# TM 11-2421

## WAR DEPARTMENT TECHNICAL MANUAL

# BAROMETERS

## ML-330/FM
## ML-331/TM
## ML-332/TM
## ML-333/TM



This copy is a reprint which includes current pages from Changes 4.

WAR DEPARTMENT 27 NOVEMBER 1945

CHANGE
No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *14 April 1969*

# BAROMETERS ML-331/TM, ML-332/TM, ML-333/TM, AND MERCURIAL BAROMETERS ML-330/FM AND ML-330A/FM

TM 11-2421, 27 November 1945, is changed as follows:

*Note.* The parenthetical reference to a previous change (*for example:* "as changed by C 3, 14 June 1957") indicates that pertinent material was published in that change.

Change the title of the manual to read as shown above.
*Page 1*, paragraph 1*a*. add the following note:

*Note.* Mercurial Barometer ML-330A/FM, Order No. 905-Phila-57, serial numbers 1011 through 1047, is similar to Barometer ML-330/FM. Information pertaining to ML-330/FM applies to ML-330A/FM unless otherwise specified. Official nomenclature followed by (*) indicates all models of barometers covered in this manual.

Delete "Barometer ML-2-( )" and substitute "Barometer ML-512-(*)" in the following places:
*Page 35*, paragraph 22*b* (2), note, line 6.
*Page 37*, paragraph 23*a*, line 6.
*Page 44*, paragraph 26*b*, line 7.
*Page 53*, paragraph 29*b*, line 4.
*Page 62*, paragraph 33*b* (4), line 3: NOTE, line 5.
*Page 63*, paragraph 33*b* (10), NOTE, line 4.
*Page 87*, paragraph 53*d* (4), line 1.
Delete "ML-330/FM" and substitute "ML-330(*)/FM" in the following places:
*Page 4*, paragraph 4, heading.
*Page 7*, paragraph 4*c* (1), line 1 and *d* (1), line 1.
*Page 8*, figure 4, caption.
*Page 9*, paragraph 4*e* (1), line 1.
*Page 11*, paragraph 5, heading and line 1.
Paragraph 6, heading and line 1.
*Page 14*, paragraph 7, heading and line 1.
Paragraph 9, heading and line 1.
*Page 23*, paragraph 13, heading and line 1.
*Page 25*, paragraph 15, heading.
*Page 28*, paragraph 15*g* line 2.
Paragraph 16, heading.

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***This change supersedes change 3, 14 June 1957.**

*Page 37*, paragraph 23*a*, lines 5 and 7.
*Page 40*, figure 21, caption.
*Page 43*, paragraph 26*a*, line 1.
*Page 44*, paragraph 26*b*, line 4, (1), line 1, (2), line 8, and (3), line 1.
*Page 45*, paragraph 26*b* (4), line 4, (5), line 8, and *c* (1), line 14.
*Page 53*, paragraph 29*a*, line 2 and *b*, line 2.
*Page 55*, paragraph 30*b*, line 6, *c* (1), line 2, (2), line 1, (6), line 2, and (7), line 1.
*Page 56*, paragraph 30*d* (1), line 2 and *g* (1), line 2.
*Page 58*, paragraph 30*h* (1), line 3 and (2), line 3.
*Page 59*, paragraph 31*b* (2), line 3.
*Page 66*, paragraph 35, heading and paragraph 36*a*, line 2.
*Page 68*, paragraph 36*c*, line 2.
*Page 69*, paragraph 40, line 2.
*Page 83*, paragraph 52, heading and *a*, lines 2 and 10.
*Page 84*, paragraph 52*b*, lines 2 and 4; *c* (1), line 3; CAUTION, line 7.

*Page 1*, paragraph 1*b*, line 3. Delete "Army Air Forces".

Add the following after subparagraph *d*.

## 1.1. Indexes of Equipment Publications

*a. DA Pam 310-4.* Refer to the latest issue of DA Pam 310-4 to determine whether there are new additions, changes, or additional publications pertaining to this equipment.

*b. DA Pam 310-7.* Refer to DA Pam 310-7 to determine whether there are modification work orders pertaining to the equipment.

## 1.2. Forms and Records

*a. Reports of Maintenance and Unsatisfactory Equipment.* Use equipment forms and records in accordance with instructions in TM 38-750.

*b. Report of Packaging and Handling Deficiencies.* Fill out DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army), NAVSUP Publication 378 (Navy), AFR 71-4 (Air Force), and MCO P4610-5 (Marine Corp).

*c. Discrepancy in Shipment Report (DISREP) (SF361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF361) as prescribed in AR 55-38 (Army), NAVSUP Pub 459 (Navy), AFR 75-34 (Air Force), and MCO P4610.19 (Marine Corps).

*d. Report of Equipment Publication Improvements.* The reporting of errors, omissions, and recommendations for improving this manual, by the individual user, is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-ME-NMP-AD, Fort Monmouth, N.J. 07703.

Paragraph 2, line 3, delete "United States Army Air Force".

*Page 2.* Delete figure 2 and substitute:

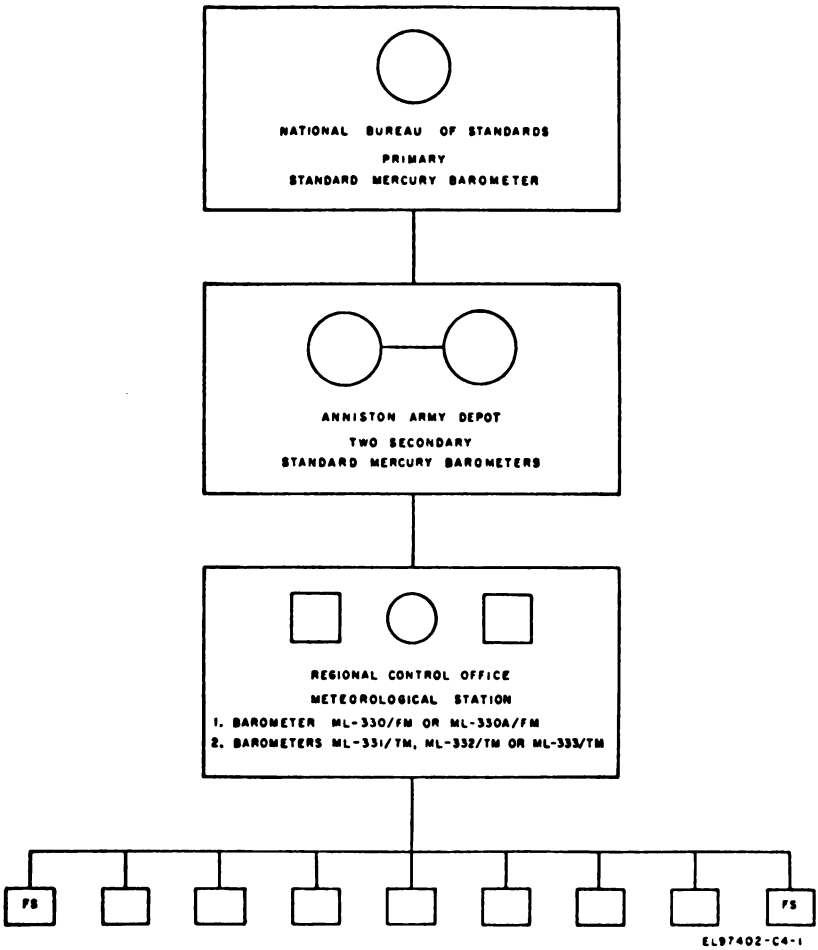


***Figure 2. Diagram showing meteorological system application for barometer checks.***

*Page 3*, paragraph 2. Delete subparagraph *a* and substitute:

*a.* Permanently installed at Anniston Army Depot, Anniston, Alabama are two Army secondary-standard barometers which have been calibrated and certified by the National Bureau of Standards. A mercurial barometer and two aneroid barometers have been calibrated against these secondary standards for use in the regional control offices of the meteorological services.

*Page 4*, paragraph 4. Delete subparagraph *a* and substitute:

*a. General.* Barometer ML-330(*)/FM is a mercurial barometer which has been calibrated to laboratory precision against the U.S.

Army secondary-standard barometers at Anniston Army Depot, Anniston, Alabama. The instrument is larger in size and has greater accuracy than Barometer ML–512(*) used in fixed meteorological stations. The construction of Barometer ML–330(*)/FM and Barometer ML–512(*), however, is almost identical.

*Page 21*, paragraph 10. Delete subparagraph *d* and substitute:

*d. Scale Calibration Chart* (fig. 9). A scale calibration correction chart, mounted in the lid of the wooden barometer case, represents the deviation of the instrument from the secondary-standard calibration equipment located at Anniston Army Depot at the time the instrument leaves the depot. This correction is determined for each individual instrument over the entire range and must be applied to each reading of the aneroid barometer.

*Page 22*, paragraph 10. Delete subparagraph *e* and substitute:

*e. Carrying Case* (fig. 8). Barometers ML–331/TM, ML–332/TM, and ML–333/TM are transported in lightweight carrying cases made of water-repellent canvas padded with shock insulation material and lined with a rubberized fabric. A flap, fastened with six snap fasteners, insures a rainproof seal. When the barometer leaves Anniston Army Depot, the aluminum temperature correction and pressure correction chart and copies of the required forms are placed in the pocket of the case lid. A webbing handle is provided for carrying the case.

*Page 27*, paragraph 15. Delete subparagraph *f* and substitute:

*f. Mercurial Barometer Correction Form.* The mercurial barometer correction form accompanies Barometer ML–330(*)/FM when it leaves Anniston Army Depot. This form gives the instrumental correction, since this may be a variable quantity throughout the scale. The total gravity correction should be applied to each reading of the barometer. Install the mercurial barometer correction form beside the barometer. This correction form is applicable as long as the barometer is used at the original location. If the instrument is moved to another location, it will be necessary to compute gravity corrections in accordance with the instructions given in paragraphs 26*c*(2) and 56.

*Page 28*, paragraph 15. Delete subparagraph *g* and substitute:

*g. Thermometer Correction.* A correction for the attached thermometer on each mercurial barometer is determined before the barometer leaves Anniston Army Depot. If the correction is large enough to introduce an error in the barometer reading, then the correction is typed on a sheet titled "Results of Thermometer Test" and placed in the carrying case of one of the precision aneroid barometers, in the set. If this sheet is furnished, it should be removed and installed near the mercurial barometer, and the corrections applied to thermometer readings as described in paragraph 21. If the correction sheet is lost, request a duplicate from Anniston Army Depot, Anniston, Alabama,

by giving the serial number of the mercurial barometer and thermometer. The serial number for the thermometer is etched on the back plate; therefore, the thermometer must be removed from the casing.

*Page 29.* Delete paragraph 17 and substitute:

## 17. Transporting Barometers

*a.* The accuracy of the mercurial and precision aneroid barometers will be affected by improper handling in shipment. Barometers should be transported by hand as long as they are in actual service.

*b.* When it becomes necessary to return a barometer for repair or calibration to Anniston Army Depot, notify NICP, Philadelphia, Pennsylvania, who is responsible for requisitions and funding requirements as prescribed in SB 11-492 before returning the equipment to Anniston, Alabama.

*c.* Special handling instructions are required for shipment of mercurial and precision aneroid barometers (para 32).

*Note.* Air shipment of aneroid barometers requires low-level flights and special precautions as described in paragraph 32; otherwise, permanent damage will result.

*Page 45,* paragraph 26. Delete subparagraph *c* (as changed by C 3, 14 Jun 57) and substitute:

*c. Gravity Corrections.*

(1) When a barometer is placed at sea level, at approximately 45° latitude, the gravity has, by definition, a standard value and gravity and corrections are not applied to the barometer readings. At all other locations, corrections for variations in the local value of the gravity from the standard must be applied. The correction for gravity consists of a correction for latitude and altitude. These corrections can be determined, assuming theoretical gravity prevails, from table I (altitude) and table II (latitude) in this manual. There is generally a small difference (seldom alters the correction by more than a few thousandths of an inch) (para 44) between the true value of the local measured gravity and the calculated value. The gravity correction for the regional control station to which Barometer ML-330 (*)/FM is shipped has been determined by Anniston Army Depot and is inscribed on the mercurial barometer correction form which accompanies each barometer. This correction must be applied to each reading of the barometer and is based on actual gravity measurements or on the values interpolated from actual measurements. The magnitude of the correction may differ from the value obtained from the tables; therefore, for some stations, it has been necessary to use theoretical values of gravity.

(2) If the location of the regional control station is changed enough to alter the gravity correction by as much as .001 inch, a new gravity correction must be determined for the new location. Theoretically, a change of approximately 300 feet in elevation at sea level, or a change of approximately 20 minutes in latitude at 30-inch pressure and 45° latitude, is required to cause a change of .001 inch in gravity corrections. Therefore, when the location of Barometer ML-330 (*)/FM is changed by less than 10 miles, or by less than 150 feet in elevation, from the location for which a gravity correction was furnished by Anniston Army Depot, retain the last gravity correction. When a change in location *and* elevation is involved, a new correction should be requested if the change in the elevation exceeds 75 feet and the change in location exceeds 5 miles. As an emergency measure, until a more precise value can be obrained, a new gravity correction, if required, can be computed in accordance with directions in paragraph 56. Application should be made through channels for a new gravity correction. The latitude, longitude, and the elevation of the new location should be given in the

application. Upon receipt of this request a new correction, including gravity anomaly, will be determined by Anniston Army Depot.

*Page 46,* paragraph 26 (as changed by C2, 14 Jun 57). Make the following changes:

Delete subparagaph *d*(2) (*a*) and substitute:

(*a*) The standard temperature for the inch scale of Barometer ML-330/FM is 62° F; the standard temperature for the inch scale of Barometer ML-330A/FM is 32° F.

Subparagraph *d*(2) (*d*). Add the following at the end of sentence:
On Barometer ML-330A/FM, the combined correction is zero at 32° F.

Subparagraph *d*(3). Add the following after the first sentence:
When stations observations are made on the inch or millibar scale of the ML-330A/FM, at temperatures other than 32° F. or 0° C., apply the appropriate corrections for temperature as indicated on the temperature correction sheet furnished with the barometer.

*Page 52,* paragraph 28. Make the following changes:

Subparagraph *d*(2). Delete the text following "indication" and substitute: Between the time the aneroid barometers are calibrated at Anniston Army Depot and the time they are received at the regional stations, a slight shift may occur due to transportation or aging of cells. This change should be small and within tolerance.

Subparagraph *f*, line 3. Delete "Evans Signal Laboratory" and substitute: Anniston Army Depot.

*Page 57,* paragraph 30*g*(3) and (4). Delete "Evans Signal Laboratory" and substitute: Anniston Army Depot.

*Page 60,* paragraph 32*b*, line 9. Delete "Evans Signal Laboratory" and substitute: Anniston Army Depot.

*Page 65,* paragraph 33*f*, NOTE. Delete and substitute:

*Note:* The mean values of Aneroid Barometer ML-331/TM, ML-332/TM, or ML-333/TM should always agree within .3 millibar. If either barometer exceeds the value when compared with Mercurial Barometer ML-330(*)/FM, replace the barometer. Replacement of barometers may be requisitioned through NICP, Phila, Pa., to Anniston Army Depot, Anniston, Alabama. The defective barometer should be returned for calibration or repair when a replacement is received from the depot. The procedure to be followed when new barometers are requisitioned or returned for repair and calibration is given in paragraph 58.

*Page 66,* paragraph 34. Add the following after the last sentence:
A maintenance calibration check will be made by using organization at least once every 6 months, and returned to Anniston Army Depot for depot maintenance and recalibration every 5 years.

*Page 68,* paragraph 36*b*. Delete the last sentence and substitute. If this size is reached, it is advisable to requisition another barometer as prescribed in paragraph 58 before returning the defective barometer to Anniston Army Depot.

*Page 69,* paragraph 37*b*, WARNING, line 4. Delete "Evans Signal Laboratory, Belmar, New Jersey" and substitute: Anniston Army Depot.

*Page 70,* PART FIVE, Delete NOTE and substitute:

*Note.* Secondary standard barometers are required to be calibrated to extreme accuracy, using special calibration and pressure measuring equipments. These barometers cannot be adjusted or repaired by maintenance personnel. All unserviceable equipment must be returned to Anniston Army Depot, as described in SB 11-492, with a work order and the log forms for each individual instrument.

*Page 77,* paragraph 46*c*(5). Delete and substitute:

(5) Occasionally a barometer will show a persistent drift. To detect this condition, note the difference for the ambient pressure of the meteorological station between the last scale calibration curve and the one supplied with the instrument. If periodic checks indicate that this difference exceeds 3 millibars, requisition a new barometer in accordance with instructions furnished by the using agencies and SB 11-492. Return the instrument to Anniston Army Depot for repair.

Paragraph 47*a*(2). Delete WARNING and substitute:

**Warning: This adjustment is never made at the meteorological stations, the instrument must be returned to Anniston Army Depot, Anniston, Alabama, for adjustment and calibration.**

*Page 80,* paragraph 50. Delete and substitute:

## 50. Unsatisfactory Equipment Report

Equipment being returned to Anniston Army Depot, Anniston, Alabama, for repairs or calibration will require an unsatisfactory report per instructions described in TM 38-750 and forwarded in accordance with instructions in SB11-492.

