evaluate techniques and hardware as needed to achieve objectives. Included are: a) minimize site and weather effect to improve existing VORs; b) update the VOR Siting Criteria Handbook; c) develop measurement standards. <u>Milestones Scheduled for Accomplishment</u> o Evaluation of 5-Bay Array at Airport Site Completed 12/77 o Spec. Data, including monitoring, 5-Bay array to AAF 8/78 o Siting Criteria Sections for DSB DVOR, Propagation Modeling and Airport Stacked Array Completed 9/78 <u>Accomplishments FY-77</u> o Modulation Percentage Standard Completed o VOR Propagation Model Computer Programs Provided AAF o Initial Evaluation 5-Bay Array Completed o Propagation Model for DVOR completed					
27. Source of Requirement 9550: AFS-74-1, 75-5, 277-i ED-04-i			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 041-307			10b. PRIOR NUMBER/CODE NA		
11. TITLE VOR Improved/New System Development					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE:		18. DATE:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Str. S.W. Wash., D.C. 20591 RESP. INDV.: Robert Fletcher, ARD-331 TEL: (202) 426-8596			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Navigation, VORTAC System, VOR, DVOR					
24. Technical Objective: To develop new VOR systems and update the present VOR system components in order to meet future needs for increased NAS capacity and reduce operational costs. Approach: SRDS, in conjunction with NAFEC, the Aeronautical Center and contractor support, will develop, test and evaluate techniques and hardware necessary to achieve the technical objectives. Included are: a) develop specification data for 2nd Generation VORTAC, including remote maintenance monitor systems. Milestones Scheduled for Accomplishment o Basic RMMS evaluation, NAFEC letter report 10/77 o Certification data, NAFEC letter report 1/78 o Fault Diagnosis, NAFEC letter report 4/78 o Trend Analysis, NAFEC letter report 6/78 Accomplishments FY-77 o RMMS Test Bed established at NAFEC o Support project to implement RMMS at Salmon, Idaho initiated o 50 KHZ, Report, reduction of harmonics below ICAO specs, provided AAF					
27. Source of Requirement FAA ED-04-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 042-308			10b. PRIOR NUMBER/CODE N/A		
11. TITLE: TACAN/DME System Development					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE:		c. DATE: d. AMOUNT: N/A		
19. GOVT. LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591 RESP. INDIV.: A. A. Simolunas, ARD-330 TEL: 202- 426-8596			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Air Navigation, NAVAIDS, VORTAC, TACAN, DME					
24. Technical Objective; To develop technical requirements for second generation TACAN DME equipment which: (1) will satisfy economic objectives and current system performance requirements; and (2) provide the capability to support increased navigation services. The National VORTAC standard shall also be updated to reflect recent changes in performance and the addition of other systems in the TACAN/DME frequency band.					
25. Approach: SRDS, NAFEC, and contract resources will be used in the development efforts leading to definition of requirements for specifications.					
Milestones Scheduled for Accomplishment:					
Final Specifications for TACAN/DME Spec.				12/77	
Final Revisions to National VORTAC Std.				5/78	
Accomplishments FY-77					
Established inter agency AD-HOC group for National Std.					
Published report on TACAN Antenna improvements					
27. Source of Requirement			Program Plan FAA-ED-04-01	28.	Blank
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

I 042-308

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1														
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram														
10a. CURRENT NUMBER/CODE I 043-304			10b. PRIOR NUMBER/CODE N/A																
11. TITLE: VLF Supplement for VOR/DME																			
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY														
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. DATE: d. AMOUNT:																
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591 RESP. INDV.: George Quinn, ARD-333 TEL: 202 426-8596			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:																
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA																
23. KEYWORDS VLF, OMEGA, Differential Omega, Noise Cancellation																			
24. Technical Objective: Determine the suitability of VLF based navigation at a supplement to the VOR/DME system and thereby limit the necessity to expand the VOR/DME system. Approach: The total effort will include studies and equipment evaluations. The work will be supported by in-house personnel, by a technical assistance contractor, other contractors as needed, by NAFEC and by other government agencies. Milestones Scheduled for Accomplishments: <table border="0"> <tr> <td>VLF Noise Cancellation Antenna evaluation completed</td> <td>10/77</td> </tr> <tr> <td>Study - Domestic VLF Navigation System completed</td> <td>5/78</td> </tr> <tr> <td>Low Cost VLF/Omega System evaluations completed</td> <td>10/78</td> </tr> <tr> <td>Omega Signal Monitor System evaluation completed</td> <td>6/78</td> </tr> <tr> <td>Definitive Analysis - Role of VLF Navigation in Aviation completed</td> <td>10/78</td> </tr> <tr> <td>Omega Offshore evaluation completed</td> <td>9/77</td> </tr> <tr> <td>General Aviation Omega Receiver Development and Evaluation completed</td> <td>6/82</td> </tr> </table> Accomplishments FY-77 Feasibility Model Differential Omega evaluation completed						VLF Noise Cancellation Antenna evaluation completed	10/77	Study - Domestic VLF Navigation System completed	5/78	Low Cost VLF/Omega System evaluations completed	10/78	Omega Signal Monitor System evaluation completed	6/78	Definitive Analysis - Role of VLF Navigation in Aviation completed	10/78	Omega Offshore evaluation completed	9/77	General Aviation Omega Receiver Development and Evaluation completed	6/82
VLF Noise Cancellation Antenna evaluation completed	10/77																		
Study - Domestic VLF Navigation System completed	5/78																		
Low Cost VLF/Omega System evaluations completed	10/78																		
Omega Signal Monitor System evaluation completed	6/78																		
Definitive Analysis - Role of VLF Navigation in Aviation completed	10/78																		
Omega Offshore evaluation completed	9/77																		
General Aviation Omega Receiver Development and Evaluation completed	6/82																		
27. Source of Requirement FAA-ED-04-01			28. Blank																
29. Blank		30. Precedence Blank																	
		31. Relevant Project Code N/A																	

I 043-304

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 043-311			10b. PRIOR NUMBER/CODE N/A		
11. TITLE Oceanic Navigation Systems					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. AGENCY:				
19. CODE LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
18. COPIES LAB/INSTALLATION/ACTIVITY RESP. INDIV.: George H. Quinn, ARD-333 TEL: 202 426-8596					
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Omega, VLF					
24. Technical Objective: Evaluate the suitability of VLF based navigation as a primary oceanic navigation aid. Approach: The total effort will include studies, data collection and analysis, and equipment development. The work will be supported by in-house personnel, by a technical assistance contractor, by other contractors as needed, by NAFEC, and by other government agencies. Milestones Scheduled for Accomplishments: Civil Omega/LORAN-C System Development and Evaluation complete 10/78 INS/VLF combined System evaluation complete 12/77 Final Evaluation report of Omega as a Primary Oceanic Aid 4/81 Omega/VLF Dynamic Signal Simulator Development and Evaluation complete 7/82					
25. Accomplishments FY-77 3.4 KHz Omega system evaluation completed Omega use on Oceanic routes - report complete (NAFEC)					
27. Source of Requirement FAA-ED-04-01			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

I 043-311

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 044-326			10b. PRIOR NUMBER/CODE N/A		
11. TITLE RNAV System Design					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		a. DATE: d. AMOUNT:		
19. GOVT. LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20590 RESP. INDV.: TEL:			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Navigation, Avionics, Air Traffic Control, Automation					
24. Technical Objective: To accomplish the R&D effort outlined in the FAA/Industry RNAV Task Force Report "Application of Area Navigation in the National Airspace System" February 1973 necessary to support the implementation of area navigation. Approach: SRDS, NAFEC and contractor support will be used to accomplish the 12 tasks outlined in the Task Force Report. The approach includes studies, enroute and terminal design application, flight tests, cockpit simulations, ATC real-time simulations and fast time simulations. Further definition of the approach is contained in report FAA-ED-04-02 "Engineering and Development Program Plan - Area Navigation." Milestones Scheduled for Accomplishment: 2D/3D RNAV Avionics Standards Completed 6/78 4D RNAV Avionics Standards completed 6/79 25. Accomplishments FY-77: Final Report "Terminal Area Design-Analysis and Validation of RNAV Task Force Concepts" Final Report "An Operational Evaluation of Flight Technical Error" Final Report "Implementation of Area Navigation in the National Airspace System"					
27. Source of Requirement FAA/Industry Task Force Report E&D Program Plan FAA-ED-04-02			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 045-390			10B. PRIOR NUMBER/CODE N/A		
11. TITLE: Helicopter IFR Operations Evaluation					
12. SCIENTIFIC OR TECH. AREA N/A		13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A	
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE:		18. GOVT. LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591 RESP. INDIV.: William T. Kuhar, ARD-300 TEL: 202 426-8596		
19. GOVT. LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591 RESP. INDIV.: William T. Kuhar, ARD-300 TEL: 202 426-8596			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Flight Technical Error, Navigation, Communications, air traffic control procedures					
24. Technical Objective: Provide performance data through flight test evaluation to support decisions relative to the issuance of helicopter IFR operations specifications for offshore, remote and the northeast corridor areas. Approach: Conduct flight test evaluation (simulated and actual IFR) to evaluate reliability, accuracy, range of available navigation, communications, surveillance, air traffic control systems, and airborne weather/ground mapping pulsed radar. Establish performance data base suitable for decision making and certification criteria for approval/denial of operational specifications and air traffic control procedures. <u>Milestones Scheduled for Accomplishment</u> Omega/Loran-C (TDL-424)/airborne radar data collection completed 12/77 Omega Signal Monitor evaluation report 5/78 Final Evaluation report 5/78 <u>Accomplishments FY-77:</u> N/A					
27. Source of Requirement		AOA-1 ltr dtd 8/16/76 NASA 27969 dated 9/20/76		28. Blank	
29. Blank		30. Precedence Blank			
		31. Relevant Project Code N/A			

I 045-390

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 047-309		10b. PRIOR NUMBER/CODE NA			
11. TITLE: Navigation System Accuracy and Performance					
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. DATE: D. TYPE: E. AMOUNT:				
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Str. S.W. Wash., D.C. 20590		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
18. RESP. INDIV.: A. Simolunas, ARD-330 TEL: (202) 426-8596					
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS Navigation, Accuracy, Requirements, Separation Standards					
24. Technical Objective: To determine navigation requirements of the National Airspace System for CONUS, remote areas, offshore and oceanic. This effort considers optimal use of all types of nav aids including VOR, DME, TACAN, Omega, Loran-C, and GPS. Also considered are operational and cost/benefits factor such as RNAV, surveillance, route widths separation standards, etc. In addition, in response to request for accurate navigation system data, SRDS will develop and implement an airborne data collection analysis system for use at low altitudes for all type of nav aids.					
25. Approach: NAFEC support will use to collect data on various nav aids system; both those already in existence and also proposed systems. This data will be used to determine basic accuracies and reliabilities of these systems. Using coverage, for different types, number and location of nav aids the utility of various nav aids will be determined based on cost/benefit factors. SRDS, in conjunction with NAFEC, will procure and develop the hardware and software required and integrate both into a viable Navigation Flight Test System to efficiently evaluate navigation system at low altitudes.					
Milestones Scheduled for Accom.			Accomplishments FY-77		
NFTS Prelim. Flight Analysis 5/78			Initial NFTS software developed		
Letter Report NFTS 7/78			Hardware components assembled		
27. Source of Requirement FAA-ED-04-01			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code N/A			

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 048-312			10b. PRIOR NUMBER/CODE N/A		
11. TITLE Loran-C In aviation					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA A. TYPE:		A. DATE: A. AMOUNT:		
18. GOVT. LAB. INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591 RESP. INDIV: George Quinn, ARD-333 TEL: 202 426-8596			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Loran-C					
24. Technical Objective: Evaluate Loran-C as a supplement or possible replacement for VOR/DME in the domestic U. S. Approach: The total effort will include studies, data collection and evaluation, and equipment development and evaluation. The work will be supported by in-house personnel, by a technical assistance contractor and other contractors as needed, by NAFFEC and by other government agencies. Milestones Scheduled for Accomplishments: Study - Loran-C as a VOR/DME Replacement (SCI) 10/77 Loran-C Data Analysis Report completed 2/79 Assessment - Loran-C as VOR/DME Replacement (SRDS) 6/81 Evaluation of Teledyne TDL-424 receivers 12/78 Loran-C Signal Monitor evaluation completed 12/80 Normalized Loran-C System Development and evaluation completed 3/82 Accomplishments FY-77 Loran-C Signal Analysis System procured (Austron 5000) Contract - Teledyne Model 424 Loran-C receivers					
27. Source of Requirement Memorandum of Agreement FAA/USCG Feb. 1976			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

I 048-312

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 049-330			10b. PRIOR NUMBER/CODE N/A		
11. TITLE: Satellite Navigation Development					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. DATE: C. TYPE: D. AMOUNT:				
18. GOVT. LAB. INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20591 RESP. INDIV.: A. A. Simolunas, ARD-330 TEL: 202-426-8596			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Satellites, Navigation, GPS/NAVSTAR					
24. <u>Technical Objective:</u> To determine optimal characteristics of a satellite referenced navigation system required to satisfy the largest civil aviation community. <u>Approach:</u> Current satellite systems will be analyzed to determine applicability. Modifications for low cost user will be developed. Transition from VORTAC system will be analyzed. <u>Milestones Scheduled for Accomplishments:</u> GPS Civil Data format Study 5/78 GPS Modification recommendations study 8/78 <u>Accomplishments FY-77</u> Preliminary report on GPS/NAVSTAR Transition					
27. Source of Requirement Program Plan 01 FAA-ED-04			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

I 049-330

05 AIRBORNE SEPARATION
ASSURANCE

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 051-241			10b. PRIOR NUMBER/CODE N/A		
11. TITLE: Airborne Proximity Warning Indicator					
12. SCIENTIFIC OR TECH AREA N/A			13. BIARY DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:	a. DATE: b. AMOUNT:	N/A		
19. GOVT. LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV: W. L. Hyland TEL: (202) 426-8432			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Airborne Proximity Warning Indicator (APWI), PWI					
24. <u>Technical Objective</u> : To determine the feasibility of implementing an economical and operational airborne means to help the pilot reduce the probability of near miss/midair collisions under Visual Flight Rules (VFR) conditions.					
25. <u>Technical Approach</u> : SRDS with contractor support has obtained APWI equipment, installed it in selected aircraft, and is acquiring operational flight information. This data will be reduced in-house and recommendations made and a report issued.					
26. <u>Milestones Scheduled for Accomplishment</u> : • Summary Report Completed 12/77					
26A. <u>Accomplishments FY-77</u> : • Operational Flight Testing Complete					
27. Source of Requirement : Program Plan FAA-ED-05-1			28. Blank		
29. Blank N/A			30. Precedence Blank		
			31. Relevant Project Code N/A		

I 051-241

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 052-241		10b. PRIOR NUMBER/CODE 241-003			
11. TITLE Collision Avoidance Systems					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE N/A	14. CRIT. COMPL. DAT. N/A	15. FUNDING AGENCY N/A
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:	18. DATE: N/A			
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA	22. COORDINATION NA				
23. KEYWORDS BCAS, Passive, Active, Semi-Active, Trimodal					
24. <u>Technical Objective:</u> To conduct the required R&D program to develop an operationally and economically sound all-weather airborne collision avoidance system and to issue a U.S. National Standard.					
25. <u>Approach:</u> SRDS/NAFEC/TSC efforts and contract support will be utilized to conduct studies and analyses relating to theoretical applications of CAS techniques and to develop and/or test hardware to prove the technical, operational, and economic feasibility of these techniques.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> • Active Feasibility Model Final Report 2/78 • Semi-Active Feasibility Model Final Report 11/78 • DABS Mode BCAS Experimental Final Report 1/80 • Evaluation Engineering Models Complete 12/79 • Operational Field Test Completed 4/81 • U.S. National Standard Issued. 10/81 					
<u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> • Upgraded Active Design Feasibility Demonstrated • Semi-Active Design Feasibility Demonstrated • Procurement Request for BCAS Issued 					
27. Source of Requirement: Program Plan FAA-ED-05-1			28. N/A		
29. N/A		30. Precedence N/A			
		31. Relevant Project Code N/A			

I 052-241

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

06 COMMUNICATIONS

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 061-221			10b. PRIOR NUMBER/CODE NA		
11. TITLE: COMMUNICATIONS SYSTEM PLANNING AND DESIGN					
12. SCIENTIFIC OR TECH AREA NA			13. START DATE NA	14. CRIT. COMPL DATE NA	15. FUNDING AGENCY NA
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. AMOUNT: NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			21. TECHNOLOGY UTILIZATION NA		
22. COORDINATION NA			23. KEYWORDS Communications, Development Plan, System Design		
24. <u>Technical Objective:</u> To develop the plans and technical designs to upgrade and modernize the FAA ATC Communication system to meet the total communications requirements of the FAA for the 1980's and beyond.					
25. <u>Approach:</u> SRDS, with contractor support, will conduct studies, prepare plans, overall system designs, detailed specifications and cost analysis for the FAA ATC Communication system modernization. The plans and technical designs will be accomplished to permit introduction of new radio, voice, and data systems capable of performing the functions on a stand-alone basis and attain the objective of phased implementation. The overall design will provide for a homogenous system of radio, voice, and data that is reliable, efficient and cost effective.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
. DOT approval for contract support			12/77		
. Conceptual Design Plan completed			4/78		
. Collect and analyze requirements data from FAA sources			9/78		
26a. <u>Accomplishments FY-77:</u>					
. Program Plan Prepared					
27. Source of Requirement ADA-1 ltr 9/11/74			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 061-222			10b. PRIOR NUMBER/CODE		
11. TITLE ATC TELECOMMUNICATION COMMUNICATIONS STANDARDIZATION					
12. SCIENTIFIC OR TECH. AREA NA			13. BIARY DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE:		c. DATE: d. AMOUNT: NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St. S.W. Washington, D.C. 20591 RESP. INDIV.: David G. Rhoades TEL: 202-426-9354			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Communications Standards, Voice Communications Standards, Digital Communications Standards, Federal Standards, International Standards					
24. <u>Technical Objective:</u> To assist in the development and design of federal and international communications standards and procedures and determine the impact of FAA utilization of developed standards.					
25. <u>Approach:</u> SRDS, with contractor support, will participate on federal, national and international standards groups. FAA's communications requirements will be made known and will be considered in the formation of standards.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
. Functional/Mechanical Interface between DTE and DCE drafted					2/78
. Common Channel Telephone Signaling drafted					6/78
. Heading Format Structure (code independent) drafted					8/78
. Terminal to Network Interface Standards for Packet Switched Networks operating in the Virtual Circuit Mode drafted					3/79
26a. <u>Accomplishments FY-77:</u>					
. Telecommunications System Performance Standard drafted					
. 4600 Baud MODEM Standard drafted					
. Data Link Control procedure (bit oriented) standard finalized					
. Glossary of telecommunication terms and definitions finalized					
27. Source of Requirement			28. Blank		
NCS ITP 10/6/72 to AAT-360					
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		
			NA		

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/COOE I 062-221			10b. PRIOR NUMBER/COOE NA		
11. TITLE AIR/GROUND COMMUNICATION FACILITIES					
12. SCIENTIFIC OR TECH AREA NA		13. BINARY DATE NA	14. CRIT COMPL DATE NA	15. FUNDING AGENCY NA	
16. PROCURE. KEY-WORD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE:	18. DATE NA			
19. GOVT LAB. INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 NAME INDY: Freeman E. Coble, ARD-221 TEL: (202) 426-8500		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS A/G RADIO COMMUNICATIONS, VOICE TRANSMISSION, REMOTE SITE, RADIO CONTROL, ANTENNA					
24. <u>Technical Objective:</u> To improve the effectiveness of ATC Communications by modernizing the design and flexibility of air/ground facilities and to develop equipments and techniques that will provide reliable, economical operations consistent with the future NAS. A compatible control and remote site equipment complement for the various ATC services is the objective.					
25. <u>Approach:</u> SRDS with NAFEC, other FAA services and contractor support, will develop, evaluate and provide for field use, advanced radio and radio control systems suitable for A/G communications through new or upgraded multi-purpose air/ground facilities. Efforts will include a replacement radio communication control system, an improved antenna system and an effective monitoring capability.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> • Complete RCCS Procurement PKG 1/78 • Off Shore Helicopter Comm TDP Hand-Off to AAF 9/79 • RCCS 1st Article Del (Factory) 1/80 • RCCS Del to NAFEC 7/80 • Complete T&E 4/81 • 1st Field Delivery & Hand-Off to AAF 7/81 					
26a. <u>Accomplishments FY-77:</u> Completed RCCS Draft Spec.					
27. Source of Requirement and 0530-1, AAF-76-8 AFS ltr of 11/23/76			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code NA			