*Page 81.* Delete figure 24.

*Page 83,* paragraph 52*a*. Delete "Evans Signal Laboratory: and substitute: Anniston Army Depot, Anniston, Alabama. Lines 6 and 7. Delete "Evans Signal Laboratory, Belmar, New Jersey" and substitute: Anniston Army Depot, Anniston, Alabama.

*Page 84,* paragraph 52*b*, line 6. Delete "Evans Signal Laboratory" and substitute: Anniston Army Depot, Anniston, Alabama.

*Page 85,* paragraph 53*a*, line 7. Delete "Evans Signal Laboratory" and substitute: Anniston Army Depot, Anniston, Alabama.

*Page 101,* paragraph 58. Delete and substitute:

## 58. Requisitioning of Equipment

The process by which new instruments are requested, and unserviceable instruments are returned to Anniston Army Depot for calibration and repair, is covered in SB11-492. Interagency request for additonal equipments or repair of existing equipments and procedures for transporting standard barometers will be coordinated with the National Inventory Control Point in Philadelphia, Pa. The accuracy required of these barometers requires special handling and should be transported by hand as long as they are in actual service.

*Page 102,* paragraph 60, line 2. Delete "Evans Signal Laboratory, Belmar, New Jersey" and substitute: "Anniston Army Depot".

By Order of the Secretary of the Army:

W. C. WESTMORELAND,
*General, United States Army,*
*Chief of Staff.*

Official:
KENNETH G. WICKHAM,
*Major General, United States Army,*
*The Adjutant General.*

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| USMA (5) | 6-526 | 11-157 |
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| USASCS (5) | 6-575 | 11-500(AA-AC) |
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*ARNG:* State AG (3); units — same as Active Army except allowance is one (1) copy each.

USAR: None

For explanation of abbreviations used, see AR 320-50.

WAR DEPARTMENT TECHNICAL MANUAL

TM 11-2421

# BAROMETERS

## ML-330/FM

## ML-331/TM

## ML-332/TM

## ML-333/TM

WAR DEPARTMENT 27 NOVEMBER 1945

WAR DEPARTMENT
WASHINGTON 25, D. C., 27 November 1945

TM 11-2421, War Department Technical Manual, Barometers ML-330/FM, ML-331/TM, ML-332/TM, and ML-333/TM, is published for the information and guidance of all concerned.

[AG 300.5 ( 45)]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL
*Chief of Staff*

OFFICIAL:

EDWARD F. WITSELL
*Major General*
*Acting The Adjutant General*

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Refer to FM 21-6 for explanation of distribution formula.

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# DESTRUCTION NOTICE

**WHY —** To prevent the enemy from using or salvaging this equipment for his benefit.

**WHEN —** When ordered by your commander.

**HOW —** 1. Smash — Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.

2. Cut — Use axes, handaxes, machetes.

3. Burn — Use gasoline, kerosene, oil, flame throwers, incendiary grenades.

4. Explosives — Use firearms, grenades, TNT.

5. Disposal — Bury in slit trenches, fox holes, other holes. Throw in streams. Scatter.

**USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.**

**WHAT —** 1. Smash — Glass tube, metal casing, cistern, and mounting case of mercury barometer; glass window, dial, and mechanism of precision aneroid barometers.

2. Cut — Connection cord to mounting case; canvas carrying cases.

3. Burn — Wooden cases; canvas carrying cases; technical manuals; all charts, forms, and records.

4. Bend — Brass tube of mercury barometer.

5. Bury or scatter — Any or all of the above pieces after destroying their usefulness.

# DESTROY EVERYTHING

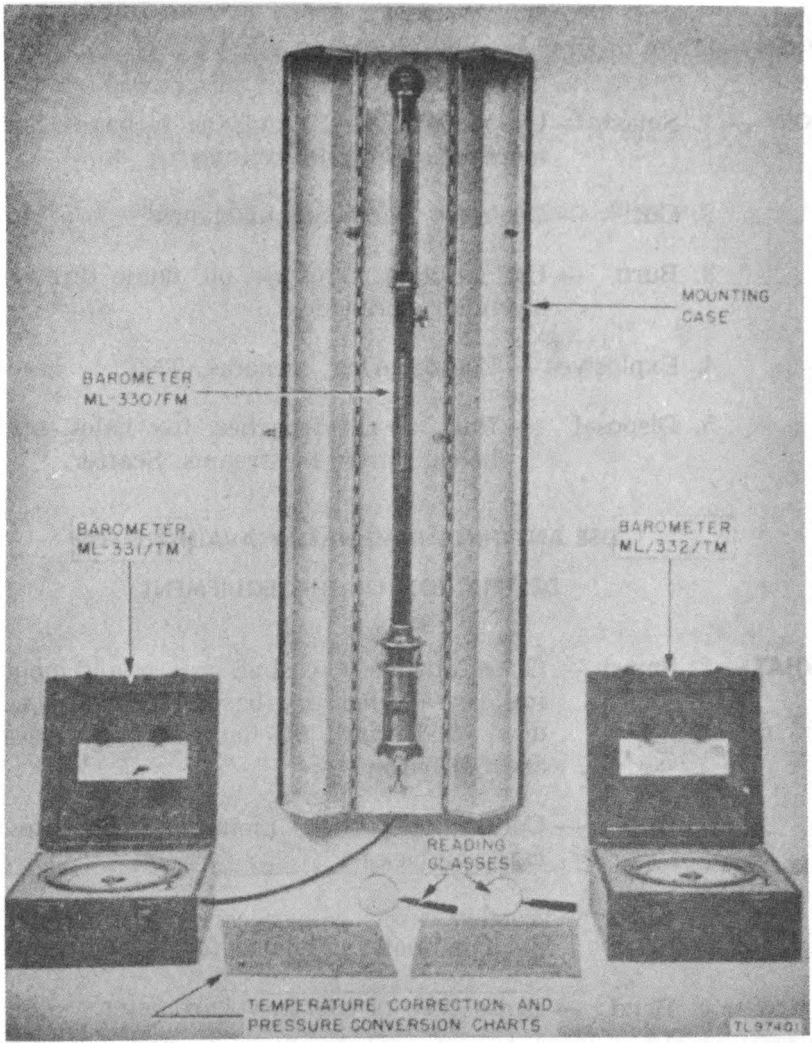


***Figure 1. Set of secondary-standard barometers in use at Army Air Force weather region control office.***

PART ONE

# INTRODUCTION

## SECTION I. DESCRIPTION

---

### 1. GENERAL.

**a.** The instruments covered by this technical manual include one mercury barometer, Barometer ML-330/FM, and three precision aneroid barometers, Barometers ML-331/TM, ML-332/TM, and ML-333/TM.

**b.** The mercurial barometer and the two precision aneroid barometers are used together as a set of reference standard barometers for weather region control offices of the Army Air Forces. All barometric instruments in the region are to be compared with aneroid reference standards for the purpose of bringing field station instruments into agreement with the standard.

**c.** Throughout this manual, references to *the set* apply to one Barometer ML-330/FM and two precision aneroid barometers, one of the pair being Barometer ML-331/TM, and the other being another Barometer ML-331/TM, ML-332/TM, or ML-333/TM, the combination used depending upon the maximum weather-station elevation above sea level within the region. References to *the aneroid* apply to any one or all models (Barometers ML-331/TM, ML-332/TM, or ML-333/TM).

**d.** In the nomenclature for the barometers, FM following the number (ML-330/FM) refers to *fixed meteorological* equipment; TM (ML-331/TM) refers to *transportable meteorological* equipment.

### 2. APPLICATION.

The use of one mercury barometer and two aneroid barometers as a set initiates a new system of checking barometers in United States Army Air Force weather stations throughout the world. Figure 2 shows diagrammatically how the system operates.

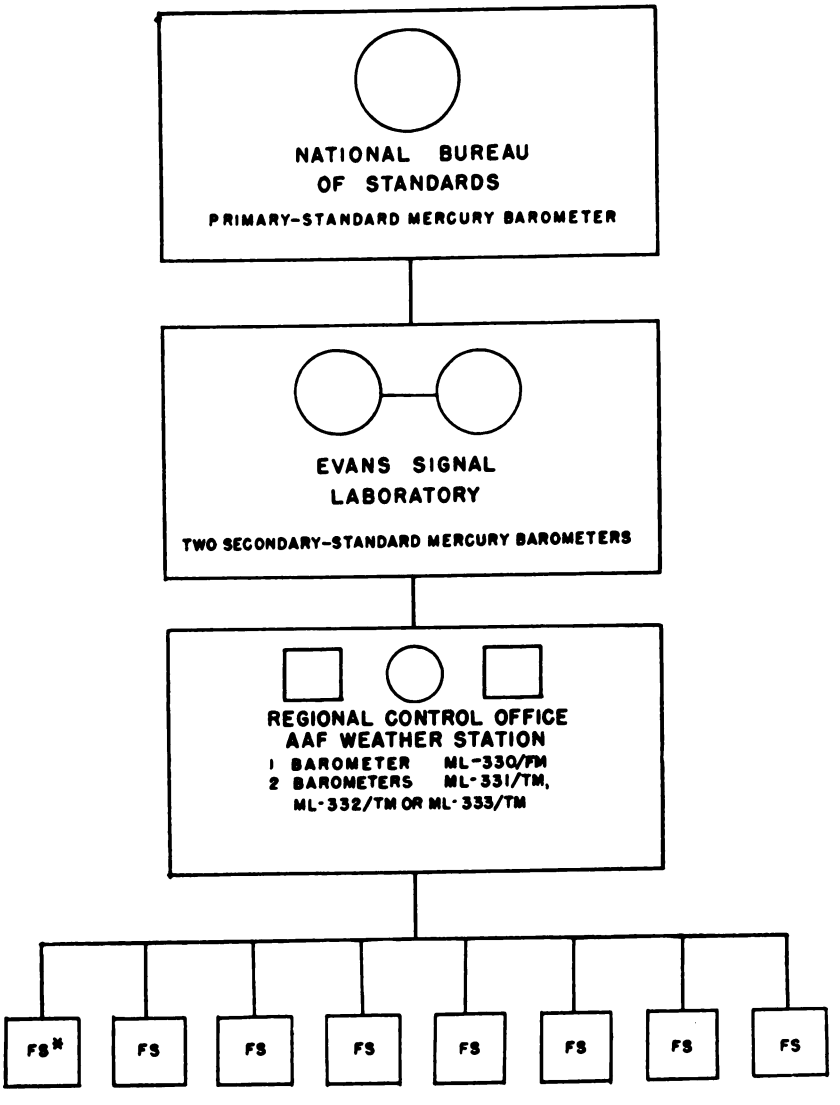


*Figure 2. Diagram showing Army Air Force weather system for checking barometers.*

a. Permanently installed at Evans Signal Laboratory, Belmar, New Jersey, are two United States Army secondary-standard barometers which have been calibrated and certified by the National Bureau of Standards, Washington, D. C. Against these secondary standards, a mercury barometer and two aneroid barometers (the set covered by this technical manual) have been calibrated for use in each of the regional control offices of the United States Army Air Forces weather service.

b. The mercury barometer (Barometer ML-330/FM) remains in the regional control office as the standard for the region.

c. The two precision aneroid barometers (Barometers ML-331/TM, ML-332/TM, or ML-333/TM) are used in the field for checking station barometers, both mercury and aneroid. (The aneroids are always used as a pair, never separately, if the pressure to be measured is within the range of both instruments.) The aneroids are checked against each other constantly and against the mercury standard in the regional office at specified intervals.

## 3. TABLE OF MAJOR COMPONENTS.

### a. Barometer ML-330/FM.

| Quan | Component | Dimensions (in.) | | | Volume (cu ft) | Weight (lb) |
|---|---|---|---|---|---|---|
| | | Length | Width | Depth | | |
| 1 | Mercurial barometer | | | | | |
| 1 | Mounting case | 48½ | 5½ | 7½ | 1.2 | 26 |
| 4 | Fluorescent lights (2 in use; 2 spares) | | | | | |
| 1 | Carrying case | 51 | 8 | 8 | 1.9 | 40* |
| 2 | Reading glasses, low power | 6¼ | 2½ | | | |

**Packed for hand transportation; includes barometer.*

**b. Barometers ML-331/TM, ML-332/TM, or ML-333/TM.**

| Quan | Component | Dimensions (in.) | | | Volume (cu ft) | Weight (lb) |
|---|---|---|---|---|---|---|
| | | Length | Width | Depth | | |
| 1 | Aneroid barometer | | | | | |
| 1 | Hardwood shock-mounting case | 11 | 11 | 5 | 0.35 | 3 |
| 1 | Padded canvas carrying case | 12½ | 12½ | 6 | 0.6 | 14* |
| 1 | Temperature correction and pressure conversion chart | | | | | |

**Packed for hand transportation; includes barometer.*

**c. Forms.**

| Quan | Component |
|---|---|
| 1 | SC Form No. 79 |
| 2 | Form SC-80 |
| 1 pad | Signal Corps Form SC 436 |
| 1 pad | Signal Corps Form SC 437 |
| 1 pad | Signal Corps Form SC 438 |

## 4. BAROMETER ML-330/FM.

**a. General.** Barometer ML-330/FM is a mercury barometer of laboratory precision which has been calibrated against the U. S. Army secondary standard at Evans Signal Laboratory, Belmar, New Jersey. The instrument is larger in size and of greater accuracy than Barometer ML-2-( ) which is used in Army Air Force weather stations. The construction of Barometer ML-330/FM and Barometer ML-2-( ), however, is almost identical.

*(1)* The barometer consists of a glass tube 35½ inches long and of 6-inch internal bore. The tube is closed at the top, while the bottom is open and is immersed in a quantity of pure mercury which is contained in the *cistern* (subpar. e below). The glass tube is constricted a few inches above the bottom, and the lower end, which dips into the mercury, is about ¼ inch in diameter.

(2) The mercury fills the tube except for an evacuated space at the top. Both the glass tube and the cistern are supported vertically within a tubular brass casing which has a swivel hanger at the top for suspending the barometer in the mounting case. Cork supports are placed between the glass tube and the brass casing at the top and at intervals along the entire length of the tube. The brass casing is slotted front and back to expose the upper portion of the glass tube and afford a view of the mercury inside.

(3) The height of the mercury column is read on *scales* (subpar. b below) attached to each side of the front slot.

(4) A cylindrical cover glass, extending from the top of the barometer tube to the bottom of the scales, fits over the brass casing and is held in place by a metal flange at the top and at the bottom. The cover glass affords protection to the scales. On most of the barometers, the cover glass is 11½ inches deep. On a few barometers, with extended scales for use at stations of high elevation, the cover glass is 14 inches deep. (See paragraph 5 for actual differences in scale.)

(5) The slots in the brass casing provide a track for the movable *vernier* (subpar. c below) and the rack and pinion mechanism by which the vernier is adjusted.

(6) Attached to the brass casing in front is a *thermometer* (subpar. d below) which indicates the temperature of the instrument.

**b. Scales.** Graduated scales for measuring the height of the mercury column are provided on each side of the front slot in the brass casing. The scales are engraved on separate strips of silver-plated brass and are attached to the casing by small screws. The height of the mercury may be measured in inches or in millibars.

(1) *Inch Scale.* The inch scale is on the left side when the observer is facing the barometer and is graduated in twentieths of an inch. Each integral inch is numbered with figures engraved on the scale.

(2) *Millibar Scale.* The millibar scale is on the right side and is graduated in whole millibars. Only 100-millibar graduations are given a complete numerical designation, for example: 800, 900, etc. The intervening 10-millibar intervals are numbered in units of 10 only, hence the numerals 10, 20, 30, etc., appearing on the scale in sequence above the 900-millibar mark actually designate 910, 920, 930 millibars.

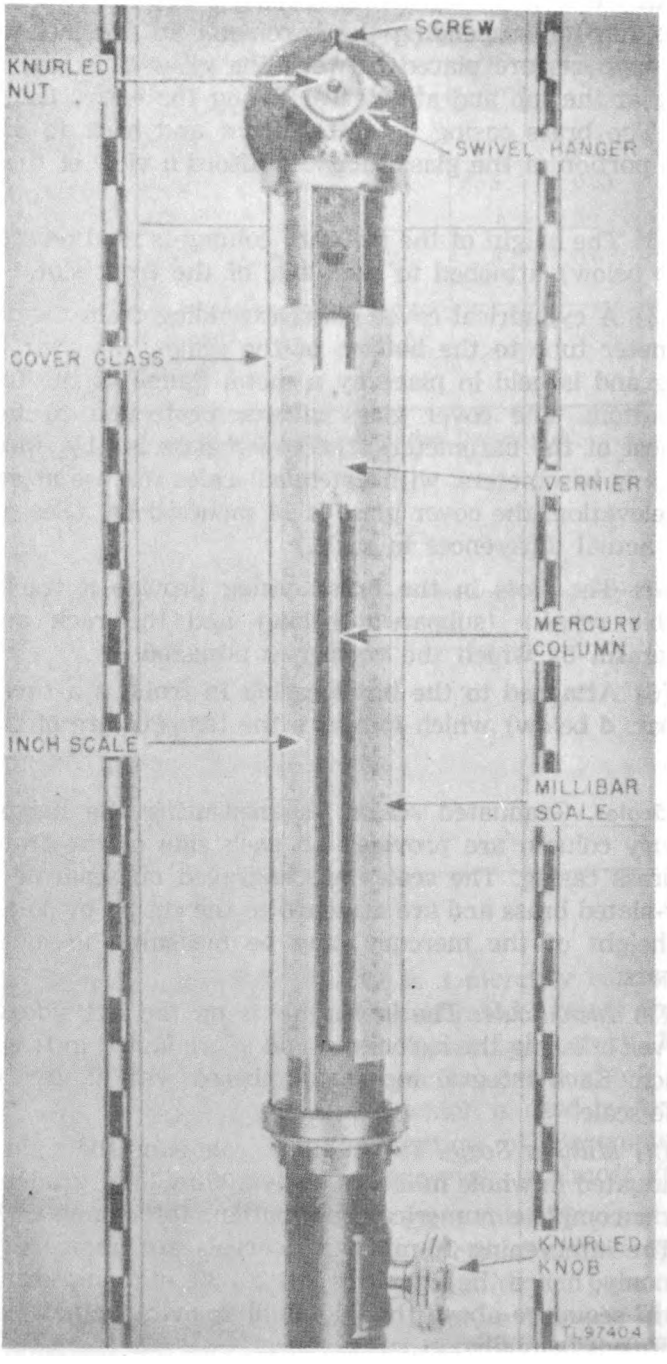


*Figure 3. Vernier, inch scale, and millibar scale, of Barometer ML-330/FM.*

**c. Vernier.** A vernier is an auxiliary scale which is placed alongside the main scale to enable subdivisions of the main scale divisions to be read accurately.

(*1*) Barometer ML-330/FM is provided with a vernier which measures fractions of the adjacent inch and millibar scales. The vernier is a metal plate $\frac{1}{2}$ inch wide and $1\frac{3}{4}$ inches long which is positioned between the inch and millibar scales so that it covers a portion of the front slot in the brass casing. An indentation about $\frac{5}{16}$ inch wide has been machined in the center of the lower edge of the vernier plate to form the sighting edge. The vernier scales are engraved on the vertical edges of the vernier plate.

(*2*) The vernier is screwed to a short piece of tubing fitted closely inside the casing. The top of a long fine-toothed rack is attached to the short tube. A pinior gear engages the rack inside the casing; its shaft extends outside the casing and is provided with a knurled knob by which the vernier is moved vertically between the scales.

(*3*) The vernier edge adjacent to the inch scale is engraved with 25 equal divisions which correspond in over-all length to 24 divisions of the inch scale. The fifth, tenth, fifteenth, twentieth, and twenty-fifth graduations are marked with the numerals 1, 2, 3, 4, and 5, respectively. The inch vernier permits measurements to $\frac{1}{500}$ (.002) inch, and by interpolation to .001 inch.

(*4*) The vernier edge adjacent to the millibar scale is engraved with 20 equal divisions which correspond in over-all length to 19 divisions of the millibar scale. The tenth and twentieth divisions are marked with the numerals 5 and 10, respectively. The millibar vernier permits measurements to $\frac{1}{20}$ (.05) millibar.

**d. Thermometer.**

(*1*) The thermometer of Barometer ML-330/FM consists of a glass thermometer tube mounted in a metal frame which is screwed to the brass casing of the barometer. The metal frame completely surrounds the thermometer bulb except at the back where an opening is cut through both the frame and the casing. Thus the bulb is shielded from temperature variations in the surrounding air and more nearly represents the temperature of the mercury and the brass casing.

(*2*) The thermometer is provided with both a Fahrenheit and a centigrade scale. The Fahrenheit scale is on the left side of the thermometer when the observer is facing the barometer, and the centigrade scale is on the right.

(3) The range of the Fahrenheit scale is from 30° F to 130° F, graduated in ½° F intervals.

(4) The range of the centigrade scale is from 0° C to 55° C, graduated in .2° C intervals.

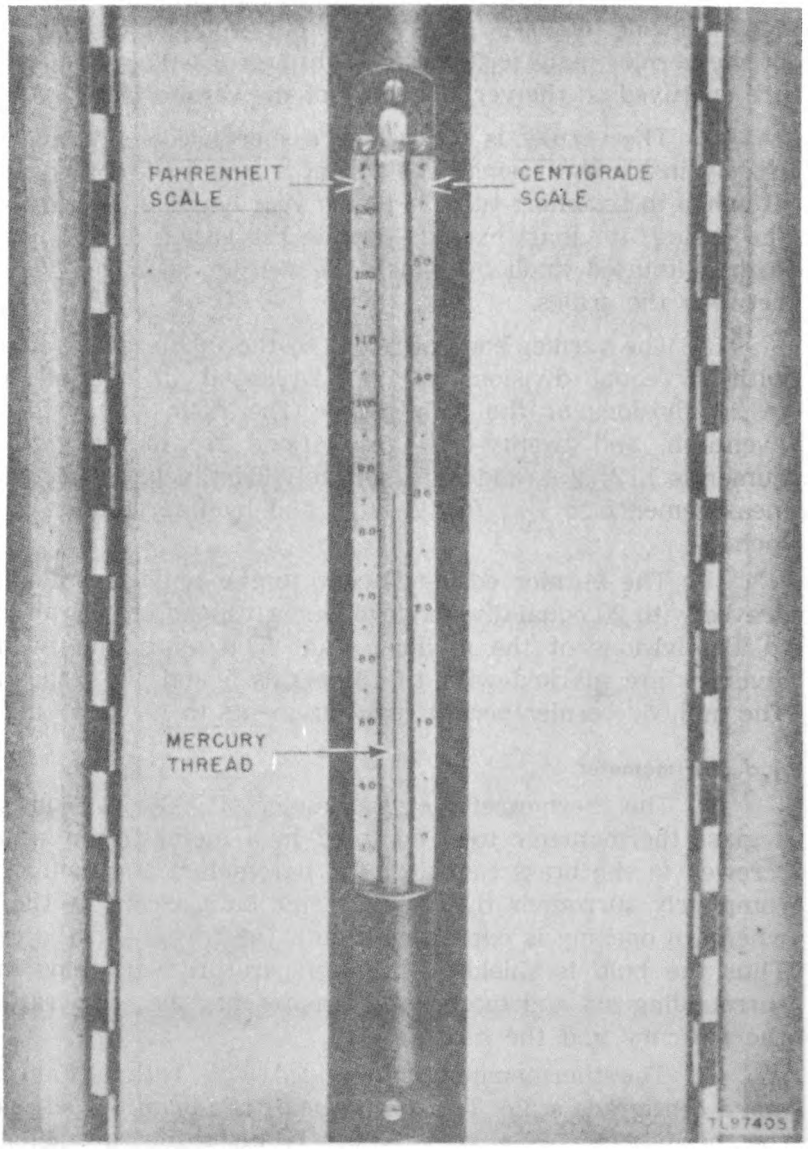


*Figure 4. Attached thermometer, Barometer ML-330/FM.*

**e. Cistern (fig. 5).**

(*1*) The cistern of Barometer ML-330/FM consists of a flanged steel cylinder ⑤, a short glass cylinder ⑧, two curved cylinders ⑬ and ⑯ made of boxwood, and a kid leather bag ⑱. These parts are assembled with gaskets ⑥, ⑪, and ⑮, and split-ring clamps ⑭, and are inclosed in a metal cylindrical housing ⑲ that is closed at the bottom by a screw cap ⑳ which carries adjusting screw ㉑. Metal cylinder ⑲ is screwed to flange ⑫ which is fastened to top flange ④ by screws ⑩.

(*2*) The center of leather bag ⑱ is tied to wooden piece ⑰ against which the tip of adjusting screw ㉑ bears. The top of leather bag ⑱ is tied to the lower end of curved cylinder ⑯, which is joined to curved cylinder ⑬ with gasket ⑮ between them, by a system of split-ring clamps ⑭.

(*3*) The top of curved cylinder ⑬ rests on a ledge of lower flange ⑫ and bears the lower end of glass cylinder ⑧ with gasket ⑪ between them.

(*4*) Glass tube ① has a piece of soft kid leather ③, which is folded in a special manner, tied securely around the constricted portion, and then brought over and tied to the top of cylinder ⑤. The flanged lower portion of cylinder ⑤ rests on top of glass cylinder ⑧ with gasket ⑥ between them. The bottom surface of cylinder ⑤ carries ivory point ⑦ which is the zero end of the scale from which all measurements of the height of the mercury column are made.

NOTE: The flexible joint provided by leather pieces ③ and ⑱ is porous to air but impervious to mercury. This, and the air vent screw ㉒ permits the air pressure inside the cistern to be identical with that outside, yet prevents mercury from leaking from the cistern at these points.

(*5*) Top flange ④ is fastened by screws to the bottom of casing ②. Flange ⑫ bears the lower cistern assembly. The lower cistern assembly ⑬, ⑭, ⑮, ⑯, and ⑱ and the upper cistern assembly ⑤ and ⑧ are held tightly together by screws ⑩ and flanges ④ and ⑫. Gaskets ⑥ and ⑪ make the joints leakproof.

(*6*) Glass tube ① and the cistern contain mercury ⑨. Glass cylinder ⑧ is transparent and affords view of the cistern mercury level and the ivory point.

(*7*) Adjusting screw ㉑, bearing against wooden bearing ⑰, controls the capacity of leather bag ⑱, making it possible to raise or lower the level of the mercury to meet the tip of ivory point ⑦.

(*8*) An air vent screw ㉒ admits air directly to the cistern of the barometer. The air vent consists of a hole about 1/16 inch

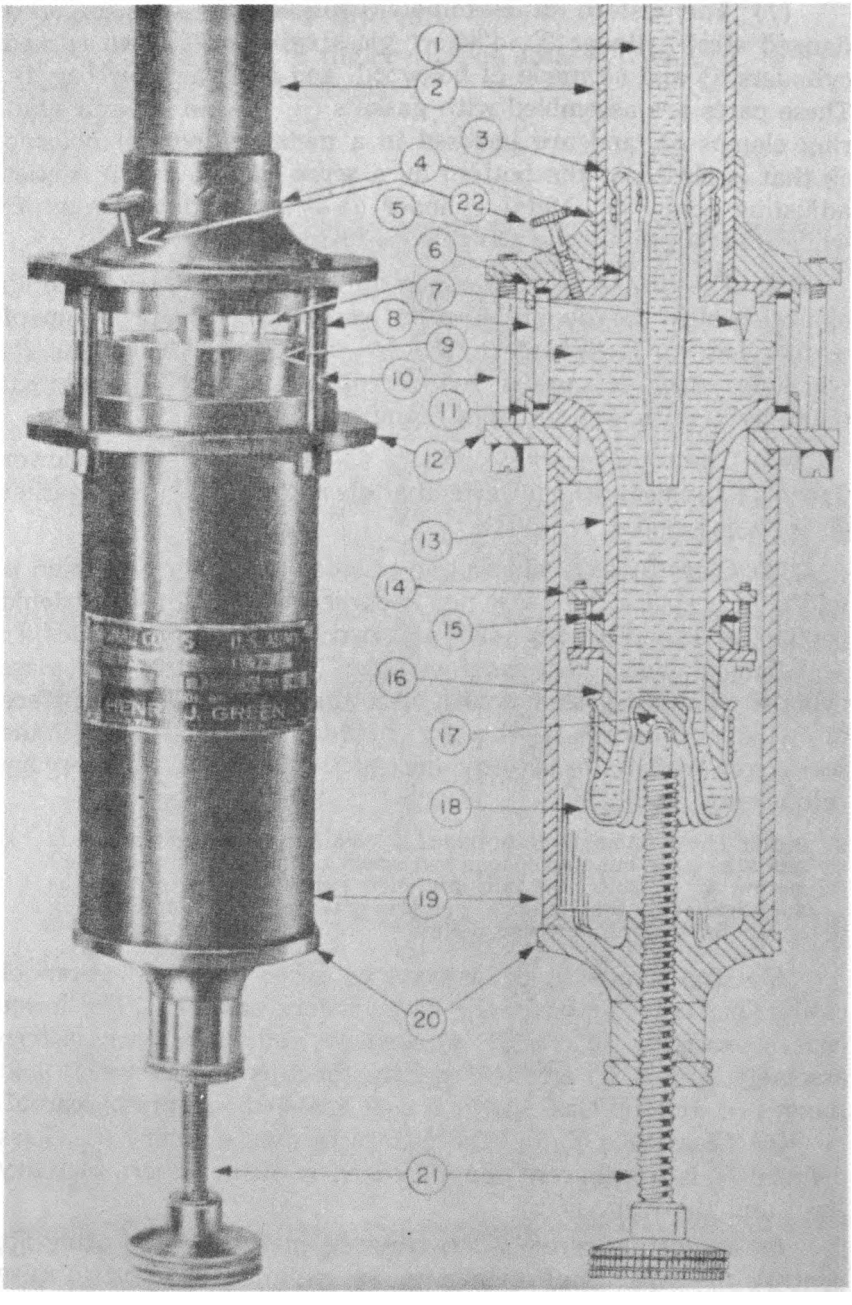


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*Figure 5. Cistern of Barometer ML-330/FM, showing internal construction.*

in diameter which is drilled through the top flange and the flanged cylinder. The hole has a threaded sleeve and is plugged with a knurled-head screw 5/8 inch long which controls the amount of air admitted to the cistern.

| Legend for Figure 5 | | |
|---|---|---|
| ① Glass tube | ⑨ Mercury | ⑰ Lower curved cylinder |
| ② Brass casing | ⑩ Long screws | ⑰ Wooden bearing |
| ③ Leather joint | ⑪ Leather gaskets | ⑱ Leather bag |
| ④ Top flange | ⑫ Lower flange | ⑲ Cistern housing |
| ⑤ Flanged cylinder | ⑬ Upper curved cylinder | ⑳ Screw cap |
| ⑥ Leather gasket | ⑭ Split-ring clamp | ㉑ Adjusting screw |
| ⑦ Ivory point | ⑮ Leather gasket | ㉒ Air vent screw |
| ⑧ Glass cylinder | | |

## 5. RANGE OF SCALES ON BAROMETER ML-330/FM.

Barometers ML-330/FM are issued in two scale ranges (see table below). Because of the length of the brass strip on which the vernier is engraved, the effective range of the inch and millibar scales is less than the actual markings in inches and millibars. A comparison of the actual scale markings and the effective range of the scales, in both inches and millibars, is as follows:

| Actual scale range | Effective scale range |
|---|---|
| 23.5 to 32.8 in. (9.3 in.)<br>800 to 1110 mb (310 mb) | 23.7 to 31.3 in. (7.6 in.)<br>805 to 1060 mb (255 mb) |
| 21.2 to 32.8 in. (11.6 in.)<br>717 to 1110 mb (393 mb) | 21.5 to 31.3 in. (9.8 in.)<br>725 to 1060 mb (335 mb) |

The greater number of the barometers issued have the shorter scale.

## 6. MOUNTING CASE FOR BAROMETER ML-330/FM (fig. 6).

a. The mounting case for Barometer ML-330/FM is a rectangular metal case, painted olive drab outside and white inside. The two front edges of the case are beveled. The front of the case opens longitudinally, and the two sides are hinged to the back so

that when the case is open, the barometer is completely exposed. The case is fastened with a small trunk latch; the case may be secured with a small padlock.

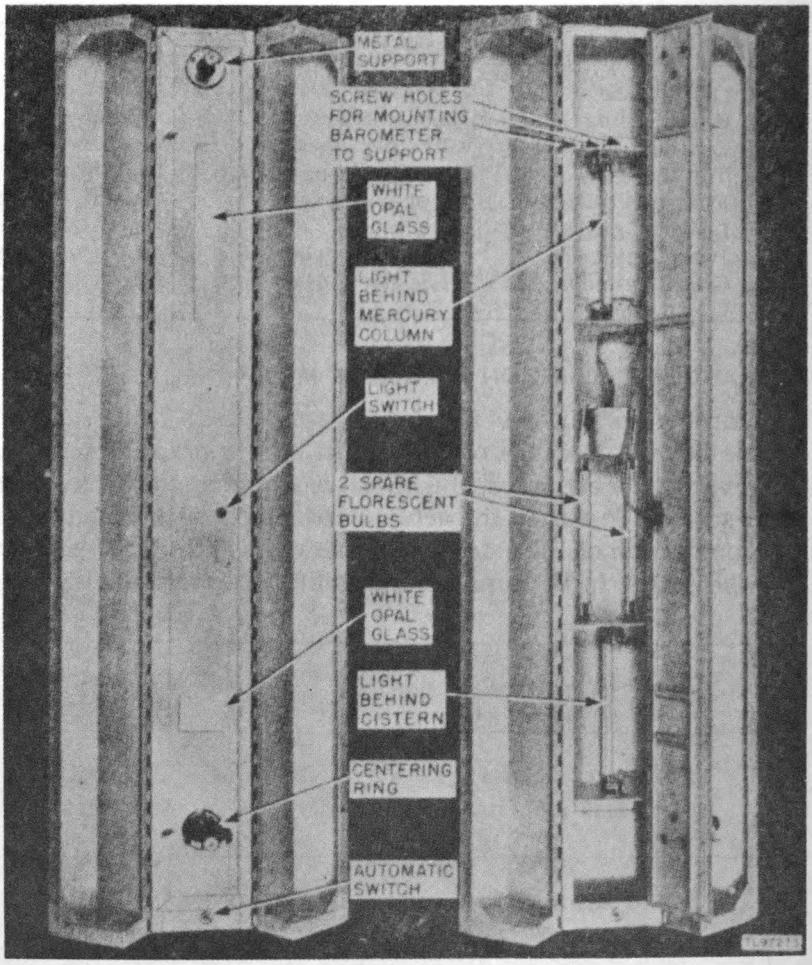


*Figure 6. Mounting case for Barometer ML-330/FM, showing mounting panel and wiring behind mounting panel.*

**b.** The barometer mounting panel which is hinged inside the case has a metal support near the top which is fitted with a knurled nut for hanging the barometer. Near the bottom, a brass centering ring with three screws provides means for maintaining the barometer in a vertical position.