I 062-221

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10. CURRENT NUMBER/CODE I 063-221			10A. PRIOR NUMBER/CODE 062-223		
11. TITLE: COMMUNICATION SWITCHING AND CONTROL SYSTEM DEVELOPMENT					
12. SCIENTIFIC OR TECH. AREA N/A		13. START DATE NA		14. CRIT. COMPL. DATE NA	
16. PROCEDURE METHOD NA		17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. AMOUNT:		18. NA	
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 PRINCIPAL INVESTIGATOR: Freeman E. Coble, ARD-221 TEL: (202) 426-8500			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS COMMUNICATIONS, VOICE, SWITCHING					
24. <u>Technical Objective:</u> To provide the agency with reliable and consolidated voice communications switching subsystems of the NAS Communications System, embodying all the intercom, interphone, administrative control and switching functions that are required to permit effective and timely air-traffic-control operations, between ARTCCs, TRACONS, ATCTs, FSSs and their respective trunk, remote, inter-station operational points and command center communications.					
25. <u>Approach:</u> SRDS, with NAFEC and contractor support, will develop and evaluate communications switching systems for use in above facilities and provide a technical data package to the operating services.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> . Complete VCS Design Analysis 9/78 . Complete ER, AP, & PR for 1st Article 9/79 . Contract Award 7/80 . Complete TDP and Hand-Off 9/81 					
26a. <u>Accomplishments to FY-77</u>					
<ul style="list-style-type: none"> . Completed FSS VCS Lease Spec. . Completed FSS VCS Buy Spec. 					
27. Source of Requirement ADA-1 letter of 9/11/74			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 064-221			10b. PRIOR NUMBER/CODE NA		
11. TITLE GROUND/GROUND NETWORK AND SWITCHING CENTERS					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. DATE: E. AMOUNT:		NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St. S.W. Washington, D.C. 20590 RESP. INDIV.: Charles LaRue, ARD-222 TEL: 202-426-9354		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Digital Communications Network, Message Switching Systems, Automation					
24. <u>Technical Objective:</u> To design and specify the Data Communication Subsystem of the National Airspace System in accordance with the policy and objectives of an integrated FAA ATC communication system.					
25. <u>Approach:</u> SRDS with contractor support will provide technical assistance to AAF during initial NADIN procurement and implementation. Design definition will continue to provide additional functions and services to accommodate required NADIN enhancements. These tasks will be accomplished through in-house effort supported by contract study and analyses of specific tasks.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> . Provide technical support to AAF during initial NADIN continuing Procurement and deployment . Contract award for support contractor studies for enhanced NADIN (Levels II & III) 11/77 . Data Package hand-off to AAF for Level II NADIN enhancement 4/78 					
26a. <u>Accomplishments FY-77:</u> Specification FAA-E-2661 for initial NADIN procurement issued Acquisition plan for initial NADIN approved					
27. <u>Source of Requirement</u> ARD ltr to AAT 9/17/75 28. Blank					
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.
4. DATE OF RESUME 10/1 77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
100. CURRENT NUMBER/CODE I 065-221			10A. PRIOR NUMBER/CODE		
11. TITLE: AUTOMATED COMMUNICATIONS SYSTEM CONTROL DEVELOPMENT					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE: 4. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St. S.W. Washington, D.C. 20591 RESP INDV: N.R. Anderson, ARD-223 TEL: 202 426-3076			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Technical Control, Communication Systems, Maintenance Concept					
24. <u>TECHNICAL OBJECTIVE:</u> To provide hardware, software, and techniques to permit the voice, radio, and data subsystems of the ATC communication system to interface with centralized technical control facilities and to provide an effective total systemwide monitoring, control restoration, and maintenance function.					
25. <u>APPROACH:</u> SRDS, with NAFEC, TSC resources and contract support will conduct studies to assess the performance parameters and economic aspects of hardware/software/ techniques for automatic status monitoring, fault trend detection and control of existing and future ATC systems. Validation models will be developed where required. SRDS, with AAT and AAF, will study each interfacing subsystem to determine its relative restoration priority.					
26. <u>MILESTONES SCHEDULED FOR ACCOMPLISHMENT:</u>					
Study of improvements to current system control concept completed 12/77					
Draft system control concept for integrated communication control system 3/78					
PR for single thread validation models completed 6/78					
Delivery of validation model to NAFEC 3/80					
Complete T&E of Validation Model 9/80					
26a. <u>ACCOMPLISHMENTS FY-77:</u> N/A					
27. Source of Requirement E&D Program Plan, FAA-ED-06-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

I-065-221

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS INDEXED PD 1750-1
4. DATE OF RESUME 10/1/77	4. KIND OF RESUME D	5. SECURITY U	7. PROGRAMING NA	8. RELEASE LIMITATION NL	9. LEVEL OF SECURITY Subprogram
10A. COUNTRY NUMBER/CODE I 066-221			10B. PRICE NUMBER/CODE 062-221-03		
COMMUNICATIONS SUSTAINING ENGINEERING					
11. START DATE NA			14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
12. MAJOR METHODS NA	13. CONTRACT/GRANT A. NUMBER: NA		16. AMOUNT: NA		
17. GOVT. INSTALLATION/ACTIVITY NAME: FAA/SRDS			20. PERFORMING ORGANIZATION NAME: FAA/NAFEC		
ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590			ADDRESS:		
RESP. INDV.: K. Wise			INVESTIGATORS: Jack Muller, ANA-330		
TEL: 202-426-3076			PRINCIPAL: ASSOCIATE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. RESEARCH AUDIO AMPLITUDE SELECTOR UNIT, MULTICOUPLERS, SENSORS					
24. TECHNICAL OBJECTIVE: To provide the operational services with enhancements and modifications to existing communications systems to improve operational capability, reduce cost or improve maintainability.					
25. APPROACH: SRDS & NAFEC (with contract support) will carry out assigned communications sustaining engineering efforts. They will investigate problems, develop and test "fixes" for correcting problems, and prepare reports and/or technical data packages.					
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:					
Evaluate Audio Comparator device 2/78					
Audio Comparator Device Technical Data Package 10/78					
26a. ACCOMPLISHMENTS FY-77:					
Letter Report on Field Test and Evaluation of Interference Cancellation System					
DC Recorder/AC Reproducer Technical Data Package completed					
27. Source of Requirement AAF Ltr. 1/27/76			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

I 066-221

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 066-222			10b. PRIOR NUMBER/CODE NA		
11. TITLE: COMMUNICATIONS IMPROVEMENTS					
12. SCIENTIFIC OR TECH. AREA NA			13. BIARY DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:				
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St. S.W. Washington, D.C. 20591 RESP. INDIV: Ken Wise, ARD-220 TEL: 202-426-8500			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS RCAG Monitoring, Electronic Key System, Communications Control Center (CCC), Key Units, Switching, Antenna, Radio Equipment, Control Units					
24. <u>Technical Objective:</u> To develop improvements in existing communications system elements or subsystem in order to support the ongoing operational communications systems by improving operational capability, reducing cost, or improving maintainability.					
25. <u>Approach:</u> SRDS, with contractor, NAFEC and other FAA support will perform studies, develop/specify communications element or subsystem improvements for RCAG monitoring equipments, electronic key system and communications control center (CCC).					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> . NAFEC RCAG Monitor Sensors Phase I Study completed 8/78 . Communications Control Center (CCC) Study completed 9/78 * . Electronic Key System Technical Data Package completed 3/79 					
26a. <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> . RCAG Monitoring Sensor investigation initiated . Final RML Project Report completed . ELT Sensor specification and procedures completed . WMSC multipoint procedures ready for implementation <p>Dependant upon FY-78 Funds being provided *</p>					
27. Source of Requirement 9550-1, AAE-75-17 AOA-1111 to AED-1 2/4/77			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

07 APPROACH AND LANDING
SYSTEMS

RESEARCH AND TECHNOLOGY RESUME		1. GOVT ACCESSION	2. AGENCY ACCESSION	REPORTS IDENT. SYMB.
		NA	NA	RD 1750.1
4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY	7. REGRADING	8. RELEASE LIMITATION
10/1/77	D	U	NA	NL
10a. CURRENT NUMBER/CODE		10b. PRIOR NUMBER/CODE		
II 071-412		071-312, 430-209		
11. TITLE				
VISUAL GUIDANCE SUSTAINING ENGINEERING				
12. SCIENTIFIC OR TECH. AREA		13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD	17. CONTRACT/GRANT	A. DATE:		
NA	A. NUMBER: NA			
	C. TYPE:	D. AMOUNT:		
18. GOVT LAB/INSTALLATION/ACTIVITY		20. PERFORMING ORGANIZATION		
NAME: FAA/SRDS		NAME: NAFEC		
ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590		ADDRESS: Atlantic City, N.J. 08405		
RESP. INDIV.: E. Hall, ARD-432		INVESTIGATORS: Leon Reamer, ANA-440		
TEL: 426-8454		PRINCIPAL ASSOCIATE: 3-346-3712		
		TEL: TYPE:		
21. TECHNOLOGY UTILIZATION		22. COORDINATION		
NA		NA		
23. KEYWORDS: Lighting Equipment, Marker Lights, Runway Markings, Visibility, Visual Signals, Approach Slope Indicators				
24. Technical Objective: To provide technical effort in response to requests for R&D or as indicated by analysis to sustain an acceptable performance level of visual aids.				
25. Approach: SRDS with NAFEC and contractor support will (a) investigate and improve systems and equipment in order to provide safer, more reliable and lower cost installations, and (2) provide critical short term engineering assistance to operating Services.				
26. Milestones Scheduled for Accomplishment:				
Report on Low Cost VASI				2/78
Specification Data on Runway Lights for Non-Precision Instrument Approaches				3/78
Report on Colored Runway Markings				5/78
Selection Order on Threshold Lights for MALSRS Systems				6/78
Specification Data on Markings and Lighting of Unpaved Runways				1/79
Data for Advisory Circular on Temporary Obstruction Lights				2/79
Proposed Standard for Intensity Settings of Lighting Systems				8/79
Report on T-VASI Test and Analysis				6/79
26a. End Item Products of Previous Fiscal Year:				
Report on Structural Tests of Plastic Frangible Couplings				
Report on Evaluation of Red Silicone Coated VASI Lens				
Letter Report of Evaluation of "Lime Green" Runway Markings				
Evaluation and Tests of Obstruction Beacons				
Letter Report on Evaluation of Improved Closed Runway and Taxiway Markings				
Letter Report on State-of-the-Art of Low-Cost VASI devices.				
27. Source of Requirement: 9550-1 AAF-76-23, AAP-550-77-1, AAS-502-76-1, AAS-502-76-2, AAT-200-16, AAS letter 11/7/74, N. J. State letter, AFS letter to AEDI, 7/16/76				
29. Blank		30. Precedence Blank		
		31. Relevant Project Code		

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE II 071-713		10b. PRIOR NUMBER/CODE II 071-313, II 072-321			
11. TITLE ILS Sustaining Engineering					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:	18. DATE: D. AMOUNT:			
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA 2100 2nd St. S.W. Washington, D.C. 20591 TELEP. INDIV.: Carl G. Peterson/Forrest G. Yetter TEL: ARD-740 (202) 426-8605		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Instrument Landing System (ILS), Glide Slope (G.S.), Localizer (Loc.)					
24. <u>Technical Objective:</u> Resolve special field problems so as to sustain an acceptable performance level of the commissioned ILS; provide technical data to insure and enhance the conventional ILS performance capability under all conditions of siting and weather. <u>Approach:</u> SRDS with NAFEC, Regional and contractual support will investigate, analyse and recommend solutions to technical problems that affect the overall operational capabilities of ILS; develop and test fixes for correcting equipment, monitoring, antenna and siting problems; test and evaluate prototype systems; prepare reports and technical data handoffs required for the issuance and revision of ILS standards. <u>Milestones Scheduled for Accomplishments:</u> Continued rapid response to specific field problems open SS ILS Lightning/transient interference reduction evaluation completion NAFEC 10/77 NAFEC scale model operation and math model verification 12/77 Install test and evaluate GS dipole broadside 8/77 Install and test commissionable GS end fire array 9/77 Develop ILS loc. mod. kit for ground speed application 3/79 Develop ILS Remote Maint. Monitor 8/79 <u>Accomplishments for FY-77:</u> NBS calibration standard for GS modulation established; evaluation of small and medium aperture slotted cable loc. and GS end fire antenna at Tamiami; Broadside GS dipole array ready for tests; ILS ground speed technique validated; LOC FFM theoretical study; NAFEC; Scale model installed, GS end fire stability tests, medium slotted cable loc. evaluated and frangible GS evaluated.					
27. Source of Requirement AAF-400 Itr. dtd. 6/1/77, FAA-ED-07-3			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code N/A			
II 071-713					

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE II 072-424			10b. PRIOR NUMBER/CODE 072-324, 430-301		
11. TITLE VISUAL GUIDANCE IMPROVEMENTS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. RESOURCE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		d. DATE: e. AMOUNT:		
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 E. Hall, ARD-432 RESP. INDIV.: 426-8454 TEL:			20. PERFORMING ORGANIZATION NAME: NAFEC ADDRESS: Atlantic City, N.J. 08405 INVESTIGATORS: Leon Reamer, ANA-440 PRINCIPAL: 3-346-3712 ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Lighting Equipment, Frangible Structures, Approach Lights, Visibility Airport Beacon.					
24. <u>Technical Objective:</u> To develop new and improved lighting systems for use under all weather conditions to make safer, more reliable or less costly systems.					
25. <u>Approach:</u> SRDS with NAFEC and contract support will develop and redesign systems which are safer, more reliable and less costly including (a) frangible ALS, b) displaced threshold ALS, c) improved circling guidance, d) control equipment, e) taxiway and runway lighting, f) visual vertical guidance, g) new light sources, h) IFR markings, i) lighting and marking for VFR airports.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
Report on Testing and Evaluation of Frangible Approach Lights				11/77	
Report on Testing of Plastic MALS and ALSF-2 Light Supports				9/78	
Data for Specification for Obstruction Marking and Lighting of Overhead Cables				3/79	
26a. <u>End-Item Products of Previous Fiscal Year:</u>					
Report on Development and Test of Low Impact Resistance Aluminum Tubular Light Supports					
Report on Development of Radio Remote Control System for Airfield Lighting Systems					
Delivery of New Type Light Weight Frangible Approach Lights					
Report on Evaluation of Radio Remote Control System for Visual Aids.					
27. Source of Requirement AAE-76-11 letter AAT-240 9550-1s PS-400-70-7A 5/15/75 28. Blank					
29. Blank			30. Precedence Blank		
31. Relevant Project Code					

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

II 072-424

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMBL. RD 1750-1
4. DATE OF RESUME 7-1-77	5. KIND OF RESUME D	6. SECURITY U RPT WKS	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE II 073-720			10b. PRIOR NUMBER/CODE		
11. TITLE: Head-Up Display (HUD)					
12. SCIENTIFIC OR TECH AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		d. DATE: e. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St. S.W. Washington, D.C. 20590 RESP. INDIV: William B. Davis, Jr. TEL: (202) 426-8605			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Aircraft safety, Approach and Landing, Head-Up Display (HUD), Literature search, Cockpit Displays, advanced displays					
24. Technical Objective: Develop data to determine the safety contribution of Head-Up Display in the operation of large turbojet airplanes during approach and landing. Approach: A series of laboratory and manned simulation experiments will be conducted by NASA/Ames. HUD system(s) will be selected based on the background review of HUD and interim results of the NASA simulation effort. Candidate HUD should have prior satisfactory operational experience, military or commercial. Flight testing will be conducted by the FAA at NAPEC in a large turbojet airplane in current airline use. The follow-on efforts will include SRDS/NAPEC/NASA coordinated effort to develop the final HUD evaluation report. Milestones scheduled for Accomplishment: <ul style="list-style-type: none"> o Review of literature, ongoing research and state-of-the-art 7/77 o Definition of safety related functions of HUD and identification of required HUD components for simulator tests 8/77 o Obtain equipment for simulator tests 10/77 o Obtain HUD system(s) for flight tests 1/78 o HUD system integration in flight test vehicle 3/78 o System qualification and engineering flight tests 5/78 o Evaluation of HUD in a manned flight simulation complete 10/78 o Subject pilot flight evaluation 12/78 o Final flight test report 3/79 Accomplished FY-77 <ul style="list-style-type: none"> o FAA/NASA IA signed 3/77 					
27. Source of Requirement AFS Letter 4/20/76 AOA 9/2/76			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code N/A		

II 073-720

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 7/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE II 075-725			10b. PRIOR NUMBER/CODE		
11. TITLE: Microwave Landing System (MLS)					
12. SCIENTIFIC OR TECH AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		b. DATE: d. AMOUNT:		
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St. S.W. Washington, D.C. 20590 RESP. INDIV: Frank L. Frisbie, ARD-700 TEL: (202) 426-3633			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Microwave/Scanning Beam/All Weather Landing Guidance System					
24. <u>Technical Objective:</u> Develop a Microwave Landing System (MLS) having a family of configurations that will meet the range of operational requirements for all aircraft, weather & environmental conditions. <u>Approach:</u> SRDS and NAPEC in conjunction with DOD and NASA and with contractor support will in accordance with the National Plan for development of the MLS, develop a MLS in a three phase program. Phase I, Technical Analysis and contract definition, followed by Phase II, Feasibility Demonstration, and Phase III Prototype Systems Development test and evaluation will result in a set of production specifications. Concurrently, investigations and studies involving system requirements, component development will be conducted independently in support of total development effort. <u>Milestones Scheduled for Accomplishment:</u> Award Military Tactical System Contract 1/78 ICAO World Wide Meeting to select system for International Standardization 4/78 Award limited production contract option 4/78 NASA Basic (Wide) Delivered 5/78 Install limited production systems 5/79 <u>Accomplished FY-77</u> TRSB System Recommended by AWOP for International Standardization Small Community & Basic (Narrow) draft specifications delivered					
27. Source of Requirements National plan for the Development of MLS			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

II 075-725

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		NA	NA	ISA	SPONSOR IDENT. SYM.
DATE OF RESUME	KIND OF RESUME	SECURITY	RECLASSIFIED	CLASSIFICATION LIMITATION	LEVEL OF RESUME
7/1/77		U	NA	NL	Subprogram
CONTRACT NUMBER/TYPE CODE			PHILIP NUMBER/CODE		
II 076-711			N/A		
TITLE					
AIRCRAFT ALERTING SYSTEM STANDARDIZATION					
IDENTIFICATION TECH. AREA			START DATE	CRIT. COMPLE. DATE	FUNDING AGENCY
			1/71		
PRIORITY METHOD	CONTRACT/GRANT		DATE		
NA	NA				
NUMBER		TYPE			
NA					
GOVT. LAB. INSTALLATION/ACTIVITY			PERFORMING ORGANIZATION		
NAME: FAA/SRDS			NAME:		
ADDRESS: 2100 Second St. S.W. Washington, D.C. 20590			ADDRESS:		
RESP. INDIV.: John F. Hendrickson, ARD-743			INVESTIGATORS:		
TELE: (202) 426-8605			PRINCIPAL/ASSOCIATE:		
TELE:			TELE:		
TYPE:			TYPE:		
TECHNOLOGY UTILIZATION			COORDINATION		
NA			NA		
23. REFERENCES: Alert, caution/warning, human factors, alerting systems warning systems, stimulus response.					
24. Technical Object: To develop recommendations and guidelines for standardization of aircraft alerting systems.					
25. Approach: Using contractor support, current aircraft alerting systems data will be reviewed. Additional required human factors stimuli response data will be defined and obtained from tests. After consolidation of all results, alternative alerting systems concepts will be defined. Implementation of most promising candidate systems will be tested and evaluated to human factors guidelines developed by NASA Ames Research Center. Recommendations and guidelines for standardization of new design aircraft will be made.					
26. Milestones Scheduled for Accomplishments:					
Contract for Definition of Candidate Alerting System Concepts				9/77	
Final Report				9/78	
Evaluation of Candidate Alerting System Concepts report				6/79	
27. End-Item Product Accomplishments (FY-77)					
Report-Collation and Analysis of Aircraft Alerting System Data					
Report-Human Factors Guidelines for Aircraft Alerting Systems					
28. Source of Requirements			29. Blank		
AFS-1 to ARD-1, 10/9/75			Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

08 AIRPORT/AIRSIDE

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 081-431			10b. PRIOR NUMBER/CODE		
11. TITLE AIRPORT SAFETY SUPPORT SYSTEMS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE. METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:	B. DATE: D. AMOUNT:			
18. GOVT LAB. INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St., S. W. Washington, D.C. 20590 RESP. INDIV.: J. Szymkowicz, ARD-420 TEL: 426-3587			20. PERFORMING ORGANIZATION NAME: NAFEC ADDRESS: Atlantic City, N. J. INVESTIGATORS PRINCIPAL: G. B. Geyer, ANA-420 ASSOCIATE: TEL: (609) 641-2645 TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Airport Safety, Firefighting Equipment, Agents, Techniques - Emergency Plan - Computerized - Medical Services					
24. Technical Objectives: Develop aircraft ground firefighting agents, equipments and techniques to provide protection following a crash landing to ensure survival of the crew and passengers. Develop emergency medical service plans for Civil Airports to ensure expeditious and effective crash rescue procedures on and between airports. Approach: Provide projects, studies, selections, procurements and test and evaluate systems necessary to accomplish the objectives. NAFEC/IA/Contract support. The Emergency Service Planning will be accomplished in a joint program with HEW, who has a contract with the University of Purdue, who are presently developing related medical services plans on hospitals in the State of Indiana and throughout the Great Lakes Region. Milestones Scheduled for Accomplishment: Airport Crash Fire Rescue: Improved Agents Test and Evaluation Complete 5/78 Final Report on Improved Agents 10/78 Improved equipment and techniques test and evaluation complete 5/78 Final Report on improved equipment and techniques 10/78 Emergency Planning: Phase I complete (12 airports) 12/77 Plan for Great Lakes Region, Phase II 10/77 Phase II completed 10/78 Printed Final Report to AAP 2/79 Accomplishments for FY-77 Letter Report on CFR "State-of-the-Art" Contract (IA) with HEW					
27. Source of Requirement 9550 AAP-700-73-1 9550 AAP-502-77-5			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

I 081-431

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 081-461			10b. PRIOR NUMBER/CODE 081-261		
11. TITLE FOG DISPERSAL					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. DATE: d. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV.: Carroll Workman, ARD-432 TEL: 426-3687			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Meteorology, Weather Modification, Environmental Quality, Warm Fog Dispersal					
24. <u>Technical Objective:</u> Increase airport capacity and safety by fostering the development of operational warm fog dispersal systems (WFDS)					
25. <u>Approach:</u> This effort will identify a ground-based fog dispersal system, for use at U. S. civil airports, which is cost-effective and meets environmental quality standards. Development, design, test and evaluation of a thermal fog dispersal system for civilian airports will be made in a joint development program with the USAF.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
Preliminary Cat II WFDS Conceptual Design					3/78
Final Cat II WFDS Conceptual Design					12/79
Life Cycle Cost Estimate					2/80
Complete Installation Operation of Candidate Airport WFDS					9/82
WFDS siting criteria, installation specifications, and operational procedures handbook					12/82
26a. <u>Accomplishments FY-77:</u>					
none.					
27. Source of Requirement AOA-1 letter to senate committee on commerce			28. Blank		
29. Blank			30. Precedence Blank		
31. Relevant Project Code					

Items 1 to 26 identical to DD Form 149R and NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY RPT U WRN	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I-082-410			10b. PRIOR NUMBER/CODE NA		
11. TITLE AIRPORT SYSTEMS PLANNING					
12. SCIENTIFIC OR TECH. AREA			13. START DATE NA	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. DATE:		
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St., S.W. Washington, DC 20590 RESP. INDIV.: Alvin F. Futrell, ARD-410 TEL: 426-3684			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Airport, Airside, Planning, System, Evaluation					
24. <u>Technical Objective:</u> To determine adequacy of the current national airports systems to meet future operational requirements, develop methodologies for measuring the degree of adequacy of major parts of the airports systems and to examine and recommend alternate measures and programs to meet the identified needs. <u>Approach:</u> The current national airports system will be examined to determine its adequacy and the segments of the airports systems needing major improvement will be identified and isolated. Performance definitions will be determined and a set of performance measuring methodologies will be developed to accurately quantify the capabilities and capacities of the overall airport system and its component parts. Alternate measures for upgrading airports and airports systems will be examined against forecast future needs and alternative measures in technology, operations, regulations and policy will be developed and tested and recommended as appropriate. <u>Milestones Scheduled for Accomplishment:</u>					
25. Letter Report - Airport/Airside Operational Simulation Study 2/78					
26. Letter Report - Airport Systems Upgrading, Probable Effectiveness and Efficiency of Selected Possible Measures - Preliminary Study 3/78					
Letter Report - Future Adequacy of National Airports Systems - Preliminary Study 7/78					
Letter Report - Airport Performance Measuring Techniques - Available and Required 9/78					
Engineering Requirement and Purchase Requests for Contract Studies Justified by Milestones 1 Thru 4 10/78					
Accomplishments - FY-77: None					
27. Source of Requirement: Directed Action			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

I-082-410

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMBL. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY RPT U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 082-420			10b. PRIOR NUMBER/CODE 450-702, 082-120		
11. TITLE AIRPORT PAVEMENT					
12. SCIENTIFIC OR TECH AREA NA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: A. DATE: C. AMOUNT:		NA		
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS/ARD-400 ADDRESS: 2100 2nd Street, S.W. Washington, D.C. 20590 PREP. INDIV.: Fred Horn ARD-431 TEL: 426-9396			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Flexible Pavement, Rigid Pavement Airport Pavement, Pavement Design, Pavement Construction, Pavement Evaluation					
24. Technical Objective: To provide criteria for airport pavement design and construction using new techniques and materials. Provide quick response to research needs generated by ADAP. Approach - Negotiate Interagency Agreements and contracts with industry as appropriate. 25. Implement jointly funded investigations with DOD, DOT, and other agencies. Provide test environment at NAFEC. 26. Major Milestones (FY-78), The following reports: Site Tests of NDT (Freq. Sweep) 8/79. Joint Spacing in Shrinkage Compensating cement 4/79. Edge Loading of Rigid Pavement 1/78. Validate Layered Elastic Design Concept 10/78. Expansive Soils Study 12/79. Recycled Rigid Pave. Materials 4/79. Installation of Recessed Lights in runway 2/79. Deflection Basin Study for NDT 10/79. Evaluate Lime Treatment of Base Course Soil 4/79. Pavement Precoating for Easy Rubber Removal 10/78. Frost Predictive Techniques (Phase II) 10/80. Frost Predictive Techniques (Phase I) 2/78. 26a. Accomplishments FY-77: The following reports were issued: Pavement Criteria for Light Aircraft Runway Roughness Repair Plan Nighttime Construction Asphalt Pavement Improved Drainage Criteria Runway Roughness Loaded Pavement Profile					
27. Source of Requirement E&D Program Plan FAA-ED-08-2 and 9550's			28. Blank		
29. Blank			30. Precedence Blank		
31. Relevant Project Code					

Items 1 to 26 identical to
DD Form 149B and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I-082-421		10b. PRIOR NUMBER/CODE 430-003;160-201;160-205;082-121;082-122			
11. TITLE AIRPORT CONFIGURATION					
12. SCIENTIFIC OR TECH. AREA			13. START DATE NA	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. AMOUNT:				
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St., S.W. Washington, DC 20590 RESP. INDIV.: Max Coggins, ARD-410 TEL: 426-3684			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Airport, Airside, Increasing Capacity					
24. <u>Technical Objective:</u> Develop improved analytical tools, handbooks, techniques, procedures and designs for increasing capacity and reducing delay of the airport airside. Apply capacity/delay measuring techniques to identification of R&D requirements and assessment of benefit potential for development items.					
25. <u>Approach:</u> In-house SRDS/NAFEC effort with contract support to develop a coordinated airside increased capacity program including studies, simulations, design guidance, prototype development and field demonstration and evaluation.					
25B. <u>Milestones Scheduled for Accomplishment:</u> Letter Report - Airport/Airside/Airspace Model Integration 11/77 Letter Report - Airport/Airside Simulation Model Enhancement Study 4/78					
26. <u>Accomplishments - FY-77:</u> High-speed Exit and Entrance Taxiways Analysis Complete VAS Evaluation of Capacity Impact Model Users' Manual Conducted Model User Training Course					
27. Source of Requirement FAAR 5090.2; ATCAC Report 12/69; Incr. Cap. Report 5/70			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 082-431			10B. PRIOR NUMBER/CODE		
11. TITLE RUNWAY SURFACE TRACTION					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:	B. DATE: D. AMOUNT:			
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590		20. PERFORMING ORGANIZATION NAME: NAFEC ADDRESS: INVESTIGATORS PRINCIPAL: Hector Daiutolo, ANA-440 ASSOCIATE: TELE: (609) 641-2283 TYPE:			
19. INDIV.: H. D'Aulerio, ARD-420 TEL: 426-3687		21. TECHNOLOGY UTILIZATION NA			
22. COORDINATION NA					
23. KEYWORDS Groove Surfaces - Pourous Friction Course - Skid Prevention - Traction					
24. Technical Objective: Determine adequacy of performance of grooves in Bituminous Surfaces. Determine extent and frequency of detrimental effects such as surface deformations, round or chipping of groove edges and closing of grooves in bituminous surfaces. Determine criteria required for adequate performance of bituminous surfaces. Determine adequacy of performance of Pourous Friction Course and other promising surfaces for runway SKID prevention and increase traction of wet runways. Approach: Same approach as used to develop optimum groove in Portland Cement Concrete. NAFEC to conduct and monitor test program using NAEC, Lakehurst facility to accomplish the objectives. NAFEC will provide test plans and reports. Milestones Scheduled for Accomplishments:					
25. Final Report on Portland Cement Contrete Surface Performance 12/77					
26. Bituminous Surface Test and Evaluation Complete 10/78					
27. Final Report on Bituminous Surface Performance 5/79					
28. Porous Friction Course Test and Evaluation Complete 8/79					
29. Final Report on Porous Friction Course Surface Performance 3/80					
Accomplishments FY-77 Test and Evaluation of Porous Friction Course Performance (Optimum Groove Configuration)					
27. Source of Requirement (9550 AAP-580-72-1) (9550 AAP-502-76-4)			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code			

I 082-431

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. GOVT ACCESSION NA	2. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL
10a. CURRENT NUMBER/CODE I 083-102		10b. PRIOR NUMBER/CODE I 143-102		
11. TITLE: AIRPORT SURFACE DETECTION EQUIPMENT				
12. SCIENTIFIC OR TECH AREA NA		13. START DATE 10-77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE: C. DATE: D. AMOUNT:	18. PERFORMING ORGANIZATION NAME: DOT/TSC ADDRESS: Kendall Square Cambridge, MA. 02142		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St., S.W. Washington, D. C. 20590		20. INVESTIGATORS PRINCIPAL: John W. O'Grady, TSC-522 ASSOCIATE: TEL: 837-2026 TYPE: FTS		
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA		
23. KEYWORDS Radar, Airport Surface Detection Equipment (ASDE), Airport Surface Traffic Control				
24. <u>Technical Objective:</u> To develop an improved primary radar surveillance system to support the Airport Surface Traffic Control System.				
25. <u>Approach:</u> A basic ASDE-3 radar system is being procured under SRDS direction by TSC. Operational tests will be performed at NAFEC so that a Technical Data Package can be developed to support the production procurement of ASDE-3. Then, enhance the basic ASDE-3 by the procurement and integration of a digital scan converter. The enhancement will be tested at NAFEC, and can become a part of the Tower Automated Ground Surveillance System (TAGS, subprogram 083-103).				
26. <u>Milestones Scheduled for Accomplishment:</u>				
- Complete Basic ASDE-3 Factory Acceptance Tests				7/78
- Complete Basic ASDE-3 Technical Data Package				4/79
- Complete Digital Scan Converter Specifications				11/78
26a. <u>Accomplishments FY-77:</u>				
- Award Basic ASDE-3 development contract				
27. Source of Requirement EDPP FAA-ED-08-1		28.		
29.		30. Precedence		
		31. Relevant Project Code		
		NA		

I 083-102

Items 7 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 083-103			10b. PRIOR NUMBER/CODE I 143-103		
11. TITLE: TOWER AUTOMATED GROUND SURVEILLANCE SYSTEM					
12. SCIENTIFIC OR TECH AREA NA			13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. AMOUNT:		NA		
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St., S.W. Washington, D. C. 20590 RESP. INDIV.: M. E. Perie, ARD-102 TEL: (202) 426-9324			20. PERFORMING ORGANIZATION NAME: DOT/TSC ADDRESS: Kendall Square Cambridge, MA. 02142 INVESTIGATORS PRINCIPAL: John W. O'Grady, TSC-522 ASSOCIATE: TEL: 837-2026 TYPE: FTS		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS: Air Traffic Control Radar Beacon System (ATCRBS), Automation, Airport Surface Traffic Control					
24. <u>Technical Objective:</u> Develop automation and surveillance aids for the Airport Surface Traffic Control System to increase surface traffic handling capacity, minimize surface traffic delays and provide all weather control and guidance.					
25. <u>Approach:</u> Perform system engineering and analysis to develop each of the necessary surveillance and display subsystems along with system interfaces. Then procure and test a prototype system in order to provide technical data for a production procurement.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> - Complete hybrid ASDE/ATCRBS surveillance and display analyses 10/78 - Install prototype system for operational evaluation 10/83 - Complete TAGS System Technical Data Package 4/85 					
26a. <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> - Complete ATCRBS Trilateration testing at BOS. 					
27. Source of Requirement EDPD FAA-ED-08-1			28.		
29.			30. Precedence		
			31. Relevant Project Code		
			NA		

I 083-103

Items 1 to 25 identical to
DD Form 1498 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 083-402		10b. PRIOR NUMBER/CODE NA			
11. TITLE AIRPORT SURFACE VISUAL CONTROL SYSTEMS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:	a. DATE: d. AMOUNT:	NA		
19. GOVT LAB/INSTALLATION ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV.: E. Hall, ARD-432 TEL: x68454		20. PERFORMING ORGANIZATION NAME: NAFEC ADDRESS: Atlantic City, N.J. 08405 INVESTIGATORS: Leon Reamer, ANA-440 PRINCIPAL: 3-346-3712 ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS Surface Control, Signals, Ground Guidance, Traffic Control					
24. <u>Technical Objective</u> - Develop airport surface visual control systems to expedite surface traffic through the airports runways and taxiways safely, efficiently and within acceptable pilot and controller work load levels under all weather conditions, and prepare technical documentation for hand off to operating services. 25. <u>Approach</u> - In House SRDS/NAFEC/TSC effort with contractual support will develop, test and evaluate systems which will eliminate or reduce potential conflicts in runway or taxiway usage, improve taxi guidance aids to enhance safety, minimize delay and reduce controller work load.					
26. <u>Milestones Scheduled for Accomplishment</u> Test of Takeoff Clearance Confirmation System (TOCCS) cont. NAFEC complete. 1/78. Test of TOCCS at higher activity airport completed. 10/78. Technical data package complete. 2/79.					
26a. <u>Accomplishments FY-77:</u> none					
27. Source of Requirement FAA Form 9550-1 ATF-77-2			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code			

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMBL. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE 1 084-740			10B. PRIOR NUMBER/CODE 084-451		
11. TITLE WAKE VORTEX AVOIDANCE SYSTEM					
13. SCIENTIFIC OR TECH AREA			13. START DATE Continuing	14. CRIT. COMPL. DAT N/A	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		A. DATE: B. AMOUNT:		
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590			20. PERFORMING ORGANIZATION NAME: Transportation Systems Center ADDRESS: Kendall Square Cambridge, Mass. 02142		
RESP. INDIV.: Henry G. Tinsley	ARD-740	INVESTIGATORS PRINCIPAL: Mr. William Wood, TSC-521 ASSOCIATE:		TYPE:	
TEL: 426-9350	21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA		
23. KEYWORDS: Vortices, Turbulence, Prediction, Anemometers, Acoustics, Sensors, Hazard, Vortex Behavior, Laser Velocimeter, Airport Capacity					
24. <u>Technical Objective:</u> Develop a system(s) to provide increased airport capacity through elimination of the aircraft trailing wake vortex effect as an impediment to efficient and effective air traffic management in the terminal airspace. <u>Approach:</u> The Transportation Systems Center under the aegis of SRDS, and in conjunction with NAFEC and NASA will design and develop an operational system to detect/predict the presence of aircraft wake vortices, their behavior, status, and provide avoidance guidance integrated with the metering and spacing function of the UG3rd ATC System Development, testing and systems integration will be accomplished and evaluated in light of NAS requirements. A meteorological-based Vortex Advisory System has been developed and will complete operational evaluation in FY-1978. Contractor support will be utilized to supplement in-house capability. <u>Milestones Scheduled for Accomplishment:</u>					
25. <ul style="list-style-type: none">. Vortex Advisory System (VAS) Performance Evaluation Report (R&D Draft) 12/77. O'Hare VAS Operational Test and Evaluation 5/78. VAS Technical Data Package Submission 4/78. Wake Vortex Avoidance System (WVAS) predictive Model developed 9/78. WVAS Conceptual Design developed 9/78					
26. <u>Accomplishments FY-77:</u> <ul style="list-style-type: none">. O'Hare VAS Feasibility Testing Completed. O'Hare VAS Reconfigured for Operational Testing, Demonstration, and Implementation. Laser Doppler Velocimeter (LDV) Van Development Completed. LDV Tracking Tests at O'Hare Completed. Departure Vortex Dynamics Data Collection Completed (Toronto). VAS Safety Analysis Completed. Aircraft Weight Re-categorization Recommendations Submitted					
27. Source of Requirement FAA-ED-21-1			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code NA			

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

09 AIRPORT/LANDSIDE
(Transferred to OSEM)

10 OCEANIC
(No Program)

II ATC SYSTEMS COMMAND
CENTER AUTOMATION

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 111-102			10B. PRIOR NUMBER/CODE I 111-150		
11. TITLE: Central Flow Control					
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA	
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: B. DATE: D. AMOUNT:				
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 Second Street, S. W. Washington, D.C. 20590 RESP. INDIV.: Dr. Carlo J. Broglio TEL: (202) 426-9325		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS Flow Control, Traffic Prediction, Energy Conservation, System Command Center					
24. <u>Technical Objective</u> : Provide automated support to the Central Flow Control's System Command Center (SCC) to (a) improve the SCC's capability to match air traffic flow to traffic handling capabilities of the en route and terminal facilities, (b) reduce "in-flight" delays by assigning ground delays thereby reducing fuel consumption, and (c) enhance the safety of air traffic in congested airspace by providing an automated status monitoring of selected en route fixes thereby allowing overloads to be predicted so that corrective action may be taken.					
25. <u>Approach</u> : Contract on a competitive basis for the software production and system integration on an IBM 9020A computer located at the Jacksonville ARTCC. Ancillary computer hardware will be purchased and installed by the Airway Facilities Service. Follow-on testing will be accomplished by the selected contractor with SRDS/NAFEC and Regional support.					
26. <u>Milestones Scheduled for Accomplishment</u> :					
1. First major program thread working				12/77	
2. Checkout of telecommunications software complete				4/78	
3. Basic software system complete				10/78	
4. Basic System operational				12/78	
26A. <u>Accomplishments for FY-77</u> : A contract for the software implementation was awarded. The computer facility was installed at the Jacksonville ARTCC. A critical design review of the software architecture was completed.					
27. Source of Requirement AAT Ltr. subj: New Definition of ATCSCC Auto. Rmths -			28. 12/24/75		
29.		30. Precedence			
		31. Relevant Project Code NA			

I 111-102

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

12 ENROUTE CONTROL

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. 90 1750-1								
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF ACQUISITION Subprogram								
10A. CURRENT NUMBER/CODE I 122-109			10B. PRIOR NUMBER/CODE N/A										
11. TITLE DEVELOPMENT SUPPORT													
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA									
16. PASCARE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE:										
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV.: Michael Deliman TEL: (202) 426-9372		20. PERFORMING ORGANIZATION NAME: FAA/NAFEC ADDRESS: Atlantic City, N.J. INVESTIGATORS PRINCIPAL: Earl McAfee, ARD-140 ASSOCIATE: TEL: 8-346-3011 TYPE:											
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA										
23. KEYWORDS Software, Design Studies, System Support Facility													
24. <u>Technical Objective:</u> To provide software technical support in areas of NAS En Route operational and operational support development programming on those projects assigned to ARD-140 which are contained in the approved technical plan. In addition a test bed for hardware and software experimentation and evaluation will be maintained.													
25. <u>Approach:</u> Various software projects will be assigned to this organization for developmental activity. End products will be a software production specification or a design study, SRDS in-house, with contractor support, will be used to accomplish the objective.													
26. <u>Milestones:</u>													
<table border="0"> <tr> <td>1. Complete final IOCE Redesign PDS</td> <td>10/77</td> </tr> <tr> <td>2. Complete final Flight Plan Probe PDS</td> <td>10/77</td> </tr> <tr> <td>3. Complete final Program Redesign PDS</td> <td>1/78</td> </tr> <tr> <td>4. Complete E-MSAW demonstration and deliver Technical Data Package to ATS</td> <td>6/78</td> </tr> </table>						1. Complete final IOCE Redesign PDS	10/77	2. Complete final Flight Plan Probe PDS	10/77	3. Complete final Program Redesign PDS	1/78	4. Complete E-MSAW demonstration and deliver Technical Data Package to ATS	6/78
1. Complete final IOCE Redesign PDS	10/77												
2. Complete final Flight Plan Probe PDS	10/77												
3. Complete final Program Redesign PDS	1/78												
4. Complete E-MSAW demonstration and deliver Technical Data Package to ATS	6/78												
26A. <u>Accomplishments for FY-77:</u>													
<table border="0"> <tr> <td>1. Complete capacity feasibility study for NAS En Route computers</td> </tr> <tr> <td>2. Impact Study on addition of E-ARTS to NAS completed</td> </tr> <tr> <td>3. E-MSAW technical requirements and approach document complete</td> </tr> </table>						1. Complete capacity feasibility study for NAS En Route computers	2. Impact Study on addition of E-ARTS to NAS completed	3. E-MSAW technical requirements and approach document complete					
1. Complete capacity feasibility study for NAS En Route computers													
2. Impact Study on addition of E-ARTS to NAS completed													
3. E-MSAW technical requirements and approach document complete													
27. Source of Requirement FAA-ED-12-2B			28.										
29.		30. Precedence											
		31. Relevant Project Code											
		NA											
I 122-109													

RESEARCH AND TECHNOLOGY RESUME				1. N/A	2. GOVT ACCESSION N/A	3. AGENCY ACCESSION N/A	REPORTS IDENT. SYMB. RD 1750-1														
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY RPT U WRK	7. REGRADING N/A	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram																
10a. CURRENT NUMBER/CODE I 122-110				10b. PRIOR NUMBER/CODE N/A																	
11. TITLE: PROGRAM PLANNING AND SYSTEM ENGINEERING																					
12. SCIENTIFIC OR TECH. AREA N/A				13. START DATE 10/77	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA															
16. PROCURE. METHOD N/A	17. CONTRACT/GRANT a. NUMBER: N/A c. TYPE:		a. DATE:	18. RESOURCES EST. PRIOR FY CURRENT FY	a. PROFESSIONAL MAN-YEARS	b. FUNDS (In thousands)															
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd Street, S.W. Washington, D.C. 20591 RESP. INDIV.: Lauren N. Douglass, Jr. TEL: (202) 426-0960				20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:																	
21. TECHNOLOGY UTILIZATION N/A				22. COORDINATION N/A																	
23. KEYWORDS System Improvements, Analysis, Concept Formulation, Design Development																					
24. <u>Technical Objective:</u> To formulate design concepts, perform system planning and accomplish system engineering activities to ensure that overall en route development efforts result in a viable upgraded third generation system design which provides sufficient capacity, improved performance and increased productivity.																					
25. <u>Approach:</u> SRDS in-house, with MITRE Corporation support, will provide: (1) system and subsystem analyses, program formulation and planning, design definition, and experimentation/validation testing of the functional engineering design; (2) identification of interface requirements with other development projects and subsystems; and (3) packaging and specification of implementable designs.																					
26. <u>Milestones Scheduled for Accomplishment:</u>																					
<table border="0"> <tr> <td>1. Initial Design Specification En Route Metering Completed</td> <td>2/78</td> </tr> <tr> <td>2. Final Design Specification Flight Plan Probe Completed</td> <td>5/78</td> </tr> <tr> <td>3. Acceptance Test Plan E-MSAW Completed (Enroute Minimum Safe Altitude Warning)</td> <td>6/78</td> </tr> <tr> <td>4. Design Verification Conflict Alert Mode C Intruder Completed</td> <td>8/78</td> </tr> <tr> <td>5. Specification DABS Surveillance Processing Completed</td> <td>8/78</td> </tr> <tr> <td>6. Initial T&E Planning ETABS Completed (Electronic Tabular Display System)</td> <td>8/78</td> </tr> <tr> <td>7. Design Verification Conflict Resolution Completed</td> <td>9/78</td> </tr> </table>								1. Initial Design Specification En Route Metering Completed	2/78	2. Final Design Specification Flight Plan Probe Completed	5/78	3. Acceptance Test Plan E-MSAW Completed (Enroute Minimum Safe Altitude Warning)	6/78	4. Design Verification Conflict Alert Mode C Intruder Completed	8/78	5. Specification DABS Surveillance Processing Completed	8/78	6. Initial T&E Planning ETABS Completed (Electronic Tabular Display System)	8/78	7. Design Verification Conflict Resolution Completed	9/78
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2. Final Design Specification Flight Plan Probe Completed	5/78																				
3. Acceptance Test Plan E-MSAW Completed (Enroute Minimum Safe Altitude Warning)	6/78																				
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5. Specification DABS Surveillance Processing Completed	8/78																				
6. Initial T&E Planning ETABS Completed (Electronic Tabular Display System)	8/78																				
7. Design Verification Conflict Resolution Completed	9/78																				
26A. <u>Accomplishments FY-1977:</u> CPFS initial DABS MRDP/AT, initial design definition conflict resolution, specification Mode C intruder conflict alert, engineering requirements ETABS. MRDP (Multiple Radar Display Processing)																					
27. Source of Requirement: FAA-ED-12-2B				28.																	
29.				30. Precedence																	
				31. Relevant Project Code N/A																	