**c.** Set within the mounting panel are two sections of white opal glass so positioned that one extends the full length of the slots in the casing while the other is behind the cistern of the barometer

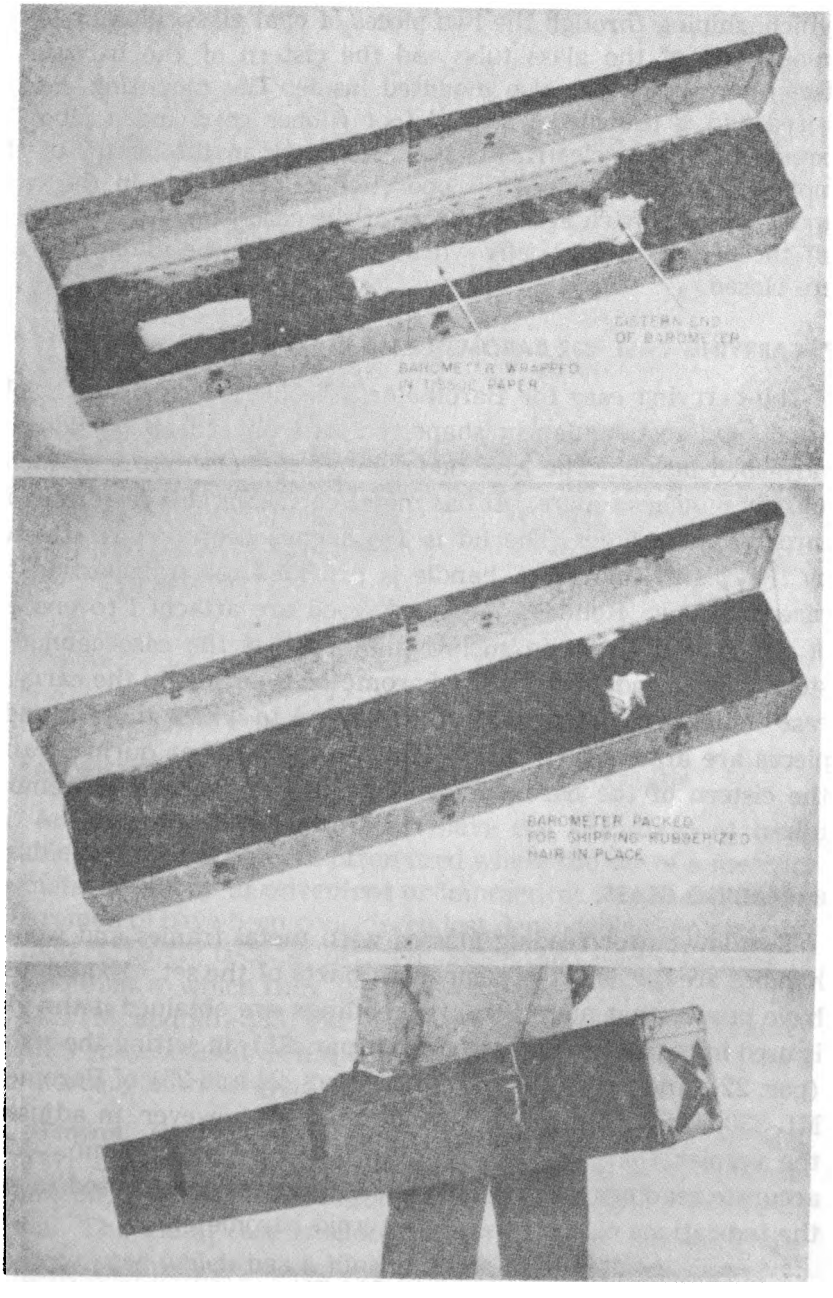


*Figure 7. Proper method of packing and transporting Barometer ML-330/FM in carrying case.*

when it is mounted in the case. In the space between the mounting panel and the actual back of the case are two fluorescent lights which, shining through the two pieces of opal glass, illuminate the upper part of the glass tube and the cistern of the barometer. Two spare bulbs are also mounted inside. The mounting case is wired and is provided with a 5-foot rubber cord and a plug for connecting to an electrical outlet. A switch in the center of the mounting panel provides for operation of the lights in the case, and a second switch at the bottom of the case provides for cutting off the lights automatically when the doors of the mounting case are closed.

**7. CARRYING CASE FOR BAROMETER ML-330/FM.**

The carrying case for Barometer ML-330/FM is a sturdy plywood box, rectangular in shape, painted olive drab outside and varnished inside. The case opens longitudinally and is 51 inches long by 8 inches square. It has metal corners and is fastened with three trunk catches. The lid is 1½ inches deep and is attached by two piano hinges. A handle is provided for transporting the case by hand. Rounded pieces of wood are attached to one end of the carrying case in such a manner that the case cannot be stood on this end. (When the barometer is packed in the carrying case the cistern is placed toward the end to which these rounded pieces are attached (fig. 7).) This is done so that during transit the cistern of the barometer will be higher than the barometer tube.

**8. READING GLASS.**

Two low-power reading glasses with metal frames and wooden handles are furnished as component parts of the set. Experiments have proved that more accurate readings are obtained if the glass is used in reading the thermometer (par. 21), in setting the cistern (par. 22), and in reading the scales (pars. 24 and 25) of Barometer ML-330/FM. The glass should not be used, however, in adjusting the vernier (par. 23) to the top of the mercury column. More accurate readings are obtained when the glass is also used to read the indications of the precision aneroid barometers.

**9. DIFFERENCES IN BAROMETERS ML-330/FM.**

All Barometers ML-330/FM are identical except for a difference in the length of the scales. A comparison of the scale markings,

together with the actual and effective range of the scales, in both inches and millibars, is given in paragraph 5.

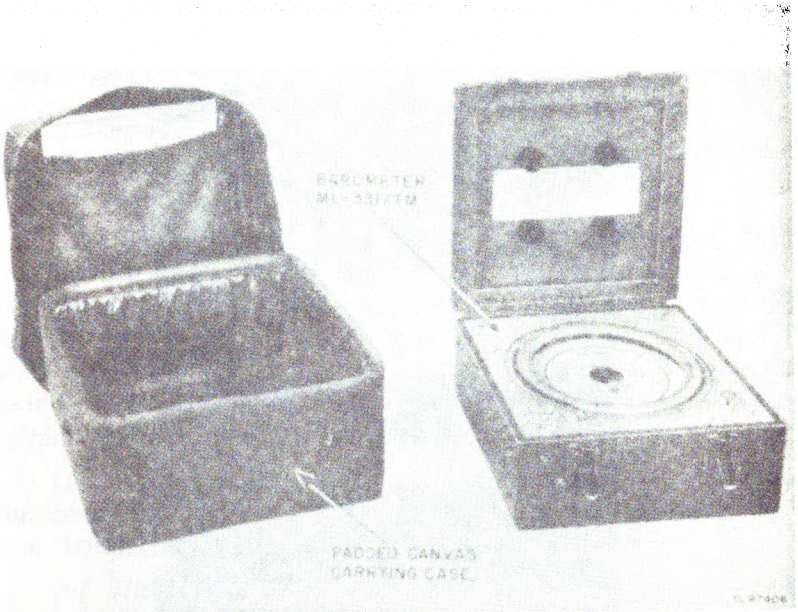


*Figure 8. Precision aneroid barometer and carrying case.*

## 10. BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.

**a. Accuracy.** Aneroid barometers have the advantage of being portable and rugged and are often used where the use of a mercury barometer would be inconvenient or impractical. Heretofore, aneroid barometers have been considered less dependable than mercury barometers, partly because of their design, and partly because of the conditions to which they are exposed. Barometers ML-331/TM, ML-332/TM, and ML-333/TM, however, are of sufficient accuracy that they may be used as inspection barometers to correct ¼-inch bore mercury barometers.

**b. General.** Barometer ML-331/TM (or ML-332/TM or ML-333/TM) consists of a *metal case* which contains the *aneroid mechanism,* a *dial,* and a *pointer* which indicates the pressure on the dial. The metal case is shock-mounted in a *hardwood shock-mounting case* which has a hinged lid. A padded canvas *carrying case* is provided for hand transportation of the barometers.

(*1*) *Metal Case.* The case containing the aneroid mechanism is kettle-shaped (8 inches in diameter by 4 inches deep) and is

made of aluminum alloy. The plate glass cover which protects the dial is sealed to a beveled aluminum bezel $^{3}/_{4}$ inch wide and $^{1}/_{8}$ inch thick. This bezel is attached to the rim of the base by means of

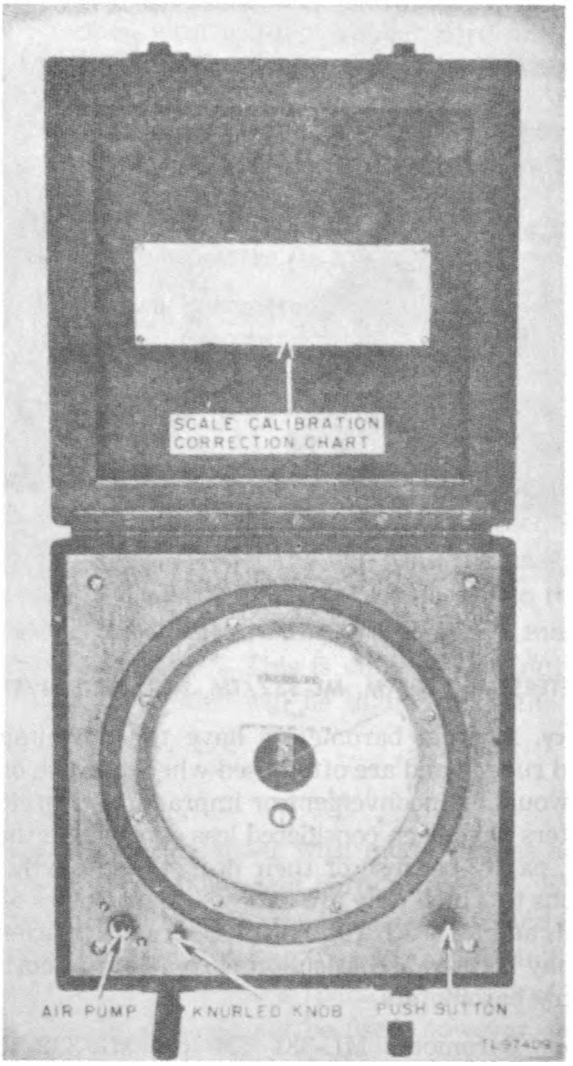


*Figure 9. Barometer ML–331/TM in hardwood shock-mounting case, scale calibration correction chart in lid.*

eight screws spaced equidistantly around the periphery of the case. A synthetic rubber gasket which fits into a circular groove on the rim of the base helps to make the juncture between the bezel and the base airtight. An opening in the cover glass permits adjustment

of the pointer without opening the case. This opening is plugged by means of a threaded metal sleeve with a flanged top which is cemented into the glass. The sleeve accommodates a flathead screw and a plastic washer. A connection on the side of the case (fig. 10) provides for attaching two rubber tubes, one terminating at a valve that can be opened and closed, and the other terminating at an air pump.

(2) *Aneroid Mechanism.* A description of the aneroid mechanism is given in paragraph 47.

(3) *Dial.* The dial of the instrument is 7 inches in diameter and is white with black numerals and graduation lines. The scale is hand calibrated in half-millibars. A slotted screw in the dial permits adjustment of the pointer. A mirror ring approximately 3/16 inch in width, concentric with the scale and immediately inside, reflects an image of the pointer and provides a means of eliminating parallax error in reading the scale.

(4) *Pointer.* The pointer is made of three sections of fine aluminum tubing and is flattened vertically at the indicating end. It is clamped to the pointer shaft by a small setscrew.

(5) *Hardwood Shock-mounting Case.* The metal case of Barometers ML-331/TM, ML-332/TM, and ML-333/TM is shock-mounted in a hardwood case 11 inches square by 5 inches deep. The case is painted olive drab, has a hinged cover, and is fastened by two metal trunk catches. The metal case fits down into the wooden case, the rim of the metal case resting against a ¾-inch-wide adjustable aluminum ring that is seated upon four wooden supports well padded with sponge rubber. The four supports are positioned in the center of each of the four sides of the wooden case; they hold the metal case firmly in place and reduce the effect on the aneroid mechanism of shocks occurring to the wooden case. The bottom of the metal case is seated upon four rubber cushions in the bottom of the hardwood case. A 10-inch square aluminum plate with an opening 8¾ inches in diameter is fastened to triangular wooden supports in each corner of the hardwood case by means of four screws, one in each corner of the plate. Threaded metal sleeves countersunk in the corner supports receive the four screws. When the screws are removed, the entire barometer case, the aluminum plate, and adjustable ring may be removed from the hardwood case.

(6) *Valve and Air Pump.*

(*a*) A valve is mounted on the under side of the aluminum plate near the lower right-hand corner, and an air pump is simi-

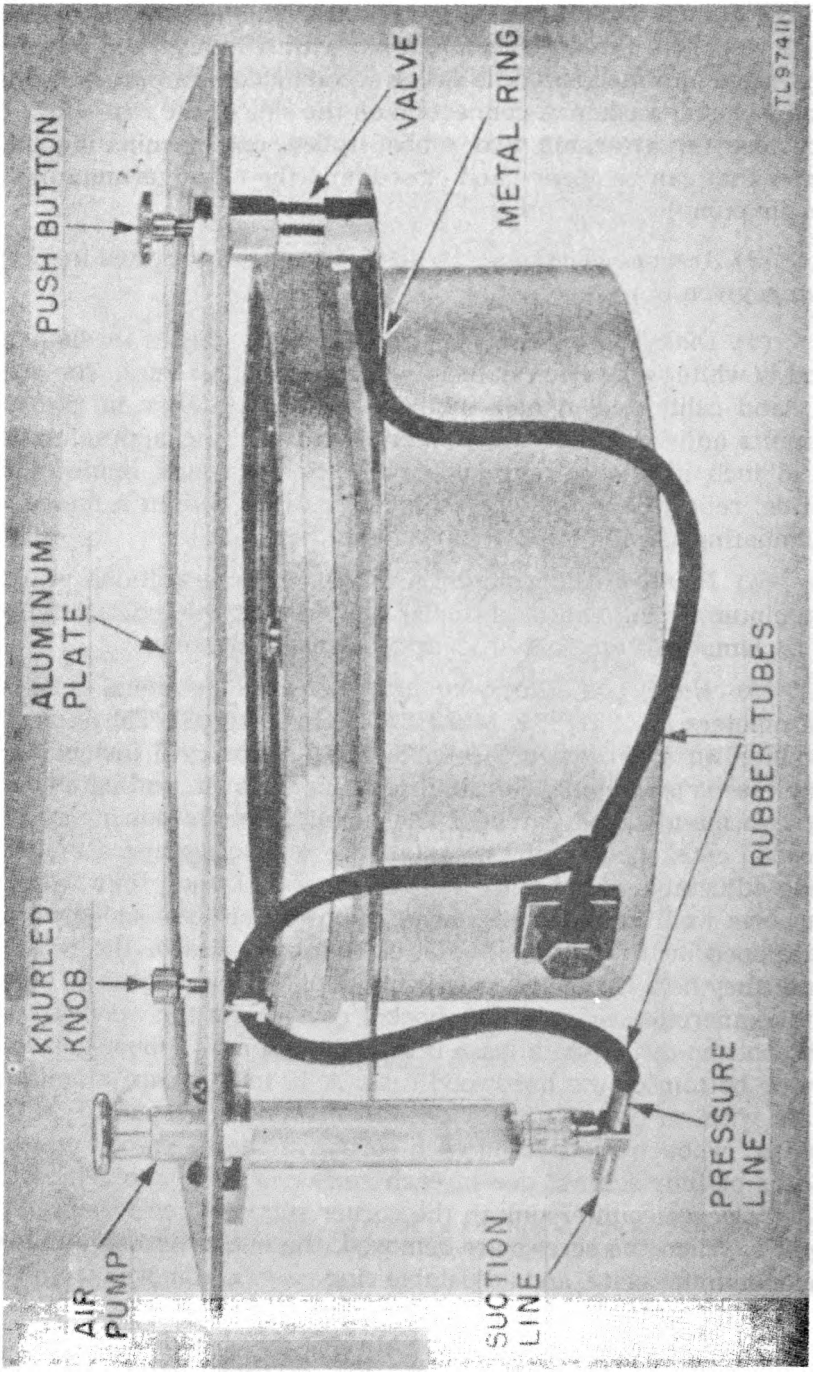


***Figure 10. Metal case of precision aneroid barometer removed from hardwood shock-mounting case.***

larly mounted near the lower left-hand corner of the plate (fig. 10). A push button which operates the valve projects through to the top of the aluminum plate. The air pump consists of the barrel and plunger of a glass hypodermic syringe provided with a suitable valve to permit air to be pumped either into or out of the metal barometer case. The top of the plunger of this pump projects through the top of the aluminum plate, thus permitting operation of the pump when the lid of the wooden case is raised. Two pieces of rubber tubing connect the valve and the pump to the barometer case (par. 10b(1) above).