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB 9D 1750.1								
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram								
10a. CURRENT NUMBER/CODE I 122-111			10b. PRIOR NUMBER/CODE I 122-117										
11. TITLE NAS STAGE A IMPROVEMENTS													
12. SCIENTIFIC OR TECH AREA NA			13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA								
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. DATE: c. TYPE: d. AMOUNT:												
19. GOVT LAB/INSTALLATION ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDV.: D. Scheffler TEL: (202) 426-9374			20. PERFORMING ORGANIZATION NAME: FAA/NAFEC ADDRESS: Atlantic City, N.J. INVESTIGATORS PRINCIPAL: Bernard Lewis ASSOCIATE: TEL: 8-346-3928 TYPE:										
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA										
23. KEYWORDS data processing, computer program, software, radar surveillance, beacon, monitor program													
24. TECHNICAL OBJECTIVE: To make more efficient use of the Central Computer Complex and associated hardware by means of improvements to the design of the software. To extend the useful life of the NAS En Route computer system by increasing capacity through more efficient use of computer resources.													
25. APPROACH: All aspects of the En Route software architecture and the structure of the operational computer programs will be analyzed to determine feasible methods of increasing computer capacity. The present En Route monitor program will be re-designed to allow for more efficiency in the utilization of mass storage and to simplify the integration of new operational functions. Present operational programs will be redesigned to decrease storage requirements and to increase their speed of operation. Candidate improvements to the Common Digitizer will be evaluated by playing a previously recorded data base against design improvements. Fixes will be built and evaluated. This effort will be with contractor support.													
26. MILESTONES:													
<table border="0"> <tr> <td>1. Complete Monitor Program Redesign final *PDS and **CPFS</td> <td>1/78</td> </tr> <tr> <td>2. Complete ***JOCE Offloading final PDS</td> <td>10/77</td> </tr> <tr> <td>3. Complete Applications Program Redesign PPDS</td> <td>6/78</td> </tr> <tr> <td>4. Demonstration of Beacon Run Length</td> <td>6/78</td> </tr> </table>						1. Complete Monitor Program Redesign final *PDS and **CPFS	1/78	2. Complete ***JOCE Offloading final PDS	10/77	3. Complete Applications Program Redesign PPDS	6/78	4. Demonstration of Beacon Run Length	6/78
1. Complete Monitor Program Redesign final *PDS and **CPFS	1/78												
2. Complete ***JOCE Offloading final PDS	10/77												
3. Complete Applications Program Redesign PPDS	6/78												
4. Demonstration of Beacon Run Length	6/78												
26A. Accomplishments for FY-77:													
<table border="0"> <tr> <td>1. Common Digitizer anti-ringaround fix installed at NAFEC</td> </tr> <tr> <td>2. Complete Monitor Program Redesign PPDS</td> </tr> <tr> <td>3. Complete IOCE Off-Loading final PDS</td> </tr> </table>						1. Common Digitizer anti-ringaround fix installed at NAFEC	2. Complete Monitor Program Redesign PPDS	3. Complete IOCE Off-Loading final PDS					
1. Common Digitizer anti-ringaround fix installed at NAFEC													
2. Complete Monitor Program Redesign PPDS													
3. Complete IOCE Off-Loading final PDS													
27. Source of Requirement FAA-ED-12-2B			28.										
29.			30. Precedence										
*Program Design Spec **Complete Program Functional Spec ***Input/Output Computer Element			31. Relevant Project Code N/A										

I 122-111

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME				2. GOVT ACCESSION	3. AGENCY ACCESSION	REPORTS IDENT. SYMB.	
				NA	NA	PD 1740-1	
4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME		
10/1/77	D	U	NA	NL	Subprogram		
10a. CURRENT NUMBER/CODE				10b. PRIOR NUMBER/CODE			
I 122-112				NA			
11. TITLE:							
AUTOMATION FUNCTIONAL DEVELOPMENT							
12. SCIENTIFIC OR TECH. AREA				13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY	
NA				10/77	NA	FAA	
16. ACQUIRE METHOD		17. CONTRACT/GRANT		18. DATE			
NA		NA					
19. GOV'T LAB/INSTALLATION/ACTIVITY		20. PERFORMING ORGANIZATION					
NAME: FAA/SRDS		NAME: FAA/NAFEC					
ADDRESS: 2100 Second Street		ADDRESS: Atlantic City, N.J.					
Washington, D.C. 20590							
RESP. INDIV.: Preston Martin		INVESTIGATORS: Earl McAfee, ARD-140					
TEL: (202) 426-9372		PRINCIPAL: ASSOCIATE:					
		TEL: 8-346-3011		TYPE:			
21. TECHNOLOGY UTILIZATION				22. COORDINATION			
NA				NA			
23. KEYWORDS							
ATC Automation, Conflict Alert, Conflict Resolution, Flight Plan Probe, En Route Metering, Command Message Automation							
24. <u>Technical Objective:</u> To provide automation aid to controllers working in the en route system beyond that presently provided for in the 3d2 system. Goals are to provide further automation capabilities and functions such as : (1) Conflict Alert Enhancements; (2) Conflict Resolution Advisory; (3) Flight Plan Probe; (4) En Route Metering; (5) En Route MSAW, and (6) Control Message Automation.							
25. <u>Approach:</u> SRDS and NAFEC with MITRE and other contractor support will define, specify, develop, test, and evaluate the many aspects and applications of the automation enhancement efforts specified under Item 24. Software and Hardware specifications, as well as procedural changes, will be developed for incorporating the changes into the en route environment.							
26. <u>Milestones:</u>							
1. Flight Plan Probe coding and testing complete 10/77							
2. En Route Metering initial design specification complete 2/78							
3. Conflict Resolution Advisory preliminary program design specification complete 3/78							
4. Control Message Automation - Functional Description of CMA Package 2 complete 6/78							
5. Conflict Alert Enhancement - ATC operational performance test plan (Mode C Intruder) complete 7/78							
6. En Route MSAW completed with demonstration to ATC (phase 1 development) 9/78							
26A <u>Accomplishments for FY-77:</u>							
1. Conflict Alert Enhancements - turn-related alerts functional description complete							
2. Conflict Alert Enhancements - Mode C intruder alerts functional description comp.							
3. Flight Plan Probe preliminary Program Design Specification complete							
4. Conflict Resolution Advisory functional specification complete							
5. E-MSAW Phase I contractual action (concept definition) completed							
27. Source of Requirement				28.			
FAA-ED-12-2B							
29.				30. Precedence			
				31. Relevant Project Code			
				NA			
I 122-112							

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	4. REPORT IDENT. SYM. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY RPT U EXC	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUM Subprogram
104. CURRENT NUMBER/CODE I 122-113			105. PRIOR NUMBER/CODE I 122-111; I 122-112; 122-115		
11. TITLE AUTOMATION EQUIPMENT DEVELOPMENT					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE 10/1/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:	b. DATE:	18. RESOURCES EST. PRIOR FY: CURRENT FY:	a. PROFESSIONAL MAN-YEARS	b. FUNDS (In thousands)
19. GOVT LAB/INSTALLATION ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street S.W. Washington, D.C. 20590 RESP. INDIV.: John Edgbert TEL: (202) 426-9360			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Automation, Tabular Display, Digital Recording					
24. <u>Technical Objective:</u> To develop automated equipments and subsystems to ensure a viable upgraded third generation system design which provides sufficient capacity, improved performance, and increased productivity.					
25. <u>Approach:</u> SRDS and NAFEC with MITRE and other contractor support, will define, specify, develop, test, and evaluate equipments and subsystems interfacing with the en route 9020 computer complex. Human Factors will be applied to better couple the man/machine relationship. Software and hardware specifications, as well as procedural changes, will be developed for incorporating the new designs into the en route environment.					
26. <u>Milestone Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> o ETABS Engineering Model 8/78 o Radar Situation Recording Model 10/78 o Interface Processor ER 6/78 					
26A. <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> o ETABS AP Approval o ETABS Cost Benefit Report o Radar Recording Demonstration 					
27. Source of Requirement FAA-ED-12-2B Engineering Development Program Plan; En Route			28.		
29.			30. Precedence		
			31. Relevant Project Code NA		

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750.1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME D
10. CURRENT NUMBER/CODE I 122-114			10A. PRIOR NUMBER/CODE 122-116		
11. TITLE PERFORMANCE ANALYSIS AND EVALUATION					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE:		
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP. INDV.: Arthur F. Chantker TEL: (202) 426-9372			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Software, Simulation, Modeling, Performance, Performance Evaluation, Productivity, Controller Performance, System Performance, Hardware Monitoring					
24. <u>Technical Objective:</u> To effectively use simulation models to predict and evaluate the performance of NAS en route hardware and development software. To measure and evaluate the performance and the changes in performance of the NAS en route computer system, the en route system, and the air traffic controllers resulting from the implementation of en route automation and development hardware and software.					
25. <u>Approach:</u> Contractor support will be used to improve the efficiency of the en route simulation models and to represent en route development software. NAFEC personnel will develop techniques to measure the performance of en route development software: using hardware monitoring techniques on the SSF, and the performance of air traffic controllers and the total en route system using analytical techniques applied to the DSF/SSF. Hardware measurements will also be made at selected ARTCCs to validate simulation models and measure en route computer system performance.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
1. Complete NAS Response Time Analysis Final Report					11/77
2. Complete IBM 9020 Capacity Study					3/78
3. Complete En Route Simulation Model Improvement and Conversion					5/78
4. En Route Development Software Model					9/78
5. Complete Reports for En Route Computer Performance, System Performance, and Controller Performance					9/78
26A. <u>Accomplishments for FY 77:</u> Completed Conversion and Validation of Systems Model Developed Technical Approval for NAS En Route Simulation Completed Response Time Analysis Measurements of 3 ARTCCs Developed En Route Performance Measurement Program					
27. Source of Requirement FAA-ED-12-2B			28.		
29.			30. Precedence		
			31. Relevant Project Code N/A		

I 122-114

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDUNT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME D
10a. CURRENT NUMBER/CODE I 122-114			10b. PRIOR NUMBER/CODE 122-116		
11. TITLE PERFORMANCE ANALYSIS AND EVALUATION					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP. INDV.: Arthur F. Chantker TEL: (202) 426-9372			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Software, Simulation, Modeling, Performance, Performance Evaluation, Productivity, Controller Performance, System Performance, Hardware Monitoring					
24. Technical Objective: To effectively use simulation models to predict and evaluate the performance of NAS en route hardware and development software. To measure and evaluate the performance and the changes in performance of the NAS en route computer system, the en route system, and the air traffic controllers resulting from the implementation of en route automation and development hardware and software.					
25. Approach: Contractor support will be used to improve the efficiency of the en route simulation models and to represent en route development software. NAFEC personnel will develop techniques to measure the performance of en route development software: using hardware monitoring techniques on the SSF, and the performance of air traffic controllers and the total en route system using analytical techniques applied to the DSF/SSF. Hardware measurements will also be made at selected ARTCCs to validate simulation models and measure en route computer system performance.					
26. Milestones Scheduled for Accomplishment:					
1. Complete NAS Response Time Analysis Final Report					11/77
2. Complete IBM 9020 Capacity Study					3/78
3. Complete En Route Simulation Model Improvement and Conversion					5/78
4. En Route Development Software Model					9/78
5. Complete Reports for En Route Computer Performance, System Performance, and Controller Performance					9/78
26A. Accomplishments for FY 77:					
Completed Conversion and Validation of Systems Model					
Developed Technical Approval for NAS En Route Simulation					
Completed Response Time Analysis Measurements of 3 ARTCCs					
Developed En Route Performance Measurement Program					
27. Source of Requirement FAA-ED-12-2B			28.		
29.			30. Precedence		
			31. Relevant Project Code N/A		

I 122-114

Items 1 to 26 identical to

DD Form 149A and

NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 122-115			10b. PRIOR NUMBER/CODE 122-114		
11. TITLE INTERFACE DEVELOPMENTS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER NA c. TYPE b. DATE d. AMOUNT:				
18. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV.: J. Stanley Smith, ARD-112 TEL: (202) 426-9372			19. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
20. TECHNOLOGY UTILIZATION NA			21. COORDINATION NA		
22. KEYWORDS Interface, Software, Hardware, DABS, IPC					
24. <u>Technical Objective:</u> To develop, test, and evaluate concepts, software, and hardware required to interface the En Route automation system with the products of other development efforts. Generally, such efforts are long-range and result in new system hardware such as DABS, IPC, FSS, NADIN, etc.					
25. <u>Approach:</u> SRDS and NAFEC, with support from MITRE and other contractors, will define, specify, develop, test, and evaluate the En Route software and hardware necessary to interface with new or improved system functions.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
DABS SIM Program Complete			12/77		
DABS Interface Verification Program Complete			2/78		
IPC Phase II Functional Description Complete			8/78		
Multisensor (DABS/ATORBS) DSF Capability Developed			9/78		
Operational ATC Program (for DABS) Acceptance Testing Complete			9/78		
26A. <u>Accomplishments for FY-77:</u>					
IPC Phase I Operational Testing Report Published					
Operational ATC Program Specification (for DABS) Published					
Development of Support/Test Programs Initiated (SIM, IV, DSF)					
27. Source of Requirement FAA-ED-12-2B			28.		
29.			30. Precedence		
			31. Relevant Project Code NA		

I 122-115

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

13 FLIGHT SERVICE STATIONS

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYM. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME 3
10a. CURRENT NUMBER/CODE I131-401			10b. PRIOR NUMBER/CODE 131-440		
11. TITLE: MASS WEATHER DISSEMINATION					
12. SCIENTIFIC OR TECH AREA Flight Service Station Automation			13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT L. NUMBER: NA S. TYPE:		18. DATE: N/A		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington D.C. 20590 RESP. INDIV.: Vincent L. Costantino TEL: 426-9347			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS PATWAS/TWEB, digitized voice, automatic Wx message composition, TWEB system study					
24. Technical Objective: To develop a national mass weather dissemination system through use of current state of the art equipment that will decrease need for FSS specialists and provide better and current aviation weather for the aviation user. Technical consideration is to be given to holding down communications costs and providing easy access by pilots to the system.					
25. Approach: Multi phase activity was started with improving the Pilot Automatic Telephone Weather Answering Service (PATWAS) as a joint venture with National Weather Service. Content, frequency of update, use of multiple messages, increased lines and new equipment were tested in the New York area. The positive response to the test is being applied to engineering and demonstration of a computer system for digitizing voice and using computer technology to generate PATWAS/TWEB weather messages. High speed transfer of data will be used to reduce communications costs and automatic composition of messages will be used to reduce specialist staffing requirements. A national system configuration will be developed for PATWAS/TWEB as a result of these engineering demonstration.					
26. Milestones Scheduled for Accomplishment: Engineering Model Demonstration 10/77 Automatic Message Composition 1/78 National System Configuration 4/78 Accomplishments FY-77 New York City PATWAS Test Complete Engineering Model Hardware Under Procurement					
27. Source of Requirement FSS Modernization AAT-1 letter dated 1/21/77			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

I 131-401

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME 3
10a. CURRENT NUMBER/CODE 1131-402			10b. PRIOR NUMBER/CODE 131-440		
11. TITLE: FSS INFORMATION DISTRIBUTION IMPROVEMENTS					
12. SCIENTIFIC OR TECH. AREA Flight Service Station Automation			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: D. AMOUNT:		18. NA		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington, D.C. 20590 RESP. INDIV.: Vincent Costantino TEL: 426-9347			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Information retrieval, integrated graphics, FSS productivity and sectorization					
24. <u>Technical Objective:</u> To perform engineering analysis and system studies for the improvement of information distribution and retrieval within FSS facilities. To improve the availability of both static and perishable information to the specialists. To determine the most efficient operational system work configuration for consolidating and sectorizing FSSs.					
25. <u>Approach:</u> SRDS, NAFEC and, when necessary, contractor support will be used to support engineering studies and analysis of various system configurations. Studies of field facilities will be accomplished for data gathering. Information retrieval and graphics systems will be tested and optimized in the FSS lab with evaluation by operating personnel from the field. Studies of the effect of FSS automation before and after will be performed to achieve max system effectiveness. Recommendations will be made on operational positions required, operational configurations for various work loads, use of satellite data, integrated graphics system and image processing and animation techniques.					
26. <u>Milestones Scheduled for Accomplishment</u>					
Study of Sectorization/Consolidation				10/77	
Evaluation of "RAVOS" digitized Voice Mass Dissemination (Delphi Systems)				11/77	
Evaluation of Satellite Data for FSS				12/77	
Demonstrate and Evaluate Techniques for Reception and Image Processing Including Animation				3/78	
Demonstrate "RAVOS" System in Lab				7/78	
Accomplishment FY-77					
Initial Leesburg/Richmond/Charlottesville study completed					
Leesburg FSS MAPS study					
27. Source of Requirement AAI-1 letter 1/21/77 Subject: Work Assignments FSS Lab.			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

RESEARCH AND TECHNOLOGY RESUME		1	2	3	REPORTS IDENT. SYMB.
	NA		2 GOVT ACCESSION NA	3 AGENCY ACCESSION NA	RD 1750-1
4 DATE OF RESUME 10/1/77	5 KIND OF RESUME Revised	6 SECURITY U	7 REGRADING NA	8 RELEASE LIMITATION NL	9 LEVEL OF RESUME Subprogram
10A CURRENT NUMBER/CODE I 132-402		10B PRIOR NUMBER/CODE 132-441			
11 TITLE SPECIALIST AUTOMATION					
12 SCIENTIFIC OR TECH AREA		13 START DATE	14 CRIT. COMPL. DATE	15 FUNDING AGENCY	
16 PROCURE METHOD NA	17 CONTRACT/GRANT A. DATE: B. NUMBER: NA C. TYPE: D. AMOUNT:				
19 GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, SW Washington, D.C. 20590 RESP. INDV.: H. J. Buck, ARD-460 TEL: 426-9393		20 PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21 TECHNOLOGY UTILIZATION NA		22 COORDINATION NA			
23 KEYWORDS Flight Service Station, Flight Service Automation, ESS Modernization, Flight Service Hub					
24 <u>Technical Objective:</u> To develop, specify, and procure a modular expandable flight service automation system which will: initially provide improved and efficient methods for obtaining weather briefings and filing flight plans; and allow for future expansion to accommodate user demand increases, user automated access methods, and functional improvements.					
25 <u>Approach:</u> SRDS, NAPEC, AAT and AAF resources, with MITRE Corporation support, will be utilized in the specificatio development phase, design verification phase, and contract production phase.					
26 <u>Milestones Scheduled for Accomplishment</u>					
<ul style="list-style-type: none"> . Procurement specification completed 1/78 . Design verification contract award 6/78 . Production contract award 7/79 . First Model 1 site IOC 2/80 . First Model 2 site IOC 7/82 					
26A <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> . System requirements defined 					
27. Source of Requirement E&D Program Plan FAA-ED-13-1			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code			
I 132-402					

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 132-403			10b. PRIOR NUMBER/CODE 132-442		
11. TITLE: DIRECT USER ACCESS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA 1
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE: C. DATE: D. AMOUNT:				
19. GOVT LAB/INSTALLATION/ACTIVITY: NAME: ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington D.C. 20590 RESP. INDIV.: Carey Weigel TEL: 426-9393			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS FSS Automation, Self Briefing, PSBT, Voice Response, VRS, Flight Service Enhancement					
24. Technical Objective: Develop a family of self briefing techniques to allow pilots to directly access a computer weather data base for preflight or inflight weather briefing and to file, amend or cancel VFR or IFR flight plans. This capability will enhance the FSS capacity, quality and timeliness. Widespread implementation is planned for the 1985 time frame.					
25. Approach: SRDS, NAFEC and TSC resources, with contractor support, will define, develop, test and evaluate various concepts and techniques for pilots to obtain required flight services by direct interface with a computer. These techniques and associated hardware/software, such as remote terminals and computer generated voice will be developed and evaluated to verify the concepts, specified, then further developed for integrated FSS system implementation and deployment.					
Milestones Scheduled for Accomplishment					
Initial capability VRS available for live demo 1/78					
Remote terminals deployed for extended eval. 2/78					
Initial DUA specification complete 6/78					
Contract for initial DUA capability 6/79					
Implementation initial DUA 6/81					
Accomplishments FY-77					
VRS/PSB test system developed					
VRS and touch-tone flight plan filing controlled tests completed					
27. Source of Requirement OST/FAA study 12/74 FSS Master Plan 6/76; AAT-1 letter dated 2/25/77			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

I 132-403

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

14 TERMINAL/TOWER CONTROL

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE I 142-121			10B. PRIOR NUMBER/CODE None		
11. TITLE: PROGRAM PLANNING AND SYSTEM ENGINEERING					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE 10-77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE: C. DATE: D. AMOUNT:				
18. GOV'T LAB INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St., S.W. Washington, D.C. 20591 RESP. INDIV.: H. McEvoy TEL: (202) 426-9334			19. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS: PRINCIPAL: ASSOCIATE: TEL: TYPE:		
20. TECHNOLOGY UTILIZATION NA			21. COORDINATION NA		
22. KEYWORDS ARTS III Program Planning and System Engineering					
24. <u>Technical Objective</u> : Support activity to perform Program 14 system planning and engineering to ensure that overall terminal automation development efforts result in an upgraded third generation system design.					
25. <u>Approach</u> : SRDS with contractor support will perform required analyses and design studies to prepare test plans, engineering requirement specifications and system test reports.					
26. <u>Milestones Scheduled for Accomplishment</u> :					
1. Software Requirements for DABS Processing/ARTS Interface 10/77					
2. Metering and Spacing Requirements Specification for Site Analysis 8/78					
26A. <u>Accomplishments for FY-77</u> :					
Analysis of RBTL Performance Conflict Alert Test and Evaluation Plan TIPS Updated Procurement Specification Denver/TRACON/Center Interface Specification					
27. Source of Requirement FAA-ED-14-2			28.		
29.			30. Precedence		
			31. Relevant Project Code NA		

I 142-121

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME				1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUMZ Subprogram		
10a. CURRENT NUMBER/CODE I 142-171				10b. PRIOR NUMBER/CODE None			
11. TITLE: ARTS III ENHANCEMENT							
12. SCIENTIFIC OR TECH. AREA NA				13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA		b. DATE:				
		c. TYPE:	d. AMOUNT:				
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St., S.W. Washington, D.C. 20591 RESP. INDIV.: A. Millhollon, ARD-120 TEL: (202) 426-9338				20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA				22. COORDINATION NA			
23. KEYWORDS ARTS III, Radar/Beacon Tracking, Data Acquisition Subsystem, Radar Processing Development							
24. <u>Technical Objective:</u> Develop, demonstrate and prepare specifications for hardware and software expansion of ARTS III to provide Multisensor Tracking, Digital Remoting and All Digital System improvements.							
25. <u>Approach:</u> SRDS/NAFEC effort with contractor support will be utilized to achieve the above objective. The development efforts will utilize the Terminal Automation Test Facility (TATF) at NAFEC.							
26. <u>Milestones Scheduled for Accomplishment:</u>							
1. Test and Evaluation of Radar Remoting System Completed*						8/78	
2. Test and Evaluation of MTD/monopulse SRAP completed*						8/78	
3. Design Specification Beacon Environment Analysis*						10/78	
4. Test and Evaluation of Remote Tower Display System Completed*						12/78	
26A. <u>Accomplishments for FY-77</u>							
1. TCDD Delivered to Tampa							
2. Installation at NAFEC of SRAP II							
3. Design Data for Beacon Environment Analysis - Report							
4. Study for Noise Monitoring - Report							
27. Source of Requirement FAA-ED-14-2				28.			
29. Technical Report Issued and Technical Data Package Handoff				30. Precedence			
				31. Relevant Project Code NA			

I 142-171

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. GOVT ACCESSION NA	2. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1										
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL										
100. CURRENT NUMBER/CODE I 142-172		10A. PRIOR NUMBER/CODE None												
11. TITLE: BASIC METERING AND SPACING/IMPLEMENTABLE METERING & SPACING														
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE 10-77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA										
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:	18. DATE: B. AMOUNT:												
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St., S.W. Washington, D.C. 20591 RESP. INDIV.: J. Talley, ARD-120 TEL: (202) 426-9336		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:												
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA												
23. KEYWORDS ARTS III Enhancement, Processing/Software Development														
24. <u>Technical Objective</u> : Develop Metering and Spacing computer programs for integration and implementation at ARTS III locations to optimize airspace utilization, reduce delays, improve airport capacity and enhance safety by providing decision assistance to controllers.														
25. <u>Approach</u> : SRDS/NAFEC effort with contractor support will be utilized. Developed programs will be tested and demonstrated using the TATF at NAFEC and programs will be integrated and implemented at the Denver ARTS III site.														
26. <u>Milestones Scheduled for Accomplishment</u> :														
<table border="0"> <tr> <td>1. NAFEC Test/Evaluation - Basic M&S</td> <td>7/78</td> </tr> <tr> <td>2. Denver Test/Evaluation Complete - Basic M&S</td> <td>7/78</td> </tr> <tr> <td>3. Final Report Documentation - Basic M&S</td> <td>10/78</td> </tr> <tr> <td>4. Contract Award Implementable Metering & Spacing</td> <td>4/78</td> </tr> <tr> <td>5. Site Analysis Complete</td> <td>8/78</td> </tr> </table>					1. NAFEC Test/Evaluation - Basic M&S	7/78	2. Denver Test/Evaluation Complete - Basic M&S	7/78	3. Final Report Documentation - Basic M&S	10/78	4. Contract Award Implementable Metering & Spacing	4/78	5. Site Analysis Complete	8/78
1. NAFEC Test/Evaluation - Basic M&S	7/78													
2. Denver Test/Evaluation Complete - Basic M&S	7/78													
3. Final Report Documentation - Basic M&S	10/78													
4. Contract Award Implementable Metering & Spacing	4/78													
5. Site Analysis Complete	8/78													
26A. <u>Accomplishments for FY-77</u> :														
Denver Test Plan - Report ER/Procurement Request Issuance for Implementable M&S														
27. Source of Requirement FAA-ED-14-2		28.												
29.		30. Precedence												
		31. Relevant Project Code NA												

I 142-172

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVY ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1												
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram												
10. CURRENT NUMBER/CODE I-142-173			10A. PRIOR NUMBER/CODE None														
11. TITLE: TOWER INFORMATION PROCESSING SYSTEM (TIPS)																	
12. SCIENTIFIC OR TECH AREA NA			13. START DATE 10-77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA												
16. PROCURE. METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATES A. DATE: B. DATE: C. DATE: D. AMOUNT:														
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington, D.C. 20591 RESP. INDIV.: W. Wilson, ARD-120 TEL: (202) 426-9336			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:														
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA														
23. KEYWORDS Terminal Automation, Flight Data Handling, ARTS III Enhancement																	
24. <u>Technical Objective</u> : Develop capability for automated flight plan processing, distribution and issuance of clearances in high density ARTS III facilities.																	
25. <u>Approach</u> : SRDS/NAFEC effort with contractor support will be utilized. The development system will be tested and evaluated with the TATF at NAFEC and at a designated field facility.																	
26. <u>Milestones Scheduled for Accomplishment</u> :																	
<table border="0"> <tr> <td>1. RFP Issuance</td> <td>5/78</td> </tr> <tr> <td>2. Proposed Contract Award for Prototype at NAFEC</td> <td>12/78</td> </tr> <tr> <td>3. Delivery of Prototype at NAFEC</td> <td>9/79</td> </tr> <tr> <td>4. Test/Evaluation Complete (NAFEC)</td> <td>12/79</td> </tr> <tr> <td>5. Test/Evaluation Complete (Field Site)</td> <td>3/80</td> </tr> <tr> <td>6. Technical Data Package Documentation</td> <td>4/80</td> </tr> </table>						1. RFP Issuance	5/78	2. Proposed Contract Award for Prototype at NAFEC	12/78	3. Delivery of Prototype at NAFEC	9/79	4. Test/Evaluation Complete (NAFEC)	12/79	5. Test/Evaluation Complete (Field Site)	3/80	6. Technical Data Package Documentation	4/80
1. RFP Issuance	5/78																
2. Proposed Contract Award for Prototype at NAFEC	12/78																
3. Delivery of Prototype at NAFEC	9/79																
4. Test/Evaluation Complete (NAFEC)	12/79																
5. Test/Evaluation Complete (Field Site)	3/80																
6. Technical Data Package Documentation	4/80																
26A. <u>Accomplishments for FY-77</u> :																	
Updated Engineering Requirement Completed ER Review by AAT Completed ER Revision Completed																	
27. Source of Requirement FAA-ED-14-2			28.														
29.			30. Precedence														
			31. Relevant Project Code NA														

RESEARCH AND TECHNOLOGY RESUME		2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1								
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL								
10a. CURRENT NUMBER/CODE I 142-174		10b. PRIOR NUMBER/CODE None										
11. TITLE CONFLICT ALERT & RESOLUTION												
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE 10/77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA								
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:	18. DATE: D. AMOUNT:										
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St., S.W. Washington, D.C. 20591 RESP. INDIV.: G. Rowland, ARD-120 TEL: (202) 426-9342		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TELE: TYPE:										
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA										
23. KEYWORDS ARTS III, Radar/Beacon Tracking, Data Acquisition Subsystem, Radar Processing Development												
24. <u>Technical Objective</u> : Develop a four-stage conflict alert and resolution program to support all ARTS III field sites in both current and future levels of sophistication.												
25. <u>Approach</u> : SRDS/NAFEC effort with contractor support to design, code and demonstrate the programs for single and dual beacon ARTS III sites. Contractor will assist during NAFEC and field evaluation.												
26. <u>Milestones Scheduled for Accomplishment</u> :												
<table border="0"> <tr> <td>1. Stage I Technical Data Package</td> <td>12/77</td> </tr> <tr> <td>2. Stage II Technical Data Package</td> <td>7/78</td> </tr> <tr> <td>3. Stage III Technical Data Package</td> <td>7/79</td> </tr> <tr> <td>4. Stage IV Technical Data Package</td> <td>9/79</td> </tr> </table>					1. Stage I Technical Data Package	12/77	2. Stage II Technical Data Package	7/78	3. Stage III Technical Data Package	7/79	4. Stage IV Technical Data Package	9/79
1. Stage I Technical Data Package	12/77											
2. Stage II Technical Data Package	7/78											
3. Stage III Technical Data Package	7/79											
4. Stage IV Technical Data Package	9/79											
26A. <u>Accomplishments for FY-77</u> :												
NAFEC Test/Evaluation Stage I Demonstration Field Evaluation Stage I (Houston/Miami) - Report												
27. Source of Requirement FAA-ED-14-2		28.										
29.		30. Precedence										
		31. Relevant Project Code NA										

I 142-174

Items 1 to 25 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. GOVT ACCESSION NA	2. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1								
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL								
10a. CURRENT NUMBER/CODE I 142-176		10b. PRIOR NUMBER/CODE None										
11. TITLE: ATC APPLICATIONS OF MESSAGE AUTOMATION												
12. SCIENTIFIC OR TECH. AREA NA		13. START DATE 10-77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA								
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:	a. DATE:	d. AMOUNT:									
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St., S.W. Washington, D. C. 20591 RESP. INDIV.: J. D. Horrocks, ARD-120 TEL: (202) 426-1328		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:										
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA										
23. KEYWORDS Controller/Computer Interface, ATC, ARTS III Enhancement, Intermittent Positive Control												
24. <u>Technical Objective:</u> To support and conduct development, test and evaluation of methods and computer programs developed in the subprogram effort through use of the TATF and DSF facilities. Provide data reduction and analysis programs in support of Phase IIB experiments. Provide support in testing efforts for IPC and Conflict Prediction related subprogram activities.												
25. <u>Approach:</u> SRDS/NAFEC will support simulation and design modification activities as required for the development of a controller/computer interface with an ARTS III and simulated link aircraft. Data link evaluation with the ARTS III enhanced target generator will be conducted on the TATF system. IPC and Conflict Prediction evaluation will be conducted on the TATF and DSF systems.												
26. <u>Milestones Scheduled for Accomplishment:</u>												
<table border="0"> <tr> <td>1. Acceptance Demonstration (IPC)</td> <td>12/78</td> </tr> <tr> <td>2. DABS Test/Evaluation Complete (Surveillance) Phase I</td> <td>3/79</td> </tr> <tr> <td>3. Test/Evaluation Complete (Phase II)</td> <td>7/79</td> </tr> <tr> <td>4. DABS/IPC Test/Evaluation Complete (Phase II)</td> <td>9/79</td> </tr> </table>					1. Acceptance Demonstration (IPC)	12/78	2. DABS Test/Evaluation Complete (Surveillance) Phase I	3/79	3. Test/Evaluation Complete (Phase II)	7/79	4. DABS/IPC Test/Evaluation Complete (Phase II)	9/79
1. Acceptance Demonstration (IPC)	12/78											
2. DABS Test/Evaluation Complete (Surveillance) Phase I	3/79											
3. Test/Evaluation Complete (Phase II)	7/79											
4. DABS/IPC Test/Evaluation Complete (Phase II)	9/79											
26A. <u>Accomplishments for FY-77:</u>												
Acceptance Demonstration (Surveillance) Test Plan IPC - Report												
27. Source of Requirement FAA-ED-14-2		28.										
29.		30. Precedence										
		31. Relevant Project Code NA										

I 142-176

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGARDING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 142-179			10b. PRIOR NUMBER/CODE None		
11. TITLE ARTS III ENHANCEMENT (TATF SUPPORT)					
12. SCIENTIFIC OR TECH AREA NA			13. START DATE 10-77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington, D.C. 20591 RESP. INDIV: J. Horrocks, ARD-120 TEL: (202) 426-9336		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: RESP. INDIV: TEL:			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS ARTS III, Test Evaluation, Integration, System Enhancement					
24. <u>Technical Objective:</u> Establish, maintain, and operate a Terminal Automation Test Facility (TATF) at NAPEC for use in the development, test, evaluation and integration of advanced Terminal/Tower ATC software and hardware systems.					
25. <u>Approach:</u> NAPEC technical and operational resources supplemented with contract technical services will be used to manage, maintain, operate and schedule the TATF.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
1. TATF System Enhancement Equipment Delivery 2/78					
2. TATF ARTS IIIA Compatibility Enhancement Equipment Delivery 8/78					
26A. <u>Accomplishments for FY-77:</u>					
Installation of Additional Memory Modules (ARTS III IOP-B Installation Complete TATF Control Tower Construction Complete					
27. Source of Requirement FAA-ED-14-2			28.		
29.			30. Precedence		
			31. Relevant Project Code NA		

I 142-179

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYM. RD 1750-1
1. DATE OF RESUME 10-1-77	2. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 144-170			10b. PRIOR NUMBER/CODE None		
11. TITLE: TERMINAL TOWER SUSTAINING ENGINEERING					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE 10-77	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE:		c. DATE: d. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: ADDRESS: FAA/SRDS 2100 2nd St. S.W. Washington, D.C. 20591 RESP. INDIV.: R. Simon, ARD-120 TEL: (202) 426-9342			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS ARTS I Radar/Beacon Tracking, Data Acquisition Subsystem, Radar Processing Development					
24. <u>Technical Objective</u> : Respond to 9550 requests for terminal system support submitted by AAT/AAF. Provide design service for ATC facility improvements for FAA, other governmental departments as required.					
25. <u>Approach</u> : SRDS with contractor support will develop systems, test/evaluate and implement for field operational use. Perform experimentation and evaluation of mock-ups and/or live test beds using NAFEC facilities.					
26. <u>Milestones Scheduled for Accomplishment</u> : None Scheduled - To be determined as requests received					
26A. <u>Accomplishments for FY-77</u> : Report on Dayton TRACON Mock-up Report on Chicago TRACON Mock-up Report on Baltimore Tower/TRACON Mock-up Report on Dulles Tower Cab Reconfiguration Report on Edwards RAPCON Mock-up Report on New York CIFRR Interim Report BRITE IV Defocus Interim Report BRITE IV Vidicon Life					
27. Source of Requirement FAA-ED-14-2			28.		
29.			30. Precedence		
			31. Relevant Project Code NA		

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

15 WEATHER

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE III 51-461			10b. PRIOR NUMBER/CODE 151-261		
11. TITLE: AVIATION WEATHER SUSTAINING ENGINEERING					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCUR. METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. DATE: d. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SMS ADDRESS: 2100 S. St., W Washington, DC 20511			20. PERFORMING ORGANIZATION NAME: NAFFC ADDRESS: Atlantic City, NJ 08405		
RESP. INDIV.: A. J. Larsson, ARD-451 TEL: (202) 425-477			INVESTIGATORS PRINCIPAL: E. Schlatter, ANA-440 ASSOCIATE: -347-2754 TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Quick Response, Sustaining Engineering, RVR, Visibility, Pressure, ASI					
24. <u>Technical Objective:</u> The objective of this effort is to provide for a quick response effort, as technical engineering support, and equipment improvements for aviation weather measurement systems presently installed at FAA facilities. Improve availability and provide more cost effective operations and maintenance for such systems as: Transmissometer, RVR signal data converters and related items, altimeter setting indicators, wind measurement and indicating devices, temperature and dewpoint measuring equipment.					
<u>Approach:</u> An in-house effort with support from MWS, NAFFC and TSC.					
<u>Milestones Scheduled for Accomplishment:</u>					
Report on use of RVR under 2 vs 4 conditions of background brightness				10/77	
Report on use of Forward Scatter Visibility Meter as a possible replacement transmissometer.				12/77	
Report giving recommendations for removing decent altitude restrictions at airports not having full time ASI reporting.				12/77	
Technical Data Package for digital ASI system calibrator.				10/77	
<u>End-Item Product Accomplishments - FY-77:</u>					
Report on second generation anemometers					
Procurement specs for RVR recorder.					
Test Report for frangible wind indicator.					
Test Report for Windhouse Wind Measuring Device.					
27. Source of Requirement Mission Oriented and 9550s as received.			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

III 151-461

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1322.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10. CURRENT NUMBER/CODE III 151-462			10A. PRIOR NUMBER/CODE 151-262		
11. TITLE: VISIBILITY AND CEILING					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE. METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE:		
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St., SW Washington, DC 20591 RESP. INDIV.: Arthur Hilsenrod, ARD-451 TEL: (202) 426-8427			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Visibility, Ceiling, RVR, SVR					
24. <u>Technical Objective:</u> Improve visibility and ceiling information available to pilots for take-off and landing information; provide improved techniques for measurement of ceiling, slant visibility and RVR below 600 feet; aid in developing international standards for RVR.					
25. <u>Approach:</u> Lidar work conducted by other organizations will be monitored for possible application to RVR and SVR. RVR data will be collected and analyzed for Chicago O'Hare International Airport. Support will be given to ICAO by participation in RVR study group.					
<u>Milestones Scheduled for Accomplishment:</u>					
Report on international RVR comparisons.				11/77	
Chicago RVR data for 1976 completed.				3/78	
26. <u>Accomplishments for FY-77:</u>					
Final report on SVR development issued.					
Cost deployment study on RVR issued.					
Report on Visual Range Concepts issued.					
Report SVR and RVR relationships issued.					
Ceilometer Technical Data Package issued.					
27. Source of Requirement		FAAR 5335.1 dtd. 10/27/67		28. Blank	
29. Blank		30. Precedence Blank			
		31. Relevant Project Code			

III 151-462

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10A. CURRENT NUMBER/CODE III 152-461			10B. PRIOR NUMBER/CODE 152-261		
11. TITLE IMPROVED AVIATION WEATHER FORECASTING					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE: 19. AMOUNT:		
19. GOVT LAB/INSTALLATION ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St., SW Washington, DC 20591 RESP. INCH: Arthur Hilsenrod, ARD-451 TEL: (202) 426-8427			20. PERFORMING ORGANIZATION NAME: ADDRESS: National Weather Service Techniques Development Lab. Gramax Building, Silver Spring, MD INVESTIGATOR PRINCIPAL: ASSOCIATE: Dr. M. Alaka TEL: (301) 427-7772 TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS					

24. Technical Objective: Improved accuracy, timeliness and availability of aviation weather forecasts in time period now to 6 hours from now.

25. Approach: Through an IAA with National Weather Service, apply new processing techniques and data analysis to available terminal and enroute meteorological observations and radar data to improve short range aviation weather forecast products.

Milestones Scheduled for Accomplishment:

Development plan for short range forecasts published.	12/77
Initiate new effort to improve thunderstorm forecasts in 0-2 hour time period.	1/78
Final report published.	5/79

26. End-Item Product Accomplishments for FY-77:

Final report on thunderstorm forecasting published.
Implementation of improved technique for 2-6 hour thunderstorm forecasting extended from East Coast to Rocky Mts.

27. Source of Requirement Program Plan ED-15-1	28. Blank
29. Blank	30. Precedence Blank
	31. Relevant Project Code

III 152-461

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U RPT WRR	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE III 152-462			10b. PRIOR NUMBER/CODE 152-262		
11. TITLE: INTEGRATED AVIATION WEATHER SYSTEM FOR NAS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		b. DATE: d. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St., SW Washington, DC 20591 RESP. INDIV.: John W. Hinkelman, ARD-452 TEL: (202) 426-8427			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Aviation Weather System					
24. <u>Technical Objective:</u> To provide an integrated aviation weather subsystem to the NAS which will materially upgrade weather support to various ATC facilities. The effort includes adapting the existing and new techniques of sensing, forecasting and reporting weather to ATC and pilot needs.					
25. <u>Approach:</u> An in-house, NAFEC, TSC and contractor effort.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
1. System Program Plan				8/77	
2. System Preliminary Design				3/78	
3. System Detailed Design				7/79	
4. System Component Development				10/80	
5. System Tests				10/81	
6. System Specifications				10/82	
27. <u>Accomplishments for FY-77:</u>					
1. Detailed System Program Plan					
27. Source of Requirement Program Plan ED-15-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10. CURRENT NUMBER/CODE III 153-451			10A. PRIOR NUMBER/CODE 151-465		
11. TITLE: AUTOMATED WEATHER OBSERVATION SYSTEM					
12. SCIENTIFIC OR TECH. AREA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18. DATE: 19. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd St., SW Washington, DC 20591 RESP. INDIV.: E. Mandel, ARD-452 TEL: (202) 426-8427			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS AV-AWOS, Automated, Weather Observations, Thunderstorm Detector					
24. Technical Objective: Develop (1) a completely automated aviation weather observation system (AV-AWOS) in support of the FSS modernization program for use at non-tower airports where an FSS which takes an observation is closed and (2) develop a low cost automated weather observation system for use at airfields where no weather observation is currently taken but where an approved standard instrument approach procedure exists.					
25. Approach: Under an interagency agreement the National Weather Service will develop and test models of the Aviation Automated Weather Observation System (AV-AWOS) and the low cost system for FAA.					
26. Milestones Scheduled for Accomplishment:					
Begin AV-AWOS User Test at Newport News.				10/77	
Low Cost System Development Plan complete.				11/77	
AV-AWOS User Test complete.				3/78	
AV-AWOS TDP to AAF.				4/78	
Begin six month operational evaluation of low cost system.				10/77	
TDP or ADAP equivalent available for low cost system.				6/80	
27. End-Item Product Accomplishments - FY-77:					
NWS let contract to support Newport News User Test.					
27. Source of Requirement RSD Program Plan 15-1		28. Blank			
29. Blank		30. Precedence Blank			
		31. Relevant Project Code NA			

III 153-451

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1																		
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram																		
10a. CURRENT NUMBER/CODE III 154-740			10b. PRIOR NUMBER/CODE III 154-451																				
11. TITLE: Wind Shear																							
12. SCIENTIFIC OR TECH. AREA			13. START DATE continuing	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA																		
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		b. DATE: d. AMOUNT:																				
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV.: H. G. Tinsley, ARD-740 TEL: (202) 426-9350			20. PERFORMING ORGANIZATION NAME: ADDRESS: FAA/SRDS, TSC, NAFEC INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:																				
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA																				
23. KEYWORDS Wind Shear, Wind Shear Characterization, Hazard Definition, Airborne and Ground-Based Systems, Wind Shear Systems Integration/Implementation																							
24. Technical Objective: Examine the hazards associated with wind shear in the terminal area, characterize the wind shear problem, establish and complete requirements to solve the problem and integrate/implement solutions into the National Airspace System. <u>Approach:</u> 25. Investigate solutions to the terminal wind shear problem under three interrelated approaches: (1) use of ground-based systems, (2) use of airborne systems, and (3) improve the accuracy of terminal area wind shear forecasting. Products that contribute to safety will be implemented as they evolve. This effort will involve FAA operating services, Office of Systems Engineering, NAFEC, SRDS elements, Logistics, TSC, DOD, NASA, NOAA and industrial concerns. <u>Milestones Scheduled for Accomplishment:</u> <table border="0"> <tr><td>. Specification for Operational Anemometer System</td><td>4/78</td></tr> <tr><td>. Specification for Airborne Equipment</td><td>6/78</td></tr> <tr><td>. Hazard Definition - General Aviation Aircraft</td><td>8/78</td></tr> <tr><td>. Wind Shear Characterization Complete</td><td>9/78</td></tr> <tr><td>. Development of Thunderstorm Gust Front Forecast Complete</td><td>9/78</td></tr> </table> <u>Accomplishments FY-77:</u> <table border="0"> <tr><td>. Manned Flight Simulation (Phases I & II)</td><td>. Pressure Jump Testing Completed</td></tr> <tr><td>. Dulles Acoustic Doppler Testing</td><td>. Hazard Definition-Air Carrier Aircraft</td></tr> <tr><td>. Additional Anemometers Installed</td><td>. Testing of Frontal Wind Shear Forecast</td></tr> <tr><td>. CW Laser Evaluation Completed</td><td>Techniques Complete</td></tr> </table>						. Specification for Operational Anemometer System	4/78	. Specification for Airborne Equipment	6/78	. Hazard Definition - General Aviation Aircraft	8/78	. Wind Shear Characterization Complete	9/78	. Development of Thunderstorm Gust Front Forecast Complete	9/78	. Manned Flight Simulation (Phases I & II)	. Pressure Jump Testing Completed	. Dulles Acoustic Doppler Testing	. Hazard Definition-Air Carrier Aircraft	. Additional Anemometers Installed	. Testing of Frontal Wind Shear Forecast	. CW Laser Evaluation Completed	Techniques Complete
. Specification for Operational Anemometer System	4/78																						
. Specification for Airborne Equipment	6/78																						
. Hazard Definition - General Aviation Aircraft	8/78																						
. Wind Shear Characterization Complete	9/78																						
. Development of Thunderstorm Gust Front Forecast Complete	9/78																						
. Manned Flight Simulation (Phases I & II)	. Pressure Jump Testing Completed																						
. Dulles Acoustic Doppler Testing	. Hazard Definition-Air Carrier Aircraft																						
. Additional Anemometers Installed	. Testing of Frontal Wind Shear Forecast																						
. CW Laser Evaluation Completed	Techniques Complete																						
27. Source of Requirement FAA E&D Program Plan FAA-ED-15-2			28. Blank																				
29. Blank			30. Precedence Blank																				
			31. Relevant Project Code NA																				

III 154-740

Items 1 to 26 identical to
DD Form 1498 and
NASA Form 1122.