(*b*) The purpose of the valve is to permit the metal barometer case to be either sealed completely from the outside air or opened to it so that the pressure in the case will be equal to that of the outside air.

(*c*) The tubing from the case to the pump passes through a mechanism which, in the closed position, pinches the tubing shut. In the open position of the mechanism the tubing is open and air passage through it is unhampered. A knurled knob which operates this mechanism projects through the top of the aluminum plate near the pump plunger (fig. 10). To close the mechanism and pinch the tubing, turn the knurled knob in a clockwise direction as far as possible. To open the mechanism, turn it counterclockwise not more than three complete turns. Further turning may result in loss of certain small parts.

(*d*) When the push button operating the valve is depressed, the valve is closed and the barometer case is sealed from the outside air. When the push button is raised, the valve is opened. Closing the lid of the hardwood case automatically depresses the push button and seals the case. *Raising the lid, however, does not open the valve; the push button must be manually raised to open it.*

(*e*) The purpose of the pump is to provide a means of controlling the air pressure within the metal barometer case when the valve is closed and the case is sealed from the outside air. It will be noted that a T-shaped brass tube projects from the bottom of the pump. One end of this tube is a pressure line, the other a suction line. Operation of the pump draws air in through the suction end of the tube and forces it out through the pressure end. Depending upon which end is connected to the barometer case, the pressure inside the case may be decreased or increased by operation of the pump. Since it is anticipated that by far the greatest use of the pump will be to increase the pressure in the case, the barometer, as received in the field, has the rubber tube

connecting the pump to the case attached to the pressure outlet of the pump.

(*f*) The purpose of the tube-clamping mechanism is to provide a means of cutting off the pump from the remainder of the barometer case. The valve in the pump is fragile and may

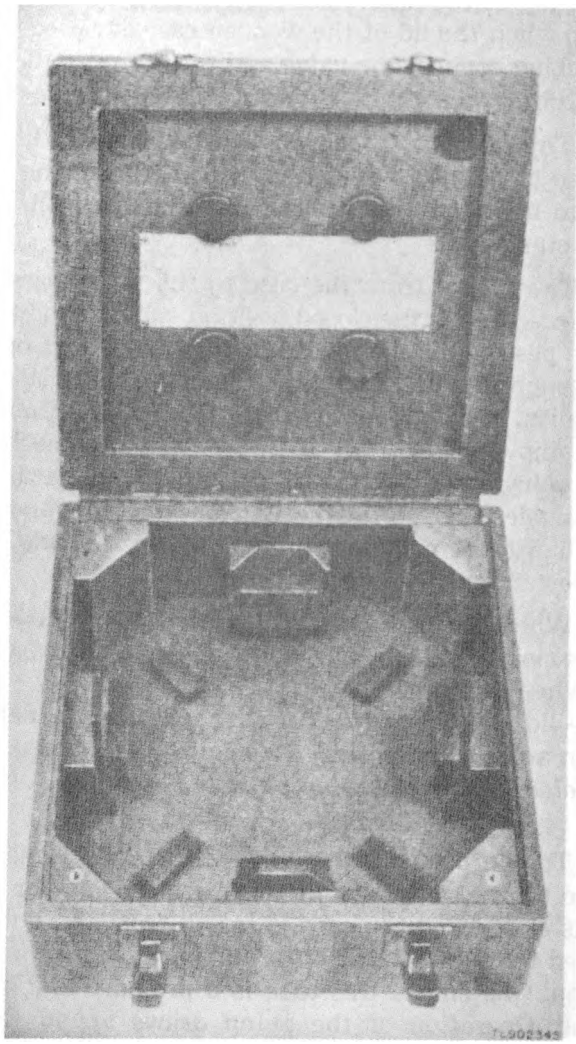

*Figure 11. Hardwood case showing rubber shock mounts.*

frequently leak, making it impossible to seal the barometer case. The tube-clamping mechanism should be in the closed position, thus pinching shut the tube from the pump at all times except when the pump is actually being operated.

(*g*) Four circular rubber disks are glued in the lid of the hardwood case to protect the cover glass of the barometer case. Two smaller rubber disks are glued in the front corners of the case to hold the pump and valve in a closed position when the lid is closed. A scale calibration correction chart for each instrument is also mounted in the lid of the wooden case.

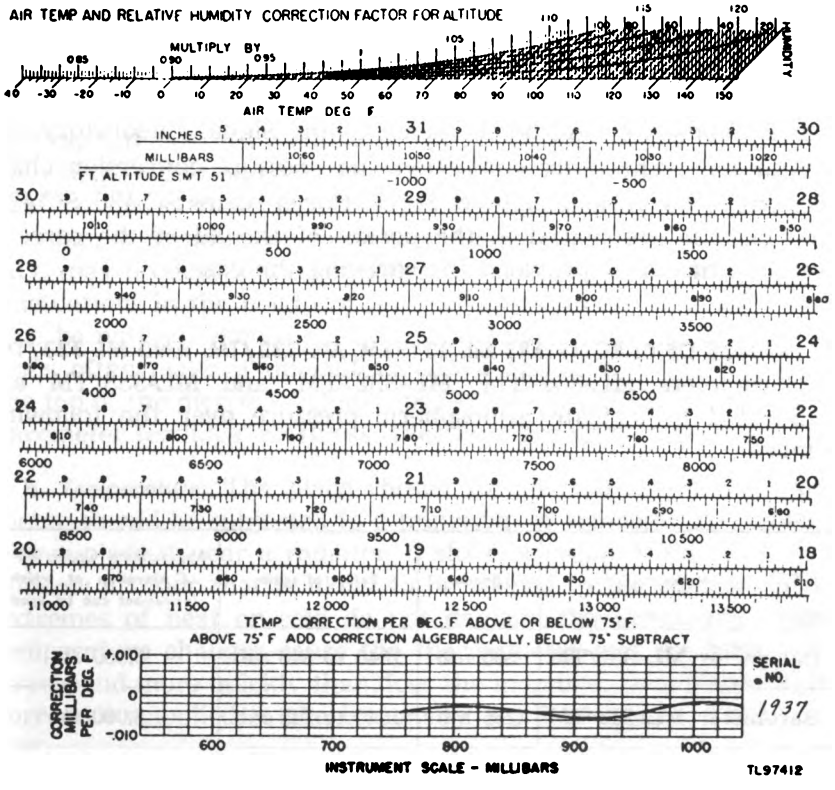


*Figure 12. Temperature correction and pressure conversion chart.*

**c. Temperature Correction and Pressure Conversion Chart.** An individual chart for correcting pressure readings for temperature and for converting pressure readings from millibars to inches of mercury is provided with each Barometer ML-331/TM, ML-332/TM, and ML-333/TM. The temperature correction is applied to each reading of the barometer. The chart is mounted on an aluminum sheet 9¼ inches square and is carried in a pocket in the lid of the carrying case.

**d. Scale Calibration Correction Chart (fig. 9).** Mounted in the lid of the wooden barometer case is a scale calibration correction chart which represents the deviation of the instrument from the

secondary calibration equipment at Evans Signal Laboratory, at the time the instrument leaves the laboratory. This correction is determined for each instrument individually over its entire range and must be applied to each reading of the aneroid.

e. **Carrying Case (fig. 8).** Barometers ML-331/TM, ML-332/TM, and ML-333/TM are transported in lightweight carrying cases of water-repellent canvas, well padded with shock insulating material and lined with a rubberized fabric. A flap, fastened by means of six snap fasteners, makes the interior of the case rainproof. When the barometer leaves Evans Signal Laboratory the aluminum temperature correction and pressure conversion chart (subpar. c above) and copies of Signal Corps Forms SC 436, SC 437, and SC 438 are placed in the pocket of the lid of the case. A webbing handle is provided for carrying the case.

**11. RANGE OF BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.**

Barometers ML-331/TM, ML-332/TM, and ML-333/TM are calibrated to indicate atmospheric pressure over the following ranges:

| Model | Range | Extent of scale | Approximate upper limit of elevation at which instrument can be used |
|---|---|---|---|
| Barometer ML-331/TM | 200 mb | 1040 to 840 mb | 5,000 ft |
| Barometer ML-332/TM | 295 mb | 1040 to 745 mb | 8,000 ft |
| Barometer ML-333/TM | 490 mb | 1030 to 540 mb | 16,000 ft |

**12. DIFFERENCES IN BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.**

Barometers ML-331/TM, ML-332/TM, and ML-333/TM are identical except for differences in the scale range (par. 11) and slight differences in the construction of the aneroid mechanism which these differences in range make necessary. This paragraph also lists the upper limits of elevation above sea level at which the instruments can be used. Slightly greater readability of the scale and more accurate readings may be obtained from Barometer ML-331/TM due to the shorter range (1040 to 840 mb) and the consequent expansion of the scale.

## SECTION II. INSTALLATION AND ASSEMBLY

**CAUTION: Do not remove Barometer ML-330/FM from its carrying case until the mounting case has been installed (par. 14)**

### 13. SITING OF BAROMETER ML-330/FM.

**a. Protection.** Barometer ML-330/FM is always installed indoors in its mounting case. The building in which it is installed should be well constructed in order to give maximum protection to the instrument from sun, rain, wind, vibration, excessive temperatures, and rapid temperature changes. The barometer should be mounted on a firm, vibration-free support on or near an inside wall. Avoid drafts or air currents such as might be caused by a door, a chimney opening, or a ventilator. Such currents, if of high or variable velocity, may produce a suction action or "pumping" which will cause fluctuations in the height of the mercury column. This effect will also be noticed when high, gusty winds are blowing. Such conditions often make it difficult to adjust the vernier accurately to the top of the mercury column; in fact, such conditions can render barometer readings worthless. (See note preceding paragraph 21.)

**b. Temperature.** The place chosen for installation of the barometer should be subjected to a minimum of temperature changes. Never place it near a radiator, a stove, a crack in the wall, or a window or door that is likely to be opened to the outside. While extremes of heat or cold do not damage the instrument, rapid temperature changes cause the thermometer and the brass case to respond more quickly than does the mercury; thus temperature corrections applied to the barometer readings are in error.

**c. Lighting.** Choose a position for the barometer where the scales are well-lighted by both natural and artificial light. (Fluorescent lights installed inside the case provide light for setting the cistern and adjusting the vernier.)

**d. Height.** Install the barometer mounting case so that the scale marking of the mean prevailing barometric pressure at the station is approximately at eye level of a person of average height. (The 30-inch mark is average for sea level.) Since various observers who will read a given barometer are usually of different heights, provision must be made to enable each observer to stand in a normal, relaxed position when making the reading. *The observer must not stand on tiptoe to read the barometer.* A taller person may stoop to obtain an accurate reading, but shorter persons must be provided with a stool, platform, or box to stand on.

e. **Illustration of Favorable Location for Barometer.** For purposes of illustration it may be supposed that the room in which the barometer is to be installed has windows across the north wall; an outside door is on the south wall; a radiator and a door to another

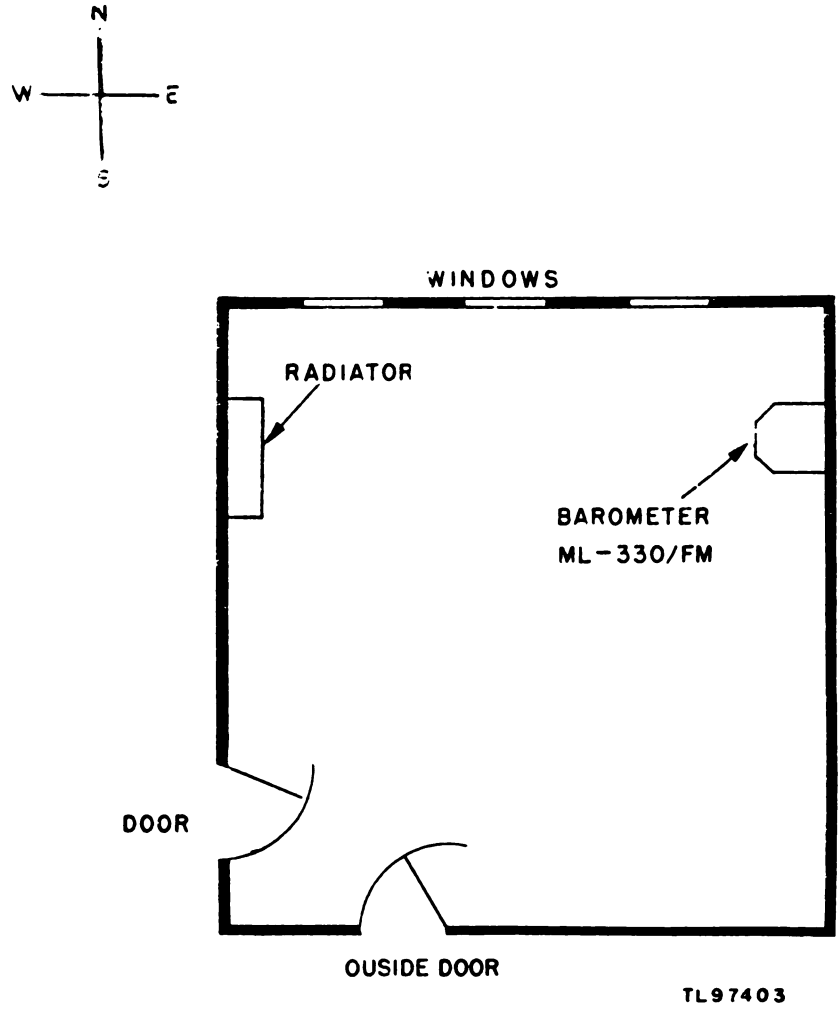


*Figure 13. Floor plan showing favorable location for mercury barometer.*

room are on the west. Thus the most favorable position for the barometer is on the east wall, near enough to the windows that the barometer scales are well-lighted during the daytime. Figure 13 illustrates the layout of such a room.

## 14. INSTALLATION OF MOUNTING CASE FOR BAROMETER ML-330/FM.

### a. Preparation.

(*1*) Walls of buildings are frequently subject to vibration, either from people moving in the building or from the wind. It is difficult to read a barometer accurately under such conditions. If the walls of the room vibrate, or if they are made of some material that prevents the case from being mounted, it is possible, if the floor is made of concrete or some other firm foundation, to build a vertical rack from the floor and mount the barometer on it. If both the wall and the floor are subject to vibration, the construction of a concrete pier is recommended. This pier should extend through the floor at least 30 inches into the ground beneath, and should not be in contact with any part of the building. A rack for mounting the barometer case should be attached to the pier.

(*2*) An electrical outlet or an extension cord must be provided for connecting the plug and cord of the mounting case.

(*3*) A suitable vertical wall or rack having been provided, use a plumb bob or a stone attached to a piece of cord to insure vertical mounting of the case.

### b. Mounting.

(*1*) The mounting case is well-wrapped in corrugated cardboard and several layers of tough kraft paper, and is tied with strong cord. Remove these wrappings.

(*2*) *Screw the case to the wall, do not nail.* The screws will be found inside the mounting case. Open the mounting panel to gain access to the screw holes which are in the back panel of the case (fig. 6). The mounting panel is opened by loosening the two wing screws on the edge of this panel. (It may be necessary to place two wood crosspieces on the wall and mount the case to these supports.)

(*3*) Insert the screws in the top of the case first. Before inserting the screws at the bottom of the case, test the vertical alignment of the case by use of the plumb bob. When it is vertical, insert the bottom screws and again test for verticality.

(*4*) Unscrew the three screws in the centering ring until the ends are flush with the inside circumference of the ring. Remove the knurled nut on the support at the top of the mounting case.

## 15. INSTALLING BAROMETER ML-330/FM.

### a. Unpacking Carrying Case.

(*1*) Place the plywood carrying case containing the barometer

on a table or other flat surface and open it. The barometer is packed in rubberized hair.

(*2*) Remove as much of this packing material as is necessary, *but do not destroy it.*

(*3*) Remove the barometer from the case and very slowly and carefully turn it upright.

(*4*) Replace the packing material in the carrying case and put the case in a dry, safe place.

**b. Hanging Barometer.**

(*1*) Pass the cistern end of the barometer down through the centering ring near the bottom of the mounting case.