AD-A044 597

FEDERAL AVIATION ADMINISTRATION WASHINGTON D C SYSTE--ETC F/G 1/2
SRDS TECHNICAL PROGRAM DOCUMENT, FISCAL YEAR 1978 ENGINEERING A--ETC(U)
OCT 77

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2 OF 2 AD A044597										

END
DATE
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10-77
DDC

16 TECHNOLOGY
(Transferred to OSEM)

7/9

17 SATELLITES

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/COOE I 171-252			10b. PRIOR NUMBER/COOE		
11. TITLE: COMMUNICATIONS SURVEILLANCE DESIGN FOR OCEANIC SATELLITE SYSTEMS					
12. SCIENTIFIC OR TECH AREA NA		13. HYARY DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE:	c. DATE: NA d. AMOUNT:			
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP INDIV: David G. Spokely, ARD-233 TEL: (202) 755-4995		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS Oceanic Systems, Air Traffic Control, Satellites					
24. <u>Technical Objective:</u> To develop the operational benefits and the characteristics of an Oceanic ATC System in a satellite environment which will meet the aviation needs through 2000.					
25. <u>Approach:</u> SRDS with NAFEC and contractor support, will develop: (1) Traffic Forecast Data, (2) Airspace and Ground Network Configurations, (3) Air/Ground Communication Requirements, etc.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> . Complete Pacific/Indian Ocean Forecast 10/77 . Complete Satellite Lease Purchase Study 3/78 					
26A. <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> . Preliminary Benefit Analysis of NAT Completed . Completed Two-Hour Scripts/Progress Strip (NAFEC) 					
27. Source of Requirement E&D Program Plan FAA-ED-17-2			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code NA			
I 171-252					

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	4. REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/COOE I 172-251			10b. PRIOR NUMBER/COOE 172-142		
11. TITLE: OCEANIC/CONUS ATC SYSTEM EXPERIMENTS					
12. SCIENTIFIC OR TECH AREA NA		13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA	
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE: C. DATE: D. AMOUNT:	NA			
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 2nd S.W., Washington, D.C. 20590 RESP INDV: John J. Bisaga, ARD-231 TEL: 202-426-8496		20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:			
21. TECHNOLOGY UTILIZATION NA		22. COORDINATION NA			
23. KEYWORDS Satellites, Oceanic Systems, Air Traffic Control					
24. <u>Technical Objective</u> : To provide hardware and gather, reduce, and analyze experimental data as necessary to support technical design of oceanic and CONUS satellite systems.					
25. <u>Approach</u> : SRDS with TSC, NAFEC and contractor support will develop and test advanced aircraft antennas, modems, and other devices as necessary to support the design of oceanic and CONUS satellite systems. A high gain aircraft antenna and a signal waveform design will be developed. These advances will drastically reduce the potential cost of satellite systems for aeronautical use.					
26. <u>Milestones Scheduled for Accomplishment</u> : <ul style="list-style-type: none"> . Signal Technology Contract Awarded 6/78 . Signal Technology Contract Completed 6/79 . Antenna Development Completed 6/80 					
26A <u>Accomplishments FY-77</u> : <ul style="list-style-type: none"> . Antenna Development Contract Awarded . Modem Contract Awarded 					
27. Source of Requirement E20 Program Plan FAA-ED-17-1			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code NA			

I 172-251

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	4. REPORTS IDENT. SYMB. RD 1750-1
5. DATE OF RESUME 10/1/77	6. KIND OF RESUME D	7. SECURITY U	8. REGARDING NA	9. RELEASE LIMITATION NL	10. LEVEL OF RESUME Subprogram
11a. CURRENT NUMBER/CODE I 173-251			11b. PRIOR NUMBER/CODE NA		
11. TITLE: OCEANIC SATELLITE SYSTEM FEASIBILITY					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER NA b. TYPE	18. DATE NA 19. AMOUNT			
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591 RESP INDV.: John J. Bisaga TEL: (202) 426-8496			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Oceanic Satellites, International Cooperation, Feasibility Study					
24. <u>Technical Objective:</u> To revalidate the system characteristics, on an international basis, for an oceanic satellite system.					
25. <u>Approach:</u> The FAA, with Europe and Canada, will revalidate the system characteristics for an oceanic satellite system. The AEROSAT Coordination Office will provide a focal point for coordinating these efforts on an international basis. Tradeoff studies will be done to determine the factors to be evaluated within any future system.					
26. <u>Milestones Scheduled for Accomplishment:</u> <ul style="list-style-type: none"> . System Characteristics Determined 12//78 . Program Plan Published 3//79 					
26A. <u>Accomplishments FY-77:</u> <ul style="list-style-type: none"> . U.S. Approach Developed 					
27. Source of Requirement Congressional Direction			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

I 173-251

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVY ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. PD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 173-255		10b. PRIOR NUMBER/CODE NA			
11. TITLE: AIC SATELLITE/AOCC SIMULATION					
12. SCIENTIFIC OR TECH AREA NA			13. SYARY DATE NA	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY NA
16. PROCURE METHOD NA	17. CONTRACT/GRANT		18. NA		
a. NUMBER NA		b. DATE:			
c. TYPE:		d. AMOUNT:			
19. GOV'T LAB/INSTALLATION ACTIVITY			20. PERFORMING ORGANIZATION		
NAME: FAA/SRDS			NAME:		
ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20591			ADDRESS:		
RESP. INDIV.: Frederic W. Pickett			INVESTIGATORS		
TEL: (202) 426-8496			PRINCIPAL ASSOCIATE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Oceanic, Satellite, System Simulation					
24. <u>Technical Objective:</u> To provide supporting technical and operational data employing voice and data communications and surveillance information from applicable data acquisition systems for an improved oceanic ATC system.					
25. <u>Approach:</u> SRDS with NAFEC, TSC, and contract support will develop a dynamic simulation capability at NAFEC for the purpose of simulating an automated oceanic control center utilizing data link, GPS for surveillance, and satellite systems for communication and surveillances. This capability will be developed and tested in three phases: Phase I - AOCC Environment, Phase II - Pilot/Controller Interface, Phase III - System Simulations.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
<ul style="list-style-type: none"> • Phase I Test Plan Complete 4/78 • Design for NAS Program Mods Complete 1/78 • NAS Program Mods Complete 3/79 • Development of AOCC Complete 3/79 • Design for Satellite Program Complete 4/79 • Design for DSF Mods Complete 4/79 • Phase I Testing Complete/report issued 4/80 • Phase II Testing Complete/report issued 10/80 • Phase III Testing Complete/report issued 4/82 					
26A. <u>Accomplishments FY-77:</u>					
<ul style="list-style-type: none"> • Develop Satellite Systems Plan 					
27. Source of Requirement Congressional Direction			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		
			NA		

I 173-255

Items 1 to 26 identical to
DD Form 1478 and
NASA Form 1122.

18 AIRCRAFT SAFETY

RESEARCH AND TECHNOLOGY RESUME		1. DATE OF RESUME	2. KIND OF RESUME	3. SECURITY	4. CLASSIFICATION	5. AGENCY ACCESSION	6. REPORTS IDENTIFICATION
		10/1/77	E	U	NA	NA	PD 10001
100. CURRENT NUMBER CODE				100. PRIOR NUMBER CODE			
1V-181-520							
11. TITLE							
MODIFIED FUEL							
12. IDENTIFICATION DATA				13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY	
N/A				Continuing	N/A	FAA	
16. PROCEDURE METHOD	17. CONTRACTOR/AGENCY	18. DATE:					
NA	NA						
19. GOVT. LAB. INSTALLATION ACTIVITY				20. PERFORMING ORGANIZATION			
NAME: FAA/SRDS				NAME:			
ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590				ADDRESS:			
21. INDIV. J. Van Dyke, ARD-520				22. INVESTIGATORS			
TEL: (202) 426-8416				PRINCIPAL:			
				ASSOCIATE:			
				TEL:			
				TYPE:			
23. TECHNOLOGY UTILIZATION				24. COORDINATION			
NA				NA			
25. KEYWORDS							
Modified Fuel, Crash Fires, Fire Safety							
26. <u>Technical Objective:</u> To evaluate a modified turbine fuel for helicopters and commercial transport aircraft which will reduce the probability and severity of a post-crash fire and extend the time available for passenger evacuation and reduce the fatalities due to fire.							
27. <u>APPROACH:</u> Small and large scale tests will be conducted to evaluate and demonstrate the safety benefits of modified fuel by inhibiting the formation of highly flammable mists when fuel is released under survivable crash conditions. These test will establish the basis for engine and fuel system compatibility tests and the preparation of a modified fuel specification for qualification of engines and aircraft to use modified fuel. NAFEC, U.S. Navy and contractual effort supports this activity.							
28. <u>MILESTONES SCHEDULED FOR ACCOMPLISHMENT:</u>							
. Rocket sled/wing impact fuel release tests						10/78	
. Fuel system/engine compatibility tests						9/79	
. Preliminary modified fuel specification drafted						9/79	
. Full-scale crash demonstration						12/79	
. Investigation of methods for delivering anti-misting additive to aircraft fuel tanks						10/80	
. Modified fuel specification published						10/82	
29. <u>ACCOMPLISHMENTS FOR FY-77:</u>							
. Publish Study on Rheology of Antimist Fuels							
. Publish Report on Experimental Scaling of Modified Fuel Breakup							
. Publish Report on Anti-misting Fuel Spillage/Air Shear Tests and Analysis							
30. Source of Requirement: FAA-ED-18-1				31. Blank			
32. Blank				33. Procedure: Blank			
				34. Relevant Project Code:			

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IV-181-520

Items 1 to 26 identical to
DD Form 1478 and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. DATE OF RESUME	2. AGENCY ACCESSION	3. AGENCY ACCESSION	4. REPORT NUMBER
		10/1/77	NA	NA	RD 1
5. DATE OF RESUME	6. KIND OF RESUME	7. SECURITY	8. REGRADING	9. RELEASE LIMITATION	10. LEVEL OF RESUME
10/1/77	D	U	NA	NL	Subprogram
11. CURRENT NUMBER/ CODE		12. PRIORITY NUMBER CODE			
IV 181-521					
13. TITLE					
CABIN CRASH SAFETY					
14. SCIENTIFIC OR TECH. AREA			15. START DATE	16. DATE COMPLE. DATE	17. FUNDING AGENCY
			Continuing	N/A	FAA
18. PROGRAM METHOD	19. CONTRACT/GRANT		20. RESPONDING ORGANIZATION		
NA	A. NUMBER: NA B. TYPE: C. AMOUNT:		NAME: ADDRESS: INVESTIGATORS: PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. GOVT. EMPLOYER/ALLIANCE ACTIVITY			22. COORDINATION		
NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590			NAME: ADDRESS: INVESTIGATORS: PRINCIPAL: ASSOCIATE: TEL: TYPE:		
REF. INDIV. R. C. McGuire, C. Troha, ARD-520 TEL. (202) 426-8416			NAME: ADDRESS: INVESTIGATORS: PRINCIPAL: ASSOCIATE: TEL: TYPE:		
23. ABSTRACT					
Cabin-Fire Materials, Smoke, Toxic-gas, Flammability, Math-Model					
24. <u>Technical Objective:</u> Develop and/or demonstrate criteria, equipment, systems, materials, which will minimize fire hazards to cabin occupants under post-crash conditions.					
25. <u>APPROACH:</u> Minimize post-crash fire hazards by developing (1) criteria to improve fire safety characteristics of cabin materials and furnishings; (2) criteria for cabin fire management systems such as compartmentation and fire detector/extinguisher systems; e.g. develop methodology and criteria to rank cabin materials for combined combustion hazards affect on cabin occupants; develop laboratory test protocol to rank materials for toxicology of combustion gases; develop advanced laboratory test methods for flammability, smoke, gas which correlate with full-scale cabin fire conditions; develop/validate cabin fire math model capable of predicting combustion hazards time-history of one or more cabin materials; develop wide-body cabin fire test facility to support R&D projects related to cabin fire safety.					
26. <u>MILESTONES SCHEDULED FOR ACCOMPLISHMENT:</u>					
<ul style="list-style-type: none"> . Develop interim method to rank a material for combustion toxicity 12/77 . Develop combined hazard index methodology to rank a material 12/79 . Complete external/internal full-scale cabin fire tests (NAFEC) 12/78 . Complete validation tests of cabin fire math model (FAA/NASA) 12/78 . Complete test plan: Criteria for wide-body cabin fire management system 9/78 					
26A. <u>ACCOMPLISHMENTS FOR FY-77:</u>					
<ul style="list-style-type: none"> . Final reports - Evaluate Cabin fire Extinguisher System-Internal/External Fire . Final reports - NAFEC/CAMI Gas Analysis/Animal Tests to Develop Toxicity Ranking Mtd. . Final Report-Cabin Fire Management (Compartment) Tests . Final Report-F/A Fire Protective Overgarment . Contract-Develop Combined Hazard Index Method 					
27. SOURCE OF REPORT			28. BLANK		
AFS-100-74-137 (5/74)			AFS-100-73-134 (5/73)		
29. BLANK			30. PRECEDENCE		
			31. RELEVANT PROJECT CODE		

BEST AVAILABLE COPY

RESEARCH AND TECHNOLOGY RESUME		1	2	3	REPORTS IDENT. SYMB.
4 DATE OF RESUME	5. KIND OF RESUME	6 SECURITY	7 REGRADING	8 RELEASE LIMITATION	9. LEVEL OF RESUME
10/1/77	D	U	NA	NL	Subprogram
10a. CURRENT NUMBER/CODE			10b. PRIOR NUMBER/CODE		
IV 181-522			NA		
11. TITLE:					
IN-FLIGHT FIRE SAFETY					
12. SCIENTIFIC OR TECH. AREA			13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY
			Continuing	N/A	FAA
16. PROCURE METHOD	17. CONTRACT/GRANT		18. DATE:		
NA	A. NUMBER: NA		B. AMOUNT:		
	C. TYPE:		D. AMOUNT:		
19. GOV'T LAB/INSTALLATION/ACTIVITY		20. PERFORMING ORGANIZATION			
NAME: FAA/SRDS		NAME:			
ADDRESS: 2100 Second Street, S.W.		ADDRESS:			
Washington, D.C. 20590		INVESTIGATORS:			
RESP. INDIV. J. J. Shea ARD-520		PRINCIPAL:			
TEL. (202) 426-8416		ASSOCIATE:			
TEL:		TEL:		TYPE:	
21. TECHNOLOGY UTILIZATION			22. COORDINATION		
NA			NA		
23. KEYWORDS:					
In-Flight Aircraft Fires, Powerplant, Detection, Control, Extinguishment					
24. TECHNICAL OBJECTIVE: To develop means of reducing the hazards of in-flight aircraft fire through prevention, early detection and rapid extinguishment.					
25. APPROACH: Studies and tests to develop improved fire detection, control and prevention for aircraft powerplant and fuel systems will be conducted via NAFEC inhouse and SRDS/ Industry contractual efforts.					
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:					
. Electrostatic Charge Tendency of Fuel Filters Investigated				12/77	
. Designer's Guide to Titanium Use in Turbine Engines				9/78	
. Lightning Strike Current Flow Path and Amount Investigated				6/80	
26A. ACCOMPLISHMENTS FOR FY-77:					
. Burner Standards for Fire Resistance Testing Report					
. Nitrogen Generator Full-Scale Prototype Report					
27. Source of Requirement FS 100-75-143; FS 100-73-135; FS 100-75-146; FS 100-76-155			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

RESEARCH AND TECHNOLOGY RESUME				1	2	3	REPORTS IDENT.
				NA	NA	NA	RD 1750-1
4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME		
10/1/77	D	U	NA	NL	Subprogram		
10a. CURRENT NUMBER/CODE				10b. PRIOR NUMBER/CODE			
IV 182-520				N/A			
11. TITLE:							
AIRCRAFT AIRWORTHINESS							
12. SCIENTIFIC OR TECH. AREA				13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY	
				Continuing	N/A	FAA	
16. PROCURE METHOD		17. CONTRACT/GRANT					
NA		NA					
18. GOV'T LAB/INSTALLATION/ACTIVITY				20. PERFORMING ORGANIZATION			
NAME: FAA/SRDS				NAME:			
ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 (202) 426-8416				ADDRESS:			
RESP INDV: H. C. Spicer, Jr., C. Troha, ARD-520;				INVESTIGATORS			
TEL: R. N. Bell, ARD-510 -426-6794				PRINCIPAL:			
				ASSOCIATE:			
				TEL:			
				TYPE:			
21. TECHNOLOGY UTILIZATION				22. COORDINATION			
NA				NA			
23. KEYWORDS							
Aircraft, Flight Loads, Ground Loads, Aircraft Structures, Maintenance							
24. <u>TECHNICAL OBJECTIVES:</u> To develop and adapt new safety technology in the areas of flight and ground loads, aircraft structures and systems, and maintenance and inspection technology for transport aircraft. To prepare recommendations to the various agency services for new or improved airworthiness certification and/or operational requirements, as well as acceptable methods to comply with the requirements.							
25. <u>APPROACH:</u> Accident statistics, service information, and new design concepts, materials applications and manufacturing techniques will be continually analyzed to identify areas where safety improvements are necessary to yield the maximum benefits to reducing the likelihood of accidents and improving the crashworthiness of the structure. Promising areas will be investigated to identify technology adaptation or improvements and R&D will be conducted to yield proposals for new or improved airworthiness regulations. Efforts will be initiated to answer safety needs expressed by other components of the agency. NAFEC and contractual effort supports this activity.							
26. <u>MILESTONES SCHEDULED FOR ACCOMPLISHMENT:</u>							
. Structural Inspection Simulation Final Report						12/77	
. Transport Crashworthiness Simulation Methodology Report						12/78	
. Bomb Jettisoning In-flight						12/77	
. Explosion Tests Within a Fuselage for Design Criteria						3/78	
. Structural Integrity of Nose Gear for Towing - Report						12/78	
26A. <u>ACCOMPLISHMENTS FOR FY-77:</u>							
. Pressurized Bomb Tests in B-707 Completed							
. Least Risk Placement Studies in B-707 and DC-10 Completed.							
27. Source of Requirement FS-100-73-133, GS-200-1-73 E&D Program Plan				28. Blank			
29. Blank				30. Precedence Blank			
				31. Relevant Project Code			

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYM. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE IV 182-521			10b. PRIOR NUMBER/CODE NA		
11. TITLE PROPULSION AIRWORTHINESS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE Continuing	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. DATE: d. AMOUNT:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDIV.: J. J. Shea, ARD-520 TEL: (202) 426-8416			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Propulsion Systems, Containment, Ingestion, Anti-Ice, Engine Reliability					
24. TECHNICAL OBJECTIVE: To develop methods and equipments to improve propulsion systems reliability and safety.					
25. APPROACH: Data generated by analysis and tests to develop improved propulsion systems, conducted via NAFEC inhouse, SRDS/Industry contractual efforts and NASA support will form the technical base for proposed new and/or revised airworthiness and operational requirements. Specific areas of interest are improved turbine rotor blade containment, resistance to bird ingestion, anti-ice system design criteria and the study of higher temperature engines using the USAF engine nacelle fire test simulator.					
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT: <ul style="list-style-type: none"> . Engine Inlet Anti-Icing Prediction Procedure Developed 1/78 . Turbine Engine Performance Margin Measuring Technique Developed 6/81 					
26A. ACCOMPLISHMENTS FOR FY-77: <ul style="list-style-type: none"> . Designer's Guide to Turbine Engine Anti-Icing Systems . Improved Resistance to Turbine Engine Bird Ingestion Report . Turbine Blade Increased Containment Reports 					
27. Source of Requirement FA-100-75-147; FS-100-76-153			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE IV 182-530			10b. PRIOR NUMBER/CODE NA		
11. TITLE: FLIGHT PERFORMANCE/OPERATION					
12. SCIENTIFIC OR TECH. AREA			13. START DATE Continuing	14. CRIT. COMPL. DATE NA	15. FUNGING AGENCY FAA
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		d. DATE: e. AMOUNT:		
19. GOV. PLANT/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20590 RESP. OFFICER: Edward M. Boothe/Frank N. Hudson TEL: (202)-426-3290			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEY WORDS Transports, Airworthiness, Handling Qualities, Simulation					
24. <u>TECHNICAL OBJECTIVE</u> : The aircraft handling qualities and system performance characteristics needed to support new or improve airworthiness criteria and associated operating limitations for all forms of transport aircraft will be developed including greater utilization of simulation methods in the aircraft certification process.					
25. <u>APPROACH</u> : Use of analysis, ground-based and in-flight simulation, and experimental flight tests will be employed. Emerging technology such as advanced avionics and active control systems will be examined. NASA-Ames simulation facilities, NAFEC and contractual support will be utilized for accomplishment of this effort.					
26. <u>MILESTONES</u> : Large Aircraft Structural Loads Criteria Report 2/78 Results of Lightning Study Flight Test Program 4/78 Study Report - Certification Criteria for IFR Helicopter Operations 4/78 Review of Advanced Technology Impact on Airworthiness Criteria 5/78					
26A. <u>ACCOMPLISHMENTS - FY-77</u> : Role of Simulation in Certification, Phase I, Completed Canadian/US STOL Handling Qualities Degradation Simulation Test. Improved Helicopter Instrument Display - Report					
27. Source of Requirement PS-100-75-142 FAA-ED-18-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code NA		