(*2*) Put the swivel hanger over the support at the top of the mounting case, being careful to fit the point of the screw in the swivel hanger into the depression on the support.

(*3*) Replace the knurled nut on the support.

**c. Turning Adjusting Screw.** Turn the cistern adjusting screw counterclockwise until the mercury in the cistern is lowered sufficiently to expose all of the ivory point. *Never lower the mercury more than 1/4-inch below the ivory point.*

**d. Opening Air Vent Screw.** After the mercury has been lowered in the cistern, open the air vent screw two full turns to admit air to the cistern. *Do not remove the screw.*

**e. Testing for Verticality.**

(*1*) As the barometer swings from the hanger, the instrument itself acts as a plumb line and takes a vertical position. Carefully turn the screws in the centering ring until each screw just touches the brass ring at the bottom of the barometer cistern. Then tighten all three screws against this ring without moving the barometer from its vertical position.

(*2*) After the screws in the centering ring have been tightened, verticality should be further tested by turning the cistern adjusting screw *very slowly* until the mercury in the cistern just makes contact with the ivory point.

(*3*) Slowly turn the barometer about its longitudinal axis through 360° and note whether during this rotation the ivory point and the mercury surface remain in contact as at the beginning of the rotation. If proper contact is maintained as the barometer is rotated, the barometer is in proper vertical position. In observing the position of the ivory point with relation to the mer-

cury surface, it may prove advantageous to use the reading glass which is furnished with the barometer.


*Figure 14. Forms supplied for use with Barometer ML-330/FM.*

**f. SC Form No. 79.** SC Form No. 79 accompanies Barometer ML-330/FM from Evans Signal Laboratory. This form, which usually gives both the instrumental correction and the correction for local gravity (altitude and latitude), is modified to eliminate the instrumental correction since this may be a variable quantity throughout the scale. The total gravity correction should be applied to each reading of the barometer. Mount SC Form No. 79 beside the barometer. This form is applicable only so long as the barometer is used at the original station. If the instrument is moved to another location, it will be necessary to compute a different gravity correction according to instructions in paragraphs 26c(2) and 56.

**g. Thermometer Correction.** A correction for the attached thermometer of each Barometer ML-330/FM was determined before the barometer left Evans Signal Laboratory. In most instances this correction was not large enough to be significant. If it was large enough to introduce an error in the barometer reading, the correction was typed on a sheet titled "Results of Thermometer Test" and placed in a pocket of the carrying case of one of the precision aneroid barometers. This sheet, if furnished, should be removed from the pocket when the equipment is received at the Regional Control Office and should be mounted near the mercury barometer. Corrections should be applied to thermometer readings according to instructions in paragraph 21. If this correction sheet should be lost, a duplicate may be requested from Evans Signal Laboratory, Belmar, New Jersey, by giving the serial numbers of the mercury barometer and of the thermometer. The serial number is etched on the back of each thermometer and to obtain it the thermometer must be removed from the casting.

## 16. REPACKING BAROMETER ML-330/FM FOR TRANSPORT.

**CAUTION: Read this paragraph carefully before removing the barometer from its mounting case. Irreparable damage may be done to the instrument by careless handling. Never remove the barometer from the case while the mercury is at or near its normal height.**

**a. Removing Barometer from Mounting Case.**

(*1*) Close (tighten) the air vent screw.

(*2*) *Very slowly* turn the adjusting screw at the bottom of the cistern until the top of the mercury column rises to a level where it is just visible at the top of the slot in the metal tube. *Do not turn the adjusting screw too far. The mercury must not touch the top of the tube.* One turn too many may force the mercury through the joints of the cistern or the pores of the leather bag and cause serious injury to the instrument.

(*3*) Remove the knurled nut from the top support of the mounting case.

(*4*) Loosen the three screws in the centering ring so that the barometer may be lifted out.

(*5*) Remove the barometer from its support and incline it *very slowly,* listening for a *metallic click* that indicates the mercury has touched the top of the glass tube. Continue inclining the barometer until the tube is horizontal.

(6) A bubble now will be noticeable in the mercury in the cistern. It may be necessary to tap the cistern and wait a few moments for this bubble to form. For transportation, the bubble should be about the size of a dime. It will probably be necessary to readjust the cistern adjusting screw until the bubble is of the proper size.

**b. Packing (fig. 7).**

(1) Wrap the barometer well in tissue paper.

(2) Place the barometer in the carrying case, packing the rubberized hair around it in exactly the same manner in which it was originally packed. Make sure there is sufficient packing material at each end so that the barometer is well-cushioned and cannot strike the ends of the case. Take time to fit the sections of hair around the instrument in the best possible manner for safe transportation. (See figure 7 for illustration of proper packing.)

(3) Close the case and fasten the catches.

**17. TRANSPORTING BAROMETERS.**

Because of the accuracy demanded of these barometers (both mercury and aneroid) and the necessity for care in handling, they should be transported by hand as long as they are in actual service. If it is necessary to return the instruments to Evans Signal Laboratory for calibration or repairs, they may be shipped (follow instruction in paragraph 58).

**18. INSTALLATION OF BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.**

There is no permanent installation of the precision aneroid barometers. Instructions for positioning the instruments when readings are being taken are given in paragraph 27a.

**19. REPACKING BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.**

No instructions are necessary for repacking, since these barometers are always transported by hand. They should, when in transport, be inclosed in the carrying cases.

**20. BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM AT REST.**

When the precision aneroid barometers are located at the Regional Control Office or at any location of approximately the same average pressure, the lid must be open and the push button raised. The lid may be propped open by resting the lip of the

catch against the lower part of the catch (fig. 15a), or by inserting a small block or eraser between the lid and base (fig. 15b). This is done so that the valve will remain open and the instrument can

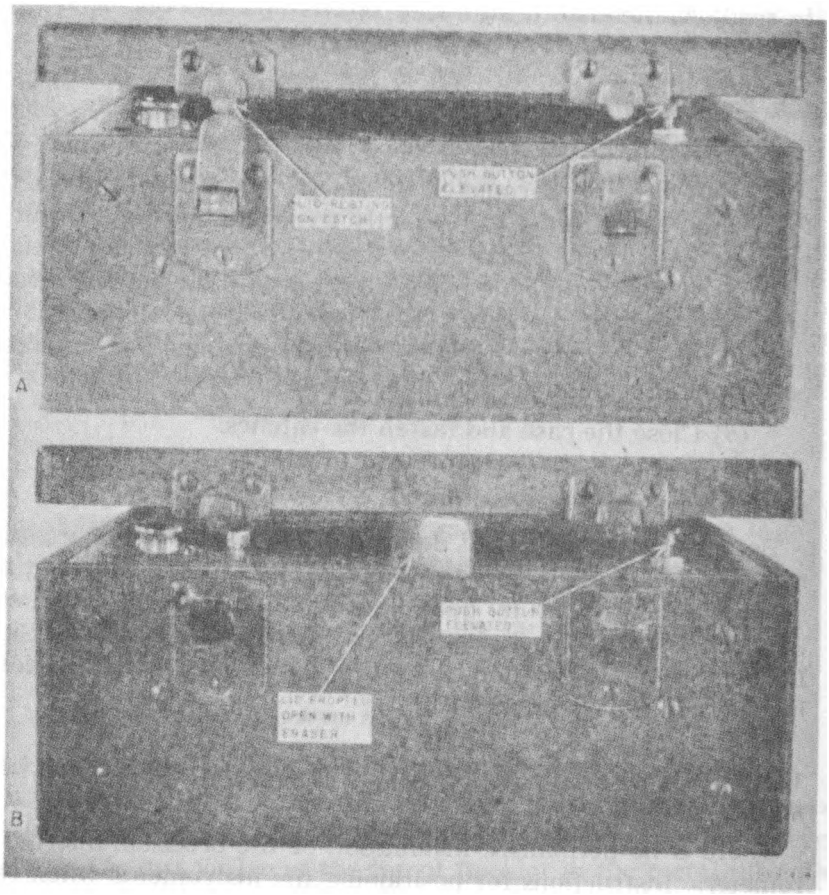


*Figure 15. Methods of keeping case open when precision aneroid barometer is at rest.*

respond to changes in ambient pressure and not to changes in pressure due to variations in temperature of the volume of air confined within the case.

PART TWO

# OPERATING INSTRUCTIONS

## SECTION III. OPERATION OF BAROMETER ML-330/FM

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NOTE: Do not attempt to take accurate readings on a mercurial barometer that has just been installed. First allow the instrument to come into equilibrium with its environment. It should hang undisturbed for at least 1 week, and preferably 3 weeks, before readings are made to which any degree of significance is attached. Observers should realize that conditions can be so unfavorable as to render barometer readings unreliable. Such conditions occur during strong gusty winds when the level of the mercury pumps up and down in the tube, or when the rate of change in the ambient temperature exceeds 3° F per hour. Under this latter condition the true temperature of the mercury lags behind the temperature indicated by the thermometer sufficiently to cause appreciable error.

### 21. READING ATTACHED THERMOMETER.

#### a. Reading Scale.

(*1*) Stand directly in front of the thermometer and take the reading to the nearest $\frac{1}{4}$° F or $\frac{1}{10}$° C. Use the reading glass to read the graduations on the thermometer (fig. 16).

(*2*) The line of sight must be perpendicular to the thermometer at the top of the mercury thread. Do not read the thermometer from a position either above or below the top of the mercury thread or parallax will result. (Parallax is an apparent displacement in the position of an object caused by a change in the position of the observer.) Readings taken when the top of the mercury thread is not at eye level may cause errors of several tenths of a degree. Figure 17 is an illustration of this condition.

(*3*) Read the Fahrenheit scale if the barometer reading is to be taken in inches.

(*4*) Read the centigrade scale if the barometer reading is to be taken in millibars.

#### b. Applying Correction.

(*1*) Most of the thermometers supplied with Barometer ML-330/FM are sufficiently accurate that their readings do not require

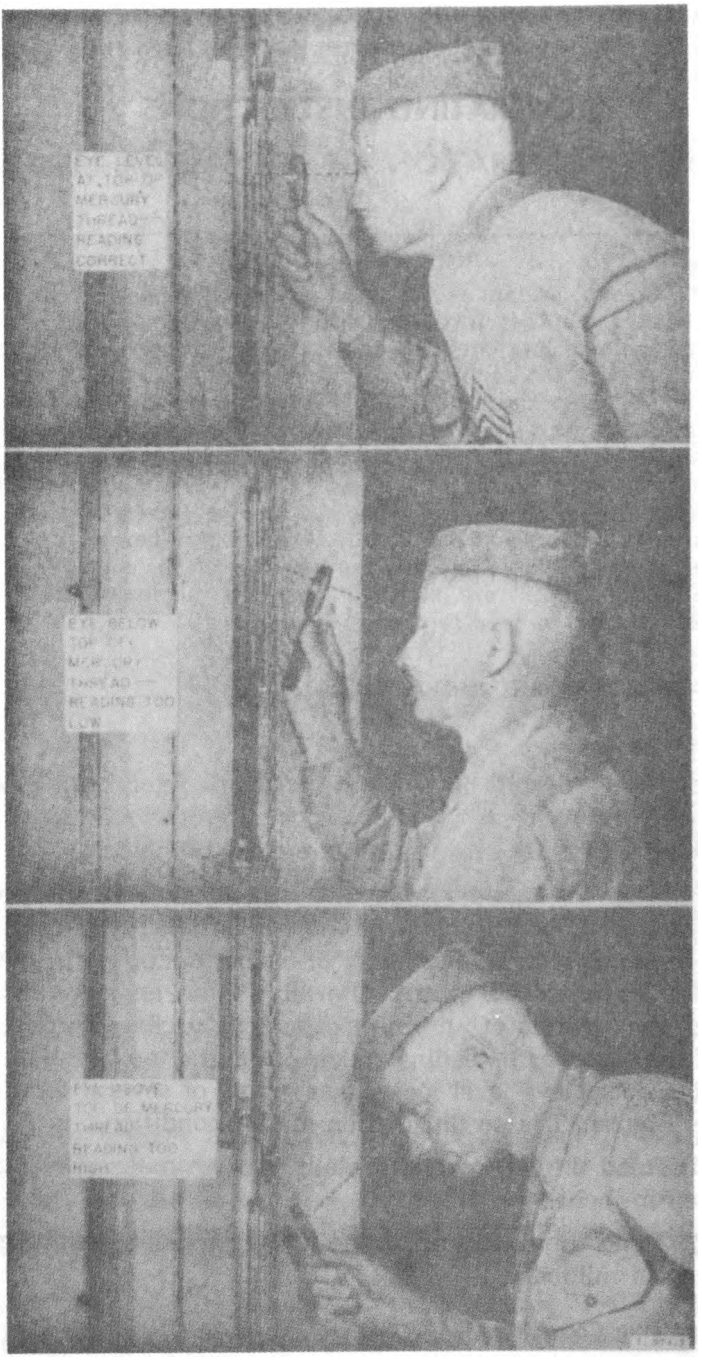


***Figure 16. Correct and incorrect positions for reading thermometer scales.***

correction. If the thermometer attached to a particular Barometer ML-330/FM required correction, a sheet titled "Results of Thermometer Test" is supplied. The corrections indicated on

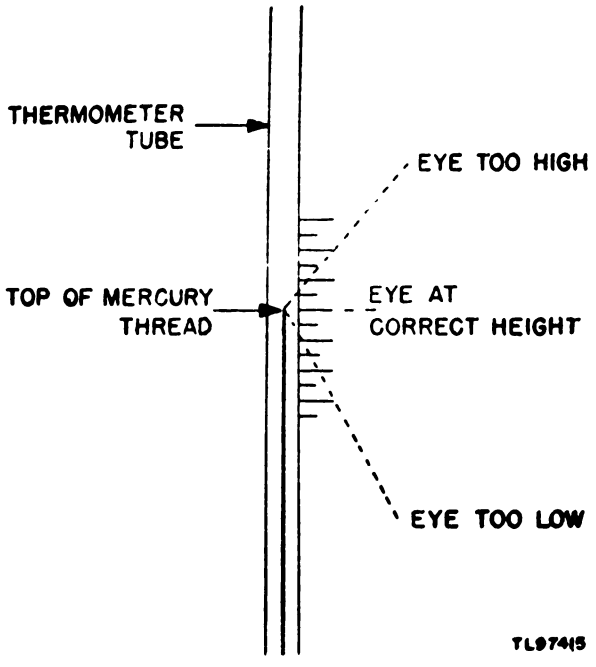


*Figure 17. Sketch showing how parallax causes error in reading scales.*

this sheet should be applied to all thermometer readings. In practically every case, corrections will be necessary over only a very limited part of the thermometer range. In the second column of the correction sheet labeled *Temperature of Bath ° F.,* find the temperature nearest to the one read on the thermometer scale in subparagraph a above. The correction to be applied to the reading is in the last column.

(*2*) Apply the correction listed to obtain the true temperature. Corrections should be added algebraically.

**22. SETTING THE CISTERN.**

The operation which is known as setting the cistern consists of adjusting the level of the mercury in the cistern to the ivory point.

**a. Preliminary.**

(*1*) Open the doors of the mounting case as far as they will go so that the instrument is completely exposed.

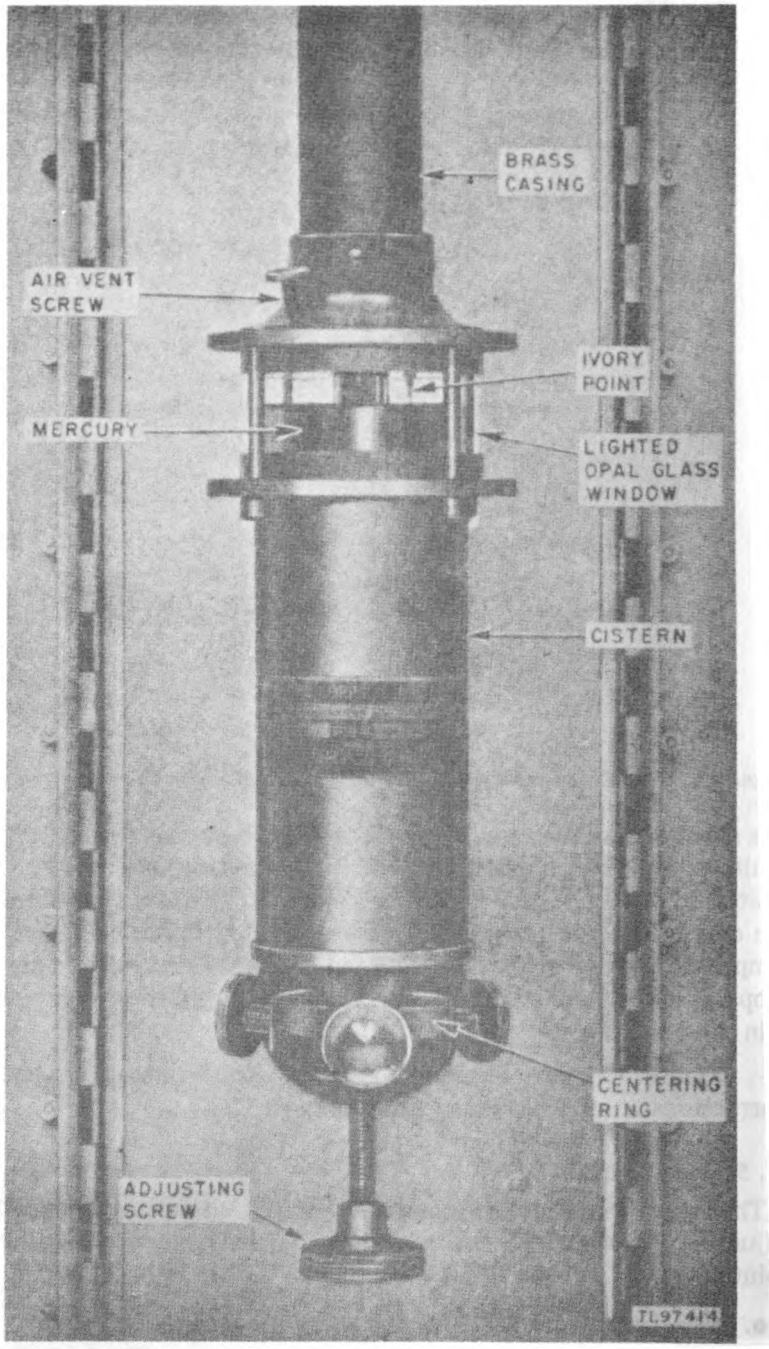


*Figure 18. Ivory point in proper contact with mercury surface.*

(2) Opening the door of the mounting case automatically closes the switch at the bottom of the case and applies power to the lighting circuit. Depress the switch on the mounting panel (the uppermost of the two switches) for a few moments until a faint glow appears behind the opal glass windows, then release the switch. The lights will come on. (The lights are automatically turned off by closing the doors of the case.)

(3) Lightly tap the glass cylinder of the cistern to allow the mercury to assume a normal curvature where it contacts the glass.

**b. Procedure.**

(1) Turn the adjusting screw to lower the surface of the mercury in the cistern until it is definitely below the tip of the ivory point. **Be careful not to turn the adjusting screw far enough to expose the lower end of the glass tube. To do so permits entrance of air into the tube which will ruin the barometer. As a precaution, never lower the mercury surface more than ¼ inch below the ivory point.**

(2) Now slowly turn the adjusting screw of the barometer, raising the level of the mercury until only the slightest thread of light can be detected between the ivory point and the mercury.

NOTE: Because of the small opening in the air vent screw (par. 4e), the constriction in the bore of the glass tube at the lower end, and the relatively large quantity of mercury which must pass through this constriction, the adjusting screw must be turned *extremely slowly*. Turning the screw at a rate which may be entirely appropriate for Barometer ML-2-( ) may momentarily compress the air in the cistern. When the pressure readjusts itself, it may be found that too much mercury has been raised so that the ivory point will be depressed into the mercury. For this reason the setting must be checked 15 to 30 seconds after it is completed to make sure that the ivory point and mercury surface are still in proper contact.

(3) Use of the reading glass will result in a more accurate setting of the cistern. As the adjusting screw is turned, sight along and parallel to the mercury surface until no light can be seen between the ivory point and the mercury surface.

(4) Still using the reading glass, check this setting by sighting on the point of contact at an angle of about 30° with the mercury surface. Sighting at this angle makes it easy to determine whether or not the ivory point is making an indentation in the mercury.

(5) If there is more than the slightest dimple where the ivory point makes contact with the mercury surface, reset the cistern

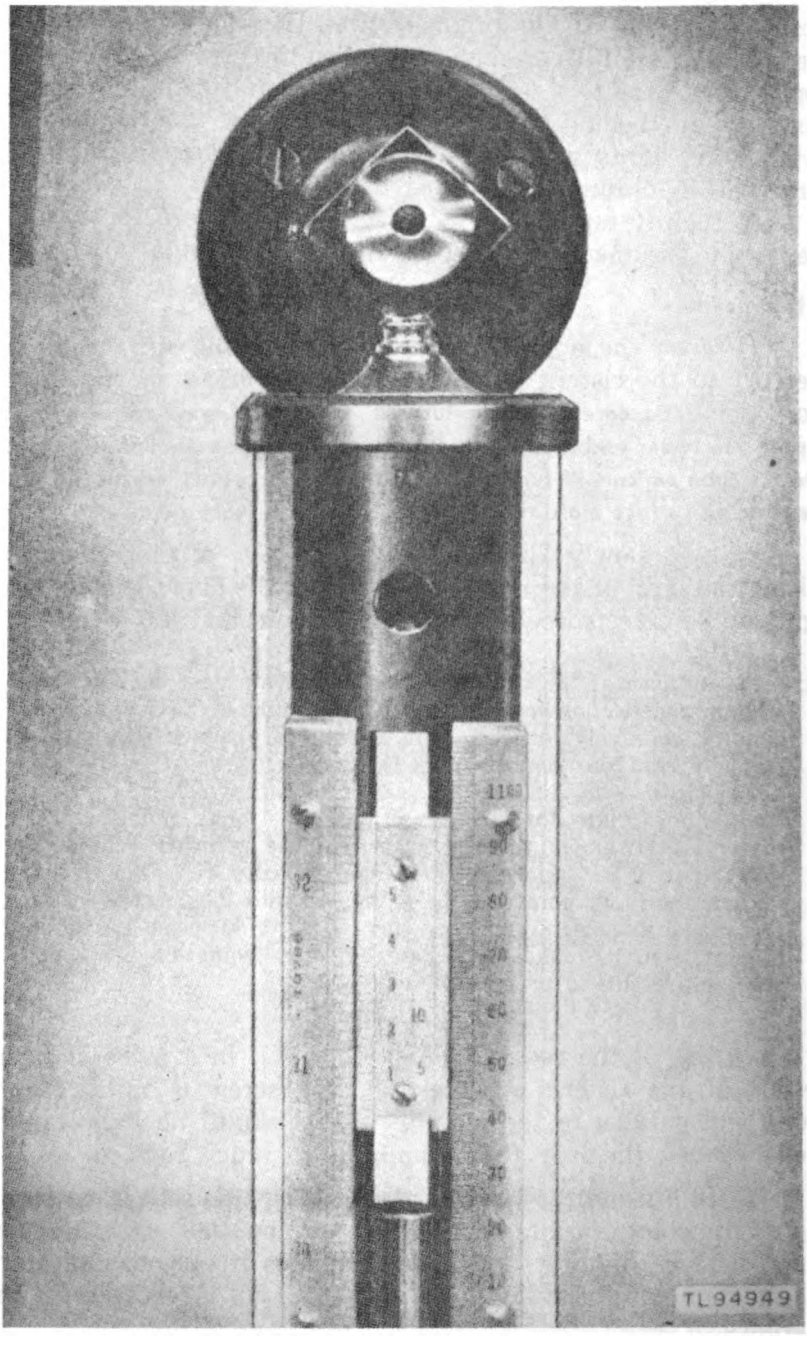


*Figure 19. Rounded summit of mercury meniscus before setting vernier.*

by turning the adjusting screw until the mercury is lowered enough to again admit light between the mercury and the ivory point. Again slowly raise the mercury surface and use the reading glass while sighting along and parallel to the mercury surface and check the setting by sighting at an angle of about 30°.

(6) If, when sighting on the point of contact at a 30° angle, no depression exists, turn the adjusting screw very slowly until a minute circle can be detected in the mercury around the ivory point.

NOTE: In setting the cistern, be careful not to overshoot. Always bring the mercury *up* to the ivory point, never down. If it is necessary to reset the level of the cistern, lower the mercury enough so that light may be seen between the ivory point and the mercury surface and then bring it up.

**23. ADJUSTING VERNIER.**

**a.** Tap the metal casing lightly with the fingertips near the top of the mercury column. This is done to assure the formation of a proper meniscus (the rounded summit of the mercury in the glass tube). It will be noted that the meniscus of the mercury column of Barometer ML-330/FM is less rounded and less dome-shaped than the meniscus of Barometer ML-2-( ). This is due to the larger bore of the tube in Barometer ML-330/FM.

**b.** Turn the knurled thumbscrew (fig. 3) to raise the vernier *above* the top of the mercury.

**c.** Then *lower* the vernier slowly until its front lower edge, the top of the mercury meniscus, and the back lower edge of the vernier are directly in line with the eyes held on the same level.

**d.** As the vernier is lowered, the lighted area of the opal glass window, as seen through the barometer tube between the bottom of the vernier and the top of the mercury column, becomes narrower. When the vernier is near proper adjustment, this lighted area appears as a narrow slit; it is straight across the top and rounded upward in the center across the bottom (fig. 20).

**e.** Adjust the vernier until this slit is so narrow it can barely be seen as a continuous streak of light across the opening. In making this adjustment, it is particularly important that the observer's eye be on the same level as the lower edge of the vernier. Check the eye level by slowly moving the eye very slightly above and below the vernier. As the eye is moved up and down, the edge of the vernier will cut off the slit of light completely.

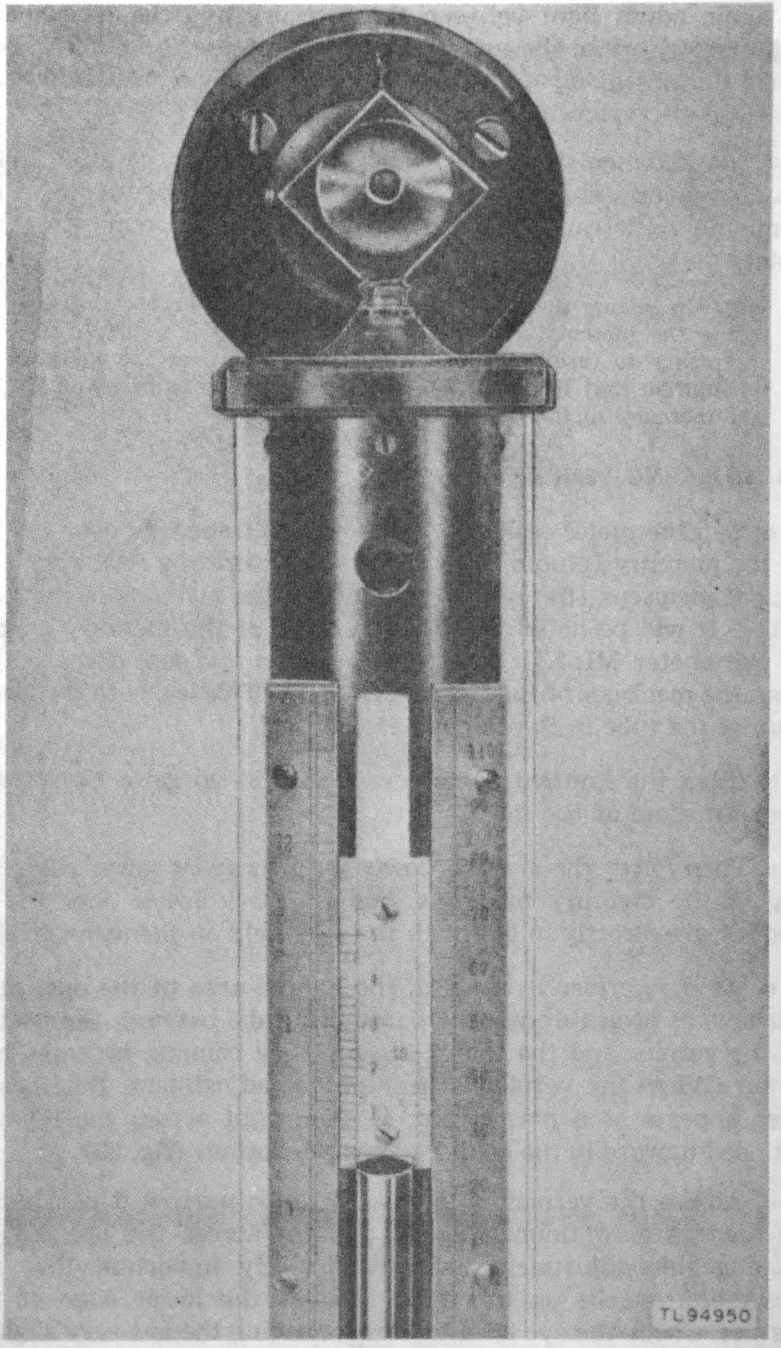


*Figure 20. Vernier properly set on mercury meniscus, showing triangular areas of light.*

When the slit appears to be the widest, the observer's eye is at the proper level.

f. Now lower the vernier until the slit of light just disappears in the center where the mercury column is highest. Two small, somewhat triangular areas of light will then be seen on each side of the center of the mercury column (fig. 20). The vernier is now properly adjusted and the scales may be read.

**24. READING INCH SCALE (fig. 21).**

**a. Value of Scale Divisions.**

(*1*) The inch scale is graduated in twentieths of an inch. Expressed decimally, this is .05 inch. Integral inch divisions are numbered; inch and half-inch graduations are the same length and are longer than the other graduations; .1-inch graduations are longer than .05-inch graduations.

(*2*) Twenty-five divisions on the inch vernier are equal to 24 divisions on the adjacent inch scale.

(*a*) This makes the height of the inch vernier scale (24 × .05) 1.20 inches.

(*b*) Since the inch vernier scale has 25 divisions, each division is equal to (1.20 ÷ 25) .048 inch.

(*3*) Thus, the difference between a division on the inch scale and a division on the inch vernier scale is (.050 − .048) .002 inch.

(*4*) Whenever the zero line (the lowest graduation) of the inch vernier is exactly coincident with one of the inch scale graduations, the first vernier graduation above the zero line will be .002 inch below the next inch scale graduation, the second vernier graduation above the zero line will be .004 inch below the next inch scale graduation, etc.

(*5*) Whenever the zero line is not in coincidence with an inch scale graduation, the vernier graduation that *is* in coincidence, or is nearest to being in coincidence, indicates how many times .002 inch the zero line is from the nearest inch scale graduation.

(*6*) For convenience in reading the vernier, the fifth graduation above the zero line is marked with the number 1, indicating (5 × .002) .01 inch; the tenth graduation is marked with the number 2, indicating (10 × .002) .02 inch; the fifteenth graduation 3, indicating (15 × .002) .03 inch; the twentieth graduation 4, indicating .04 inch; and the twenty-fifth graduation 5, indicating .05 inch.

**b. Reading.**

(*1*) If the zero line of the inch vernier scale coincides *exactly* with any graduation on the inch scale, that inch graduation is the height of the mercury, and the vernier is not read further.

(*a*) If the zero line is coincident with a whole inch graduation, that designation is the height of the mercury.

(*b*) If the zero line is coincident with one of the graduations *between* whole inches, count the number of such graduations from

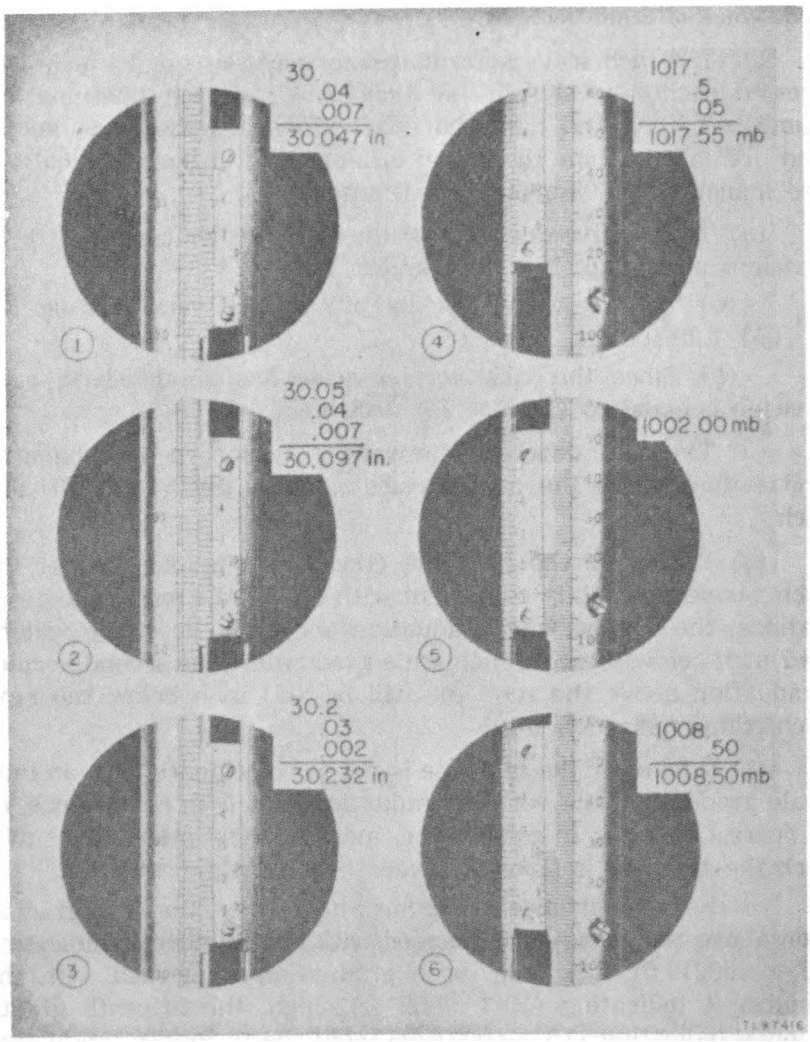


*Figure 21. Sample readings of scales of Barometer ML-330/FM, in inches and millibars.*

the whole inch designations *below* the zero line. Add this amount to the whole inch reading. The result is the height of the mercury.