IV 182-530

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1 NA	2 GOVT ACCESSION NA	3 AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4 DATE OF RESUME 10/1/77	5 KIND OF RESUME D	6 SECURITY U	7 REGRADING NA	8 RELEASE LIMITATION NL	9 LEVEL OF RESUME Subprogram
10 CURRENT NUMBER/CODE IV 184-520			10A PRIOR NUMBER/CODE NA		
11 TITLE GENERAL AVIATION FLIGHT SAFETY					
12 SUBJECT AREA/TECH AREA			13 START DATE Continuing	14 CRIT COMPL DATE N/A	15 FUNDING AGENCY FAA
16 FUNDING METHOD NA	17 CONTRACT/GRANT A. NUMBER: NA C. TYPE:		18 DATE:		
19 GOVT. INSTALLATION/ACTIVITY FAA/SRDS 2100 Second Street, S.W. Washington, D.C. 20590 Joseph W. Howell, ARD-530 (202)426-3290			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. SEC. UTILIZATION NA			22. COORDINATION NA		
23. KEY WORDS Aircraft Safety Stall/Spin, Stall Avoidance, Cockpit Standardization					
24. TECHNICAL OBJECTIVE: Develop and apply advanced technology in aircraft design to general aviation to improve light general aviation aerodynamic characteristics, performance, stability and control and structural design criteria to general aviation flight safety. Provide technology base for new or improved airworthiness and operational requirements. Determine characteristics of cockpit layouts contributing to pilot error.					
25. APPROACH: Perform analyses, ground-based and in-flight simulation operational flight testing of personal owner and business oriented general aviation airplanes. Obtain flight characteristics and operational data related to development of advanced design data and regulatory standards. Develop standards for cockpit control features. NAFC and contract effort supports this activity.					
26 MILESTONES SCHEDULED FOR ACCOMPLISHMENT:					
Contract Award - Criteria for Lightplane Static Longitudinal Stability				11/77	
for Stall Avoidance Safety					
. Report - Phase III Cockpit Standardization				7/78	
26A. ACCOMPLISHMENTS - FY-77					
. Draft Report - Phase II Cockpit Standardization					
. Report - Lightplane Longitudinal Control Criteria					
. Report - FAA-RD-77-25 - Lightplane Stall Avoidance and Suppression.					
27. Source of Requirement AFS-160 Letter dtd 11-17-75, ED-18-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		
			NA		

IV 184-520

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. RD 1750.1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESU Subprogram
100. CURRENT NUMBER/CODE IV 184-521			10A. PRIOR NUMBER/CODE NA		
11. TITLE GENERAL AVIATION CRASH SAFETY					
12. SCIENTIFIC OR TECH AREA			13. START DATE Continuing	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENC FAA 1
16. PROCURE. METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE: C. DATE: D. AMOUNT:				
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S.W. Washington, D.C. 20590 RESP. INDV: Herbert C. Spicer, Jr., ARD-520 TEL: (202) 426-8416			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Aircraft Safety, Crash Survivability, Crashworthiness					
24. TECHNICAL OBJECTIVE: To develop a validated basis for standards leading to improved occupant survivability in aircraft accidents. To develop effective and practical means of packaging aircraft occupants during a crash to minimize injury, and to reduce the likelihood of a fire after a crash. Prepare recommendations to Flight Standards for new or improved certification requirements.					
25. APPROACH: The approach for the General Aviation Program is three-phased. Phase I includes technical studies and theoretical research leading to a scientific analytical basis for the development of design standards. Phase II involves full-scale crash tests to refine and validate Phase I basic data. Phase III applies the analytical techniques to general aviation aircraft designs to identify possible and practical crashworthiness improvements. Work will be accomplished through contracts and NAFEC tests.					
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:					
<ul style="list-style-type: none"> • General Aviation Crash Survivability Criteria Phase II Full-Scale Crash Validation Test Report 12/77 Phase III Application of Analytical Techniques - Criteria Report 8/78 • Validation Man/Seat/Restraint System Tests Complete - Report 8/78 • General Aviation Crash Resistant Fuel System Construction & Test Report 6/78 					
26A. ACCOMPLISHMENTS FOR FY-77					
<ul style="list-style-type: none"> • Phase I Crash Simulation Report Completed • Interim Report on Fuel System Tests Completed 					
27. Source of Requirement FAA-ED-18-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

IV 184-521

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		4. GOVT ACCESSION NA	5. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
6. DATE OF RESUME 10/1/77	7. KIND OF RESUME D	8. SECURITY U	9. REGRADING NA	10. RELEASE LIMITATION NL
11. LEVEL OF RESUME Subprogram		12. CURRENT NUMBER/CODE IV 184-530		
13. PRIORITY NUMBER/CODE NA			14. TITLE GENERAL AVIATION PILOT COMPETENCE	
15. SCIENTIFIC OR TECH AREA NA		16. START DATE Continuing	17. CRIT. COMPL. DATE NA	18. FUNDING AGENCY FAA
19. PROCEDURE METHOD NA	20. CONTRACT/GRANT A. NUMBER: NA B. DATE: C. TYPE: D. AMOUNT:	21. GOVT LAB. INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second Street, S. W. Washington, D. C. 20590 22. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
23. GOVT LAB. INSTALLATION/ACTIVITY NAME: Joseph W. Howell, ARD-530 ADDRESS: (202)-426-3290		24. TECHNOLOGY UTILIZATION NA		
25. COORDINATION NA				
26. KEY WORDS Certification, Simulators (Ground Trainers), Currency, Judgment, Computers				
27. TECHNICAL OBJECTIVE: To develop data to support Flight Standards Service regulatory and advisory action as regards pilot certification, training, and currency requirements.				
28. APPROACH: Projects involving pilot judgment studies and evaluation of experimental training and certification methods (simulator and ground trainers, computer aided education, etc.) will develop supporting data. Contractual activity will be required since in-house capabilities in this area do not exist at the levels required.				
29. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:				
. Pilot Judgment Study - Final Report				10/77
. Let Contract - Improved Pilot Training				10/77
. Complete Improved Pilot Training Syllabus Report - Phase I				5/78
30. ACCOMPLISHMENTS - FY-77				
Completion of Final Report "Stall Awareness Training" - RD-77-26				
31. Source of Requirement NSA-ARD-76-1 FAA-ED-18-1		32. Blank		
33. Blank		34. Precedence Blank		
35. Blank		36. Relevant Project Code NA		

IV 184-530

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10. SOURCE NUMBER/CODE IV 185-561			10A. PRIOR NUMBER/CODE		
11. TITLE EXPLOSIVE/SABOTAGE DETECTION					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE Continuing	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE:	C. DATE:			
18. INSTALLATION/ACTIVITY FAA/SRDS 2100 Second Street, S.W. Washington, D.C. 20590 Gerry Carp, ARD-560 426-6794		19. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL. TYPE:			
20. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
24. KEYWORDS Civil Aviation Security					
24. <u>TECHNICAL OBJECTIVE</u> : Conceive, design, develop, test and evaluate new devices and ancillary equipment and assess existing devices directed towards the detection and prevention of weapons and explosives being introduced into the aircraft/airport environment.					
25. <u>APPROACH</u> : SRDS, NAFEC and TSC resources with contract support will be utilized in carrying out the work necessary to meet the objectives of the security program. This is a multi-year research and development effort in accordance with the agency approved Security Technical Development Plan (TDP).					
26. <u>MILESTONES SCHEDULED FOR ACCOMPLISHMENT</u>					
. Complete Air Cargo Study					11/77
. Storage Locker Tests Completed					12/77
. Evaluation of Decompression Vapor Sampling System					12/77
. Feasibility Study of X-Ray Fluorescence Completed					2/78
. Phase I Vapor Characterization Completed					4/78
. Construction of Operational N.M.R. Completed					6/78
. Thermal Neutron Operational Detector Construction Completed					8/78
26A <u>ACCOMPLISHMENTS FY-77</u>					
. Completed Evaluation of X-Ray Absorption Concept					
. Completed Laboratory Evaluation of N.M.R.					
. Completed 1st Phase Explosive Locker Experimentations					
. Completed Evaluation of Commercial Vapor Detectors					
27. Source of Requirement FAA-ED-18-2			28. Blank		
29. Blank		30. Precedence Blank			
		31. Relevant Project Code N/A			

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

19 AVIATION MEDICINE
(Not included)

20 ENVIRONMENT

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
9a. CURRENT NUMBER/CODE IV 201-521			9b. PRIOR NUMBER/CODE		
11. TITLE: AIRCRAFT PROPULSION SYSTEMS AIR POLLUTION					
12. SCIENTIFIC OR TECH AREA N/A			13. START DATE Continuing	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. DATE:		
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA, SRDS ADDRESS: 2100 -2nd St. S.W. Washington, D.C. 20590 RESPIRON: W. T. Westfield, ARD-550 TEL: (202) 426-3314			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS AIRCRAFT, POLLUTION, POWERPLANT, MEASUREMENT					
24. TECHNICAL OBJECTIVE: Develop the means to measure, reduce, and control air pollution from aircraft powerplants and support systems in consonance with the authorities and responsibilities of the Clean Air Amendments of 1970 (Public Law 91-604)					
25. APPROACH: Through in-house, NAFEC, and contracted technical efforts, the necessary technology will be developed and evaluated to supply the data base and procedures to formulate regulations for the control of aircraft exhaust emissions.					
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:					
Report on Criteria for Monitoring Aircraft Generated Pollution @ Airport ---- 12/77					
Certification Test Procedures Handbook Issued ----- 11/77					
Simulated Flight Tests of Low-Polluting Piston-Engined Aircraft ----- 8/78					
Contract Award, Aircraft Configuration Effects On Exhaust Emissions ----- 7/78					
26A. ACCOMPLISHMENTS FY-1977:					
Report On Time-Degradation Factors For Turbine Engine Exhaust Emissions -----					
Report On Safely Achievable Emission Levels For Piston Engines -----					
Contract Awarded For Development Of Time-Degradation Factors For Piston Engine Exhaust Emissions -----					
27. Source of Requirement FAA-ED-20-1 AEO-74-1; AFS-100-75-148			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

IV 201-521

Items 1 to 26 identical to
DD Form 149A and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE IV 202-551			10b. PRIOR NUMBER/CODE		
11. TITLE SOURCE NOISE REDUCTION					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE Continuing	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE. METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA C. TYPE: 4. AMOUNT:				
18. GOVT. LAB./INST./INSTALLATION/ACTIVITY FAA/SRDS 2100 - 2nd St. S.W. Washington, D.C. 20590 Robert S. Zuckerman, ARD-550 426-3314			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
19. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEY WORDS AIRCRAFT NOISE, JET NOISE, CORE ENGINE NOISE, SOUND ABSORPTION TREATMENT					
24. <u>TECHNICAL OBJECTIVE</u> : Determination of aircraft/engine performance and configurational variables that influence generation or propagation of noise, development of prediction techniques and establishment of guidelines for noise reductions.					
25. <u>APPROACH</u> : Analytical and experimental investigations of mechanisms of generation and suppression of engine noise sources and of installation effects of nacelle and airframe on noise propagation and reduction--Contract Support.					
26. <u>MILESTONES SCHEDULED FOR ACCOMPLISHMENT</u> : - JT8D Mixer Full Scale Ground Test Report -----12/78 - JT8D Mixer Flight Test and Evaluation ----- 1/79 - Jet Noise Suppression Report Theoretical/Experimental--Task II -----12/77 Suppression Nozzles (Static) Task III ----- 1/78 Optimal Nozzles (Wind-On) Task V ----- 2/78 Design Guide - Task VI ----- 3/78					
26A. <u>ACCOMPLISHMENTS FY-77</u> - JT8D Mixer Model Study Report - P&WA Combustion Noise Prediction Model (low emissions combustors) - G.E. Core Engine Component Noise Update, including low emissions combustors - Airframe Noise Prediction and Reduction Model Report					
27. Source of Requirement FAA-ED-20-2A			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10. CURRENT NUMBER/CODE IV 202-552			10A. PRIOR NUMBER/CODE N/A		
11. TITLE OPERATIONAL NOISE REDUCTION					
12. SCIENTIFIC OR TECH AREA N/A			13. START DATE Continuing	14. CRIT COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT A. DATE: B. NUMBER: NA C. TYPE: D. AMOUNT:				
19. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 - 2nd St., S.W. Washington, D.C. 20590 REL. PROJ.: Robert J. Koenig, ARD-550 TEL: 426-3314			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS NOISE ABATEMENT OPERATIONS, ATMOSPHERIC ATTENUATION, NOISE MEASUREMENTS					
24. TECHNICAL OBJECTIVE: Determination of significant aircraft performance characteristics that influence noise exposure on the ground, development of prediction techniques, evaluation of the effects of the atmosphere on sound propagation, and development of noise measurement techniques.					
25. APPROACH: Theoretical and experimental investigations of effects of aircraft operating procedures, meteorological conditions, and ground terrain on transmission of sound. Analysis, design, and testing of noise measurement systems. In-house and contractual effort supports this activity.					
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT: --Meteorological Effects On Aircraft Noise Propagation----- 8/78					
26A. ACCOMPLISHMENTS FY-77 --Report - Helicopter Noise Data --Report - Noise Characteristics Of Eight Helicopters					
27. Source of Requirement FAA-ED-20-2			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

RESEARCH AND TECHNOLOGY RESUME				1.	2. GOVT ACCESSION	3. AGENCY ACCESSION	REPORTS IDENT. SYMB.
				NA	NA	NA	RD 1750-1
4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME		
10-1-77	D	U	NA	NL	Subprogram		
10a. CURRENT NUMBER/CODE				10b. PRIOR NUMBER/CODE			
IV 202-553				N/A			
11. TITLE:							
NOISE EVALUATION AND RESPONSE							
12. SCIENTIFIC OR TECH. AREA				13. START DATE	14. CRIT. COMPL. DATE	15. FUNDING AGENCY	
N/A				Continuing	N/A	FAA	
16. PROCEDURE METHOD		17. CONTRACT/GRANT		18. DATE:			
NA		NA					
		a. NUMBER:		b. AMOUNT:			
		NA					
		c. TYPE:					
19. GOVT LAB/INSTALLATION/ACTIVITY				20. PERFORMING ORGANIZATION			
NAME: FAA/SRDS				NAME:			
ADDRESS: 2100 2nd St. S.W.				ADDRESS:			
Washington, D.C. 20590							
21. CONTACT: Thomas H. Higgins, ARD-550				INVESTIGATORS			
TEL: 426-3314				PRINCIPAL:			
				ASSOCIATE:			
				TEL:			
				TYPE:			
21. TECHNOLOGY UTILIZATION				22. COORDINATION			
NA				NA			
23. KEYWORDS: AIRCRAFT AND COMMUNITY NOISE, PSYCHOACOUSTIC PROCEDURES, NOISE CERTIFICATION, CALCULATION, AIRCRAFT FLYOVER NOISE SIGNALS, NOISE COMPATIBLE LAND USE PLANNING							
24. TECHNICAL OBJECTIVE: To obtain certification and design criteria for aircraft and airports. Determination of significant variables that influence response to noise, development of psychoacoustic measures procedures and guidelines for control of noise exposure within the requirements of Public Law 90-411.							
25. APPROACH: Conduct Psychoacoustic Tests in laboratories and family homes regarding the effects of noise on man and the development of acceptable procedures and yardsticks for evaluating aircraft noise and community noise exposure.							
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:							
- Psychoacoustic Tests of Certification Criteria For General & Commerical Aviation Interior Noise ----- 12/78							
- Psychoacoustic Tests Of Certification Criteria Regarding Significant Changes in Level and Number of Operations For Airport/Community Planning -- Report ----- 9/78							
26A. ACCOMPLISHMENTS FY-77							
In-House R&D Completed and Report Published "Human Response to Sound: The Calculation Of Perceived Level Directly From Physical Measures"							
27. Source of Requirement				28.			
PL-90-411/FAA-ED-20-2				Blank			
29. Blank				30. Precedence Blank			
				31. Relevant Project Code			

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10-1-77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE IV 202-554			10b. PRIOR NUMBER/CODE NA		
11. TITLE SONIC BOOM RESEARCH					
12. SCIENTIFIC OR TECH. AREA N/A			13. START DATE Continuing	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		18. DATE:		
19. GOVT. EST. INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 - 2nd St. S.W. Washington, D.C. 20590 REL. INCH. Thomas H. Higgins, ARD-550 TEL: 426-3314			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS SONIC BOOM RESEARCH, CERTIFICATION CRITERIA, DESIGN CRITERIA					
24. TECHNICAL OBJECTIVE: To obtain Certification Criteria required by Public Law 90-411 aircraft design criteria and operational criteria regarding sonic boom environmental effects.					
25. APPROACH: This is an in-house and contract effort coordinated by Interagency Agreements with NASA, NOAA, DOT, and U.S. Air Force to determine the effects of sonic boom on man and his environment. Support is provided by NAFEC in the processing of TDR-1 Sonic Boom Recorder data and by the Aeronautical Center in the maintenance of TDR-1 recorders.					
26. MILESTONES SCHEDULED FOR ACCOMPLISHMENT Concorde Sonic Boom Monitor Report (JFK Flights)----- 7/78 NOAA Report on Long Distance Propagation----- 6/78					
26A ACCOMPLISHMENTS FY-77 --F-111 Supersonic Boomless Flight Demonstrations --System Definition-Transcontinental Boomless Flight System Report --NOAA Report on Atmospheric Effects On Concorde Sonic Boom Lateral Propagation --Concorde Sonic Boom Monitoring Report (IAD Flights)					
27. Source of Requirement PL-90-411, ED-20-2			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10. CURRENT NUMBER/CODE IV 204-551			10A. PRIOR NUMBER/CODE NA		
11. TITLE ENGINE EMISSIONS					
12. SCIENTIFIC OR TECH. AREA			13. START DATE Continuing	14. CRIT. COMPL. DATE NA	15. FUNDING AGENCY FAA
16. ACQUIRE METHOD NA	17. CONTRACT/GRANT A. NUMBER: NA B. TYPE: C. DATE: D. AMOUNT:				
19. GOVT. LAB/INSTALLATION/ACTIVITY FAA/SRDS 2100 - 2nd St. S.W. Washington, D.C. 20590			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
18. PERSONNEL Joseph Gwiazdowski, ARD-550 426-4922					
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS CLIMATIC IMPACT, STRATOSPHERE, TROPOSPHERE, ENGINE EMISSIONS, MONITORING, FUEL SULFUR					
24. TECHNICAL OBJECTIVE: To develop accurate, current engine exhaust emission and fuel sulfur loading characteristics for the world fleet of aircraft that operate in the stratospheric regions. This compilation will be used as input data to a global modeling effort to predict aircraft impact on the stratosphere.					
25. APPROACH: Where available, actual emission factors will be compiled from data taken by various government and industry sources. If data at altitude is not available, sea level information will be corrected to the proper conditions using appropriate relationships. Fuel sulfur content will be monitored and coupled with the time spent in the stratosphere, calculations of the amount of sulfur oxides will be maintained.					
26A. MILESTONES SCHEDULED FOR ACCOMPLISHMENT:					
1979 Fleet Emission Factors Defined -----4/78					
Global Emissions Loading Updated -----7/78					
26B. ACCOMPLISHMENT: FY-77					
Initial assessment of world fleet emissions burden in stratosphere updated and issued.					
27. Source of Requirement Directed Action S-1			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

IV 204-551

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

21 SUPPORT

RESEARCH AND TECHNOLOGY RESUME		1	2 GOVT ACCESSION	3 AGENCY ACCESSION	REPORT IDENT. SYMB.
		NA	NA	NA	R-1730-1
4 DATE OF RESUME	5 KIND OF RESUME	6 SECURITY	7 REGRADING	8 RELEASE LIMITATION	9 LEVEL OF RESUME
7/1/77	D	RPT U WKS	NA	NL	Subprogram
10A CURRENT NUMBER/CODE		10B PRIOR NUMBER/CODE			
I-213-660		213-620			
11 TITLE					
SPECTRUM APPLICATIONS ENGINEERING					
12 SCIENTIFIC OR TECH AREA		13 START DATE		14 CRIT COMPL DATE	
Air Facilities 001500 Com- puters 004200 Wave Propagation 01700 Test Equipment 008700					
16 PROCURE METHOD		17 CONTRACT/GRANT		18 FUNDING AGENCY	
NA		NA			
19 GOVT LAB/INSTALLATION ACTIVITY		20 PERFORMING ORGANIZATION			
NAME: FAA/SKDS		NAME:			
ADDRESS: 2100 Second St., S.W. Washington, D.C. 20591		ADDRESS:			
RESP INDIV: Raymond Johnson, ARD-61		INVESTIGATORS			
TEL: 202 426-3628		PRINCIPAL:			
		ASSOCIATE:			
		TEL:		TYPE:	
21 TECHNOLOGY UTILIZATION			22 COORDINATION		
NA			NA		
23 KEYWORDS					
RF Propagation Spectrum OTP, IRAC, ICAO, ITU, CCIR					
24 Technical Objective: To continue the development of technical expertise in the field of RF propagation; to develop test equipment and measurement procedures needed to more accurately certify facility operation and resolve interference situations in a more timely manner; to obtain/retain spectrum support for new/existing FAA systems in the OTP/IRAC and ICAO/ITU CCIR forums where we must compete with all other users for spectrum support.					
25 Approach: Propagation computer models will be developed/refined for solving a wide variety of day-to-day spectrum management problems. Propagation studies will be conducted as required in support of WARC '79 preparation. National and International spectrum management forums will be participated into the extent necessary to satisfy the spectrum needs of the agency.					
26. Milestones scheduled for Accomplishments:					
Report on ECAC Remote Terminal Capability				10/77	
Publication of Report on Propagation Model Refinements				11/77	
Revised Communications Frequency Handbook				11/77	
Revised Handbook on EMC Measurement Techniques				11/77	
Report on Ground Conductivity Wave Tilt Measurements				8/78	
Report on RML Interference Thresholds				9/78	
26A. FY-77 Accomplishments:					
SCAM Vehicle delivered per Specification FAA-ER-620-001					
Development of Phase I Remote Terminal Capability with ECAC					
Special Purpose RML Antenna Alignment Receiver Delivered					
27. Source of Requirement		Administrator (functional responsibility)		28.	
		30. Precedence			
		31. Relevant Project Code			

I-213-660

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1.	2. GOVT ACCESSION	3. AGENCY ACCESSION	REPORTS IDENT. SYMB.
		NA	NA	NA	RD 1750-1
4. DATE OF RESUME	5. KIND OF RESUME	6. SECURITY	7. REGRADING	8. RELEASE LIMITATION	9. LEVEL OF RESUME
7/1/77	D	RPT U WRK	NA	NL	Subprogram
10a. CURRENT NUMBER/CODE		10b. PRIOR NUMBER/CODE			
I-213-661		I-213-621			
11. TITLE					
RADAR/BEACON SPECTRUM PLANNING					
12. SCIENTIFIC OR TECH AREA		13. START DATE	14. CRIT COMPL. DATE	15. FUNDING AGENCY	
Radar Detection 013700 Air Facilities 001500 Computer 004200					
16. PROCURE METHOD	17. CONTRACT/GRANT				
NA	a. DATE:				
	b. NUMBER: NA				
	c. TYPE:		d. AMOUNT:		
18. GOVT LAB/INSTALLATION/ACTIVITY NAME		20. PERFORMING ORGANIZATION			
FAA/SRDS		NAME:			
ADDRESS: 2100 2nd St., S.W.		ADDRESS:			
Washington, D.C. 20591		INVESTIGATORS			
RESP INDIV: Joseph L. Pierzga, ARD-62		PRINCIPAL:			
TEL: (202) 426-3628		ASSOCIATE:			
TEL:		TYPE:			
21. TECHNOLOGY UTILIZATION			22. COORDINATION		
NA			NA		
23. KEYWORDS					
Electromagnetic Compatibility, Radar, ATCRBS, DABS, spectrum					
24. Technical Objective: To conduct studies and make recommendations for improving the overall electromagnetic compatibility of existing and new radar and radar beacon (ATCRBS and DABS) systems. To upgrade the existing capability for predicting ATCRBS performance in a given environment and validate the resultant models. To develop a DABS performance prediction model.					
25. Approach: An EMC analysis will be performed to support the introduction of the ASDE-3 radar into the 15.7 to 16.2 GHz band. Band studies will be conducted as required to insure continued spectrum support for the agency's ASR and ARSR operations (existing and planned). Specific problems at terminal and en route ATCRBS sites will be investigated and proposed solutions will be developed utilizing the latest performance pre-models. An EMC study will be performed to determine the impact of DABS on TACAN/DME.					
Milestones Scheduled for Accomplishment:					
ARSR (radar EMC analysis report, publication DABS/ATCRBS EMC				8/77	
DABS/ATCRBS EMC/performance prediction model report, completion					
26. ATCRBS Interrogator Facility File (document), completion				9/77	
ATCRBS Computer Models Validation report, completion				10/77	
ATCRBS Problem Site, PRF Assignment Analysis and Computer Program Report, Completion				9/77	
ATCRBS Analytical Models, Users Descriptive Catalog (report) completion				11/77	
26a. FY-77 Accomplishments: No final products					
27. Source of Requirement			Administrator (functional responsibility)		28.
			30. Precedence		
			31. Relevant Project Code		

I-213-661

Items 1 to 26 identical to
DD Form 149R and
NASA Form 1122.

RESEARCH AND TECHNOLOGY RESUME		1 NA	2 GOVT ACCESSION NA	3 AGENCY ACCESSION NA	4 REPORT IDENT. SYMB. 47 1750-1
5 KIND OF RESUME	6 SECURITY RPT U	7 REGRADING NA	8 RELEASE LIMITATION NL	9 LEVEL OF RESUME Subprogram	
10 PROJECT NUMBER CODE I-213-662		10A PRIOR NUMBER CODE			
COMMUNICATION/NAVIGATION SPECTRUM PLANNING					
11 PROJECT OR TECH AREA Air Facilities 001500 Computer 004200 Navigation & Guidance 010800 Communications 003900			13 START DATE	14 CRIT COMPL DATE	15 FUND NO AGENCY 1
16 RESOURCE METHOD NA	17 CONTRACT GRANT	A. DATE			
A. NUMBER		B. TYPE NA			
C. TYPE		D. AMOUNT			
19 GOVT LAB INSTALLATION ACTIVITY NAME FAA/SRDS			20 PERFORMING ORGANIZATION		
ADDRESS 2100 2nd St., S.W. Washington, D.C. 20591			NAME		
21 EMP INDIV Joseph L. Pierzga, ARD-62			ADDRESS		
TEL (202) 426-3628			INVESTIGATORS PRINCIPAL ASSOCIATE		
22 TECHNOLOGY UTILIZATION N/A			22 COORDINATION N/A		
23 KEY WORDS Communications, Navigation, MLS, BCAS					
24 Technical Objectives: To revise the Navigation Frequency Separation Handbook 6050.5A To develop a preliminary assignment model for MLS (azimuth and elevation). To continue development of an implementation plan for 25 KHz UHF air/ground frequency assignments. To conduct EMC studies for BCAS.					
25 Approach: NAV/COM efforts will be done with in-house manpower with support through the use of the ITS Quick Response Response Capability and the ECAC UHF Frequency Selection Model. BCAS efforts will be done with both in-house and external manpower.					
26. Milestones Scheduled for Accomplishment:					
"Real World" VHF Assignments		1/78			
Draft Nav. Handbook		3/78			
Draft MLS Criteria		6/78			
Report on UHF Implementation Plan		6/78			
Publication of Washington-Los Angeles BCAS Reports		10/78			
26A. FY-77 Accomplishments:					
- Technical Reports:					
1. The Selection of ILS Antenna Patterns for Use in the Frequency Assignment Process					
2. A Comparison of Measured Data and ITS Model Predictions					
- UHF Frequency Assignment Model Completed					
- Revised A/G Com. Handbook released for comment					
27. Source of Requirement Administrator (functional responsibility)			28.		
30. Precedence			31. Relevant Project Code		
I-213-662					

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. RD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME D	6. SECURITY RPT U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME
10a. CURRENT NUMBER/CODE I 215-307			10b. PRIOR NUMBER/CODE 215-607		
11. TITLE RELIABILITY SUPPORT ACTIVITIES					
12. SCIENTIFIC OR TECH AREA N/A			13. START DATE N/A	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY N/A
16. PROCURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE: d. DATE: e. AMOUNT:		NA		
19. GOV'T LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St., S.W. Washington, D.C. 20591 RESP. INDIV.: C.J. Andrasco, ARD-350 TEL: 202-426-3585			20. PERFORMING ORGANIZATION NAME: ADDRESS: INVESTIGATORS PRINCIPAL: ASSOCIATE: TEL: TYPE:		
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Reliability, Maintainability, Electromagnetic Protection, Electromagnetic Compatibility, Grounding, Lightning Protection					
24. <u>Technical Objective:</u> Development of basic reliability, maintainability, EMC, EMP, Lightning and Grounding standards for FAA NAS System. Establish guidelines and procedures for evaluation of reliability, maintainability, electromagnetic compatibility, electromagnetic protection, lightning protection and grounding. Necessary engineering support to R&D will be provided.					
25. <u>Approach:</u> By in-house and contract support, establish guidelines for design analysis and evaluation, generate handbooks and expand technology as applicable toward complete functional reliability, maintainability, EMC, EMP, lightning protection and grounding for FAA equipment and systems.					
26. <u>Milestones Scheduled for Accomplishment</u> Engineering Support to ARD and AAF - continuing Radio Noise Effects on Communications 12/77 State-of-ART LED Study 4/78 Updated Grounding Handbooks for EMP 9/78					
26a. <u>Accomplishment for FY-1977</u> Lightning and transient protection systems for RVR, ID ILS reports issued. High power microwave tube reliability report issued. Vacuum Tube Availability Assessment report issued. Microelectronics Technology Evaluation reports on charge coupled devices, silicon on sapphire and emitter follower logic issued. Failure rate models for semiconductor optoelectronic devices reports issued.					
27. Source of Requirement 9550 SM5-69-28 Letter AT&T to AFD-1 6/14/77			28. Blank		
29. Blank			30. Precedence Blank		
			31. Relevant Project Code		

10/1/77	D	U	NA	NA	NA	NA
I 216-101		N/A				
ATC SELECTION AND PERFORMANCE MEASUREMENT						
N/A		10/77	N/A	FAA		
FAA/SRDS 2100 Second Street, S.W. Washington, D.C. 20591 Ben Wenning (202) 426-9327			DOT/FAA/NAFEC Kenneth House, ANA-230 8-346-2764			

Air Traffic Control, Personnel Measurements, Performance Tests

24. Technical Objective: Develop and validate a measurement system that will objectively rate the radar control performance of a developmental ATCS.
25. Approach: SRDS in conjunction with NAFEC will develop, test and validate techniques, hardware and software necessary to achieve the technical objectives. End products will consist of reports, specifications and support for Academy implementation.
26. Milestones Scheduled for Accomplishment:
- . RCPMS Validation Tests 4/78
 - . Academy RCPMS Functional Specifications Completed 7/78
- 26A. Accomplishments for FY-77:
- None

Source of requirement	FAA-ED-21-3	28.	N/A
29.	30. Precedence	N/A	
N/A	31. Relevant Project Code	N/A	

RESEARCH AND TECHNOLOGY ACQUISITION	NA	NA	NA	10/1/77	D	U	NA	HL	NA
I 216-102	N/A								
FAA ACADEMY ATCS TRAINING			10/77		N/A		FAA		
N/A	NA		DOT/FAA/NAFEC						
FAA/SRDS 2100 Second Street, S.W. Washington, D.C. 20591 William Petruzel (202) 426-9327			Kenneth House, ANA-230 8-346-2764						
NA			NA						
Air Traffic Control, Simulation, Training, Academy, Tower									
24. <u>Technical Objective:</u> Support the agency's effort to acquire realistic ATC training simulators for the FAA Academy. Two types of simulators to be considered (1) Radar Training Facility (RTF) (2) control tower environment.									
25. <u>Approach:</u> SRDS in conjunction with the Office of Personnel and Training, Air Traffic Service, FAA Academy and NAFEC will conduct engineering studies, develop the functional specifications for procurement of the Academy simulators, and provide management/technical expertise during the acquisition and implementation of the systems.									
26. <u>Milestones Scheduled for Accomplishment:</u>									
. RTF Contract Award . RTF Design Plan Approved							11/77 3/78		
26A <u>Accomplishments for FY-77:</u>									
. RTF RFP Issued . Tower Simulator Technical Feasibility Report									
27. Source of Requirement			FAA-ED-21-3			28.		N/A	
29.			N/A			30. Precedence		N/A	
						31. Relevant Project Code		N/A	

10/1/77	D	U	NA	NA	NA	Subcontract
I 216-103		N/A				
ATC FACILITY ATCS TRAINING						
N/A			10/77	N/A		FAA
NA	NA					
FAA/SRDS 2100 Second Street, S.W. Washington, D.C. 20591 Ben Wenning (202) 426-9327			DOT/FAA/NAFEC Kenneth House, ANA-230 8-346-2764			
	NA			NA		

Air Traffic Control, Simulation, ATC Facility Training

24. Technical Objective: Support the upgrading of training simulation capabilities at ATC facilities. This includes: enhancement of En Route (DYSIM) and ARTS III (ETG) simulator programs; engineering analysis for identification and specification of long-term facility training.

25. Approach: SRDS in conjunction with NAFEC will investigate, develop, test and validate techniques, hardware and software necessary to achieve the technical objectives. End products will consist of reports, specifications and support for field implementation.

26. Milestones Scheduled for Accomplishment:

- . ARTS III and En Route Software Specification 3/78
- . Recommendations for Upgrading ETG/DYSIM Report 4/78

26A Accomplishments for FY-77:

- . Technical Data Package and Specifications for Pilot Console

Source of Requirement	FAA-ED-21-3	28.	N/A
29.	N/A	30. Precedence	N/A
		31. Relevant Project Code	N/A

10/1/77	D	U	NA	NA	NA	10/1/77
I 216-105		N/A				

PRODUCTIVITY IN ATC AUTOMATION

N/A	10/77	N/A	FAA
FAA/SRDS	DOT/TSC		
2100 Second Street, S.W. Washington, D.C. 20591	Kendall Square Cambridge Mass. 02142		
William Petruzel (202) 426-9327	Al Robertson, TSC-431 8-837-2014		

Air Traffic Control, Productivity, Personnel & System Performance and Measurements

24. Technical Objective: Develop and validate ATC controller productivity benefits as they apply to selected ATC En Route and ARTS III automation enhancement packages. At least six of the enhancement packages that intend to increase productivity will be evaluated with a technique that includes effects of capacity and sustained service.
25. Approach: TSC shall develop a fast-time simulation to serve as a predictive tool in assessing productivity gains due to NAS En Route and ARTS III enhancement packages. Correlate the measures of productivity used in simulation studies to observations of ATC controller work pace in actual operations in the field.
26. Milestones Scheduled for Accomplishment:
- . ATF Model Assessment (En Route) 12/77
 - . Miami ARTCC Field Experiments 2/79
- 26A Accomplishments for FY-77:
- . Development of Automated Processing Method for Field Data Reduction

Source of Requirement	OST Review of UG3RD	28.	N/A
29.	30. Precedence	N/A	
N/A	31. Relevant Project Code	N/A	

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	REPORTS IDENT. SYMB. PD 1750-1
4. DATE OF RESUME 10/1/77	5. KIND OF RESUME A	6. SECURITY U	7. REGRADING NA	8. RELEASE LIMITATION NL	9. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE I 218-150			10b. PRIOR NUMBER/CODE 013-150		
11. TITLE: FAA/NASA SIMULATIONS					
12. SCIENTIFIC OR TECH. AREA N/A		13. START DATE 10/77	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA	
16. PASCAL METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA b. TYPE: c. DATE: d. AMOUNT:				
18. GOVT LAB/INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St., S.W. Washington, D.C. 20591		19. PERFORMING ORGANIZATION NAME: NASA Ames Res. Center ADDRESS: Moffett Field, Calif. FAA/NAFEC			
RESP. INDIV.: Joseph P. O'Brien, ARD-150 TEL: (202) 426-9327		INVESTIGATORS PRINCIPAL: Dr. Heinz Erzberger ASSOCIATE: F. Hierbaum TEL: 8-448-5450 TYPE: 8-346-2630			
21. TECHNOLOGY UTILIZATION NA			22. COORDINATION NA		
23. KEYWORDS Operational Scenarios, Ames, STOL, NASA, Fuel Optimization, VTOL					
24. <u>Technical Objective:</u> Provide operational scenarios to exercise high performance flight simulators at Ames Research Center, to evaluate advanced 4D electronics systems, and for live flight tests of a modified augmented wing Buffalo STOL aircraft. Assist NASA with operational inputs, test development and evaluation with fuel optimization programs. Provide operational support to NASA in Short Haul programs particularly helicopter operations.					
25. <u>Approach:</u> Provide scenarios traffic models and test design for STOL simulation at Ames. Provide scenarios for live tests of augmented wing Buffalo STOL. Provide operational support to Ames for flight simulator and flight experiments at Ames Research Center. In support of NASA short haul helicopter operations provide operational support in near-term northeast corridor CH 53 helicopter activities; current oil rig operations; future designs for IFR oil rig operations; VTOL operations city center, to city center; major airport to city center; and all areas in a large metropolitan area.					
26. <u>Milestones Scheduled for Accomplishment:</u>					
. Start Simulations at NAFEC				7/77	
. Report Completed on Fuel Optimization Approaches				2/78	
. Design for Follow-on 4D Navigation Completed				4/78	
. Develop Offshore Concepts				3/78	
. Develop City Center Concepts				6/78	
. Develop Major Airport Arrival and Departure Concepts				9/78	
26A. <u>Accomplishments for FY-77:</u>					
. Scenarios for Fuel Optimized Studies					
. Phase I Simulation for NASA Ames Completed					
. Design for Follow-up 4D Simulation Defined					
27. Source of Requirement 9550 AVP 200-1/FAA NASA Agreements			28. N/A		
29. N/A					
30. Precedence					
31. Relevant Project Code N/A					

10/1/77	A	U	NA	IL	Subcontract
I 218-151			013-151		
ATC CONCEPTS AFFECTING CAPACITY					
NA			10/77	NA	NA
FAA/SRDS					
2100 Second Street, S.W. Washington, D.C. 20591					
Herbert A. Wachsman (202) 426-9327					

- Air Traffic Control, En Route Separation Standards, Terminal Separation Standards.
24. Technical Objective: Perform analyses and studies to produce concept documents for maximum utilization of airspace in conjunction with present and future fuel conservation techniques.
25. Approach: In-house*resources will be utilized to simulate terminal and en route air-space interactions associated with fuel conservation techniques. Profile descent concepts proposed essentially force holding and derandomizing techniques into the en route area. Concepts offering increased capacity in area, sector, or terminal airspace will be evaluated, and will include modifications to present en route and terminal air traffic control procedures, definitions of airspace, and flight procedures associated with terminal arrival and approach routes.
- Particular emphasis should be given to determining the maximized terminal configuration. Although 4-post concepts are being employed data is needed to specify number of posts for maximized operation, distance and angle from runway and such other factors as non-interfering paths. *SRDS/NAFEC.
26. Milestones Scheduled for Accomplishment:
- . En Route Holding Impact Analysis 5/78
 - . En Route Metering Concepts Analysis 7/78
 - . Terminal Capacity Concepts 10/78
 - . Simulation of High Gain Concepts 2/79
 - . Technical Report Issued 5/79

29. Source of Requirement	SRDS Functional Statements	25. N/A
N/A	30. Precedence	N/A
	31. Relevant Project Code	
	N/A	

RESEARCH AND TECHNOLOGY RESUME		1. NA	2. GOVT ACCESSION NA	3. AGENCY ACCESSION NA	4. REPORTS IDENT. SYMS. PD 1750-1
5. DATE OF RESUME 10/1/77	6. KIND OF RESUME A	7. SECURITY U	8. REGRADING NA	9. RELEASE LIMITATION NL	10. LEVEL OF RESUME Subprogram
10a. CURRENT NUMBER/CODE 218-152			10b. PRIOR NUMBER/CODE 013-152		
11. TITLE: IN-SERVICE ATC SIMULATIONS					
12. SCIENTIFIC OR TECH. AREA NA			13. START DATE 10/77	14. CRIT. COMPL. DATE N/A	15. FUNDING AGENCY FAA
16. PROCEDURE METHOD NA	17. CONTRACT/GRANT a. NUMBER: NA c. TYPE:		d. DATE: e. AMOUNT:		
18. GOV'T LAB INSTALLATION/ACTIVITY NAME: FAA/SRDS ADDRESS: 2100 Second St., S.W. Washington, D.C. 20591 RESP. INDIV.: Joseph P. O'Brien, ARD-150 TEL: (202) 426-9327			19. PERFORMING ORGANIZATION NAME: FAA/NAFEC ADDRESS: INVESTIGATORS PRINCIPAL: Felix Hierbaum ASSOCIATE: 8-346-2630 TEL: TYPE:		
20. TECHNOLOGY UTILIZATION NA			21. COORDINATION NA		
22. KEYWORDS Simulation, ATC In-Service, ATC Studies					
24. <u>Technical Objective:</u> To provide proficient development and management for Air Traffic Control simulations requested by operating services, technical services, and/or municipalities or governments. This program is based on prior years experience and to provide a vehicle to quickly initiate work on what is always a time critical request. It is established for the purpose of planning the utilization of SRDS in-house and NAFEC personnel and resources and assumes three 6 week simulations each year.					
25. <u>Approach:</u> In-house SRDS and NAFEC resources, with contract support when required, will be used to examine ATC simulation requirements received, to provide responsive studies, to plan and perform/or direct necessary simulations and provide analysis and reports based on findings.					
26. <u>Milestones Scheduled for Accomplishment:</u> <ul style="list-style-type: none"> . Review Tentative Work from New England and Western Regions . Schedule Simulations as Requests are Received Continuous 					
26a. <u>Accomplishments for FY-77:</u> <ul style="list-style-type: none"> . Las Vegas Study Completed 					
27. Source of Requirement AWE-500 ltr 4/13/76			28.		
29.			30. Precedence		
			31. Relevant Project Code N/A		

Items 1 to 25 identical to

DD Form 149A and

NASA Form 1122.

10/1/77	A	U	NA	NA	NA	NA
I	219-151				012-151	
TERMINAL INTERFACE (WVAS, TIPS, ASTC, WIND SHEAR)						
NA		10/77	NA	NA		
FAA/SRDS	2100 Second Street, S.W. Washington, D.C. 20591					
Herbert A. Wachsman	(202) 426-9327					
Terminal ATC, Terminal Mockups, Terminal Displays, Terminal Equipments Handbooks						
24. <u>Technical Objective:</u> Produce operational interface descriptions and modified facility operating procedures documentation for the utilization and operation of new equipments including the implementation of advanced systems planned for application in the terminal ATC environment (e.g. WVAS, Wind Shear, TIPS, etc.).						
25. <u>Approach:</u> In-house SRDS, TSC, and NAFEC resources, with contract support as required, shall be used to perform analyses of present-day terminal ATC functions and operations, state-of-the-art equipments applicable to terminal ATC operations, advanced techniques to enhance those operations, and the ATC terminal system requirements associated with the operational implementation of advanced systems. The products resulting from these efforts shall include functional specifications, operational system descriptions, and physical design specifications for terminal ATC equipments and systems, as well as equipment handbooks.						
26. <u>Milestones Scheduled for Accomplishment:</u>						
	Tower Cab Small Equipment Evaluation Report (9550-1, AAF-440-077-003)					11/77
	Tower Cab Equipments Handbook					11/78
	Advanced Tower Cab Equipments Specifications					2/79
	Advanced Tower Cab Display Concepts Report					4/79
	TRACON Equipments Handbook					10/79
26A <u>Accomplishments for FY-77:</u> SWIMS Display Functional Specification						
Source of Requirement FAA-ED-01-1A			25. N/A			
29. N/A			30. Precedence N/A			
			31. Relevant Project Code			
			N/A			

RELATIONSHIP TO TECHNICAL REQUIREMENT	NA	NA	NA	10/1/77			
DATE	10/1/77	A	U	NA	NA	NA	NA
CONTRACT NUMBER	I 219-153		012-153				
IPC/ATC SYSTEM INTERFACE							
NA	10/77		NA	NA			NA
FAA/SRDS	2100 Second Street, S.W.		Washington, D.C. 20591				
Herbert A. Wachsman	(202) 426-9327						
NA	NA		NA				

Terminal ATC, Enroute ATC, Controller, Pilot, DABS/IPC, GAT II, DSF, TATF, SSF, Simulation

- 24. Technical Objective: Develop ATC procedures for utilization of IPC to increase safety in the terminal and en route ATC environments.
- 25. Approach: NAFEC in-house resources will be utilized to design, test, and produce data in a simulated terminal and en route ATC environment to determine pilot, controller, and system interactions for the development of procedures for control of IFR aircraft in a mixed IFR/VFR IPC system. Determine the techniques and procedures and possible changes to separation standards and airspace definitions are envisioned as end products. The operational IPC/ATC system interface will also be defined.
- 26. Milestones Scheduled for Accomplishment:
 - Operational System Description 2/78
 - Test Design 9/78
 - System Simulation 1/80
 - IPC/ATC Procedures 7/80
 - IPC/ATC Interface Definition 6/81

26A Accomplishments for FY-77:
None

Source of Requirement	FAA-ED-01-1A	28.	N/A
29.	N/A	30. Precedence	N/A
		31. Relevant Project Code	N/A