**EXAMPLE:** If the zero line is coincident with the third graduations above 30, the reading is 30 plus .15 (3 × .05) or 30.15 inches.

(*c*) If the zero line of the inch vernier scale is not coincident with a graduation on the inch scale, look upward along the vernier until the vernier graduation closest in coincidence is found. That graduation determines the decimal portion of the reading.

(*2*) The following are three examples of how to read the inch scale and vernier:

(*a*) *Example 1 (fig. 21* ①).

*1.* In this setting, the zero line of the vernier is above 30 inches and below 30.05.

*2.* Since the zero line of the vernier does not coincide exactly with a line on the inch scale, look upward along the scales until two lines are discovered to be in coincidence, or nearly so.

*3.* In this case, the third and fourth lines above 4 on the vernier coincide most nearly with a line on the inch scale.

*4.* Had the line marked 4 on the vernier scale coincided with a line on the inch scale, the reading would have been .04. Since coincidence is above this point, the reading will be more than .04.

*5.* If the third vernier line above 4 coincided exactly with a line on the inch scale, the reading would be increased by 3 times .002, or .006. If the fourth vernier line above 4 coincided exactly with a line on the inch scale, the reading would be increased by 4 times .002, or .008. Since the fourth vernier line above 4 is a little *below* the corresponding line on the inch scale, and the third vernier line a little *above* its corresponding line, the approximate reading is .007 more than .04.

*6.* This makes the total reading 30 inches, plus .04, plus .007, a total of 30.047 inches.

(*b*) *Example 2 (fig. 21* ②).

*1.* This example illustrates an important point in reading the barometer. The reading from the inch scale is 30 inches, plus .05 (30.05).

**CAUTION: Do not forget to add .05 to the final reading. Unless care is exercised in reading the scale, this amount may be overlooked and only the vernier reading added to the whole inch plus the .1 inch value. Whenever the zero of the vernier is above a .05 graduation and below the next .10 graduation on the inch scale, the .05 must be added to the reading.**

*2.* Examination of the vernier shows that no line is in exact coincidence with a line on the inch scale. In this instance, as in the preceding one, the lines that are more nearly in coincidence are the third and fourth lines above 4. If the third line above 4 were in coincidence, the amount to be added would be 3 times .002, or .006. If the fourth line above 4 were in coincidence, the amount to be added would be .008. But since the one is a little above and the other a little below the corresponding lines on the inch scale, the approximate reading is between the two, and is .007.

*3.* Thus, the total reading is 30.05, plus .04 (since the lines most nearly in coincidence are above the figure 4 which represents .04), plus .007, or 30.097.

(*c*) *Example 3* (*fig. 21* ③).

*1.* In this instance the zero line of the vernier is above 30.20 and below 30.25.

*2.* Look up along the scales. The line on the vernier that most nearly coincides with one on the inch scale is the first line above 3.

*3.* Thus, the reading is 30.20, plus .03, plus .002, or 30.232 inches.

### 25. READING MILLIBAR SCALE.

#### a. Value of Scale Divisions.

(*1*) The millibar scale is graduated in whole millibars.

(*2*) Twenty divisions on the millibar vernier scale are equal to 19 divisions on the millibar scale.

(*3*) Thus each vernier graduation is $^{19}/_{20}$ of a millibar, and the *difference* in length between a vernier graduation and a millibar scale graduation is $^{1}/_{20}$ of a millibar or .05 mb.

(*4*) For convenience in reading the millibar vernier, the middle of the scale is marked with the number 5 which denotes (.5) millibar and the top graduation is marked with a 10, denoting 1.0 millibar.

(5) Whenever the zero line (lowest graduation of the millibar vernier) coincides exactly with a line on the millibar scale, the first vernier graduation above the zero line will be $\frac{1}{20}$ millibar (.05) lower than the next millibar scale graduation, the second vernier graduation above the zero line will be $\frac{1}{10}$ (.1) millibar below the next graduation on the millibar scale, etc.

**b. Reading.**

(1) When the zero line of the vernier coincides with a line on the millibar scale, the top line of the vernier will coincide with another line on the scale. The reading is then expressed in whole millibars represented by the line which coincides with the zero line of the vernier.

(2) When the zero line is not in true coincidence, read the millibar scale to the nearest whole millibar and then use the vernier. Look upward along the scales until a line is discovered that does coincide, and add this fraction, in tenths or five-hundredths of a millibar, to the whole millibar reading.

(3) The following are three examples of how to read the millibar scale and vernier.

(a) *Example 1* (*fig. 21* ④).

1. In this example, the zero line of the vernier is more than 17 millibars above 1000.00, making the reading 1017.00 plus some fraction of a millibar.

2. Since the zero line does not coincide, look up along the scale. The first line above 5 seems to be most nearly in coincidence. The 5 adds .5 to the reading, and the first line above 5 adds .05. The final reading is, therefore, 1017.55 millibars.

(b) *Example 2* (*fig. 21*⑤). In this illustration the zero line of the vernier coincides exactly with the second line above 1000 on the scale, making the reading 1002 millibars.

(c) *Example 3* (*fig. 21*⑥). In this instance the zero line of the vernier is above 1008.00 millibars on the scale. The line numbered 5 seems to coincide exactly, which makes the reading 1008.50 millibars.

## 26. CORRECTING OBSERVED READING.

**a. Purpose.**

(1) The observed reading of Barometer ML-330/FM is not a true indication of atmospheric pressure. There are *instrumental errors* (explained below) which require correction. A correction must be applied also to compensate for the effect of *gravity* which varies with latitude and altitude.

(2) The *temperature* of the instrument at the time of reading requires still another correction since a change in temperature affects the length of both the metal scale and the mercury column.

(3) By the use of appropriate tables and information given on SC Form No. 79 and Form SC 437, section I, all of these corrections can be determined, in terms of inches and millibars, so that they can be applied to the observed reading of the barometer. When this has been done, the resulting reading represents true atmospheric pressure.

**b. Instrumental Errors.** Included under this heading is a combination of mechanical and natural errors encountered in constructing the instrument. Due to inherent characteristics of Barometer ML-330/FM instrumental errors are minimized. By using a tube of larger bore and by careful construction and testing, these errors have been made much smaller than they are in Barometer ML-2-( ). They are still present, however, even though in reduced amount.

(1) *Capillarity.* In Barometer ML-330/FM the top of the mercury, or meniscus, in the glass tube is somewhat convex because of the capillary action between the mercury and the glass. As a result, the mercury is depressed a slight amount and does not indicate the true height of the column. This error is very small. The maximum possible value, even if the meniscus should disappear entirely, does not exceed .005 inch. Capillarity is seldom constant, but it has been largely eliminated by adjusting the scale to compensate for the *average* capillary depression.

(2) *Imperfect Vacuum.* It is generally assumed that the space in the barometer tube above the mercurial column is a perfect vacuum, but this is seldom the case. Traces of air or water vapor which may be present in the tube exert a downward pressure upon the top of the column of mercury. In any good barometer the air and vapor present will be slight and correction for vacuum will be almost constant, provided the annual range of pressure for the station is not great. In Barometer ML-330/FM, the error due to imperfect vacuum did not exceed .0005 inch when the instrument was calibrated. This error, however, may increase with time.

(3) *Scale Error.* The scale error of Barometer ML-330/FM is extremely small, the total error due to engraving the scale never exceeding .001 inch at any point on the scale; generally it will be less than that amount.

(4) *Variable Instrumental Error.* In the past, instrumental errors have been determined for the prevailing surface pressure only. By the use of special calibration equipment the instrumental error for Barometer ML-330/FM has been determined throughout the entire scale range at ½-inch intervals.

(5) *Summary.* It is never possible, nor is it necessary, to know what part of the error is due to each of the three separate factors above. The instrumental corrections over the entire pressure range of the barometer have been determined and are entered in Form SC 437, section I. These corrections have been determined as a result of careful comparisons with extremely accurate standards of pressure. When obtaining corrected readings of Barometer ML-330/FM, the instrumental error for the pressure listed in Form SC 437 which most nearly corresponds to the ambient pressure should be used. No attempt should be made by using personnel to readjust the scales of the barometer.

**c. Gravity Corrections.**

(1) When a barometer is located at sea-level and about 45½° latitude, where gravity has, by definition, a standard value, gravity corrections need not be applied to its readings. At all other locations, corrections for variations in the local value of gravity from the standard must be applied. The correction for gravity consists of a correction for both altitude and latitude. These corrections may be determined, assuming theoretical gravity to prevail, from the Smithsonian tables or from table I (altitude) and table II (latitude) in this manual. As noted in paragraph 44, there is generally a small difference (which will seldom alter the correction by more than a few thousandths of an inch) between the true value of local gravity as actually measured, and the calculated theoretical value. The gravity correction for the Regional Control Office to which Barometer ML-330/FM was originally shipped was determined by Evans Signal Laboratory and inscribed on SC Form No. 79 which accompanies the barometer. This correction, which must be applied to each reading of the barometer, is based on actual gravity measurements or on values interpolated from actual measurements for all stations where this has been possible. The magnitude of the correction may therefore differ from the value which would have been obtained from the tables. For some stations it has been found necessary to use theoretical values of gravity.

(2) In the event that the location of the Regional Control Office is changed, a new gravity correction must be determined for the new location. As an emergency measure, until a more

precise value can be obtained, compute a new gravity correction in accordance with the directions in paragraph 56. At the earliest opportunity, however, application should be made through channels for a new gravity correction. The latitude, longitude, and elevation of the new location should be given in the application. Upon receipt of this request, Evans Signal Laboratory will determine a new correction, including gravity anomaly.

**d. Temperature.**

(*1*) The temperature of a barometer affects the accuracy of its reading in two ways:

(*a*) The metal scale expands and contracts with changing temperature and is, therefore, continually changing in length.

(*b*) The mercury itself expands and contracts much more than the scale. For instance, a column of mercury which is 30 inches high at 80° F will be only 29.861 inches high when the mercury is at 32° F temperature and the pressure remains the same. The true pressure of the air, therefore, is not shown by the observed height of the mercury until both the temperature of the scale and the density of the mercury are taken into account.

(*2*) The standard temperatures adopted for the barometer are as follows:

(*a*) The standard temperature for the inch scale is 62° F.

(*b*) The standard temperature for the mercury is 32° F.

(*c*) The standard temperature for the millibar scale is the same as that for mercury, 32° F.

(*d*) By combining the temperature correction for the inch scale with the temperature correction for the mercury, the correction is zero at 28.6° F.

(*e*) Since the standard temperature for the millibar scale is the same as the standard temperature for the mercury, 0° C, the combined correction is zero at 0° C.

(*3*) Thus when observations are made at temperatures other than 28.6° F, using the inch scale, or at temperatures other than 0° C, using the millibar scale, the appropriate correction for temperature given on Form SC-80 must be applied. An explanation of the temperature correction tables is given in paragraphs 54 and 55. These paragraphs should be read carefully.

**e. Application of Corrections.** The following three corrections must be applied to every reading of the barometer:

(*1*) The *gravimetric correction,* recorded on SC Form No. 79.

(*2*) The *instrumental correction,* entered in column s, Form SC 437, section I.

(*3*) The *temperature correction,* determined as follows:

(*a*) The temperature correction when the barometer is read in *inches* or *millibars* is found on Form SC-80.

(*b*) For temperatures above 28.6° F or 0° C the corrections are subtracted; for temperatures below these values, the corrections are added.

**CAUTION: In applying these corrections, be careful to use the correct algebraic sign (+) or (−). Applying the algebraic sum of the corrections is another way of saying that all corrections with a minus sign are subtracted and all with a plus sign are added to the observed reading.**

**f. Station Pressure.** True pressure is obtained only after the corrections mentioned in subparagraph e above have been applied to the observed reading.

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## SECTION IV. OPERATION OF BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM

### 27. READING BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.

**a. Preliminary Procedure.**

(*1*) Remove the aneroid barometer from the carrying case.

(*2*) Place the instrument on a level horizontal surface. The precision aneroid barometer must always be read in a horizontal position. In making comparisons with a mercurial barometer, the aneroid must be at the same height (within ½ foot) as the ivory point of the mercurial barometer.

(*3*) Open the case *but do not raise the push button controlling the valve.* The metal case of the aneroid should have been sealed by closing the valve prior to its use in measuring pressure. If the instrument is newly received at the Regional Control Office, the case will have been sealed when it was shipped. If it is being used on a field trip (par. 33), it should have been sealed prior to departure from the Regional Control Office.

NOTE: If the aneroid is being used at a field station where the pressure is within ±50 mb of the pressure at which the barometers were sealed at the Regional Control Office, the valve may be opened at any time without introducing appreciable error in the aneroid reading. As noted in paragraph 20, when the aneroids are at the Regional Control Office the cases are always unsealed and the instruments may be read at any time without special procedure.

(4) Note the pressure indicated by the aneroid. If, from leakage or other cause it has departed as much as ±50 mb from the pressure at which it was sealed at the Regional Control Office, readjust the pressure in the metal case by means of the pump. Under no circumstances should the pressure be allowed to vary by more than ±50 mb from the value at which the barometer was sealed. If the ambient pressure at the station where the aneroid is being used differs from the pressure at which it was sealed by more than 50 mb, the case should remain sealed until 15 minutes before the aneroid is actually to be used.

**b. Waiting Period.**

(1) When an aneroid barometer is first received at a Regional Control Office, sufficient time must be allowed to elapse before it is used to permit recovery from any hysteresis effects (par. 46a) to which it may have been subjected during transportation. If it is known that the instrument has been transported for a long distance by water (where pressure changes would be small) or if it is known that the pressure in the case was frequently readjusted during transportation so that it remained within 50 mb of the value at which it was sealed, the instrument can be used within 2 hours, if necessary, provided the ambient pressure of the Regional Control Office is within 50 mb of the pressure at which the aneroid case was sealed. Although 2 hours is the minimum waiting period, 1 day's time should be allowed for readjustment if feasible. If the ambient pressure differs from the pressure at which the case was sealed by as much as 100 mb or if it is likely that the barometer was subjected to pressure changes of this amount during transportation, the barometer should not be used for at least 3 days after receipt and preferably 1 week. If pressure differences of the order of 200 mb or more are involved, the barometer should not be used for at least 2 weeks, and preferably 1 month.

(2) When an aneroid barometer is taken from the Regional Control Office on field trips for the purpose of making comparisons with station mercurial barometers, a period of at least 2 hours should elapse before use to allow the instrument to reach temperature equilibrium. During this interval the case should re-

main sealed, unless ambient pressure is within 50 mb of the pressure in the case. After this period observations may be started. The instructions for the waiting period, given above, are based on the assumption that the pressure has been held within ±50 mb of the ambient value at the Regional Control Office during transportation to the field station. If pressure changes greater than this have been encountered during transportation, the waiting times given in subparagraph b(1) above should be used.

**c. Procedure Before and After Reading.**

(*1*) When the barometer has rested a sufficient time and it is desired to use it to make an atmospheric pressure measurement, open the valve in the case by lifting the push button. *Wait 15 minutes before making the reading.* Additional readings may be made, if desired, in the next 15-minute interval, but do not keep the interior of the aneroid exposed to atmospheric pressure for more than 30 minutes at any one time.

(*2*) After the reading is completed, close the valve. Use the pump to adjust the pressure in the metal case to approximately the same value as when the case was sealed at the Regional Control Office. Wait at least 1 hour before using the instrument again. (The reason for this procedure is given in paragraph 48.)

NOTE: If the pressure at the point where the barometer is being used is within 50 mb of the pressure at which it was sealed at the Regional Control Office, it is not necessary to follow the procedure just outlined. The valve may be opened at any time. After the proper waiting period, the barometer may be used at will until it is to be transported again. At this time it should be resealed.

**d. Making Readings.**

(*1*) Tap the instrument lightly to see that the pointer is free and in equilibrium. If the pointer moves slightly to each side of its rest position, the movement is sufficiently free. The dial must be in good light so that the image of the pointer is clearly visible in the mirror ring. The light should preferably come from directly above or if this condition cannot be satisfied, place the aneroid so that the pointer is directed *toward* the light source.

(*2*) Use the reading glass to read the scale of the aneroid barometer. To read the instrument correctly, have the eye directly above the pointer so that the image of the pointer in the mirror ring is obscured by the pointer itself. This is important in order to avoid parallax, an effect which can readily be seen by moving

the head to either side of the correct position and noticing the difference in the apparent indication of the pointer.

(*3*) Sight through the center of the reading glass and estimate the position of the pointer on the scale to the nearest tenth of a millibar. Record the reading. This reading is the "Observed Barometer Reading" or "Aneroid Barometer Reading" to which reference is made in Form SC 436, SC 437, and SC 438. (This reading does not represent atmospheric pressure until it is corrected for temperature and scale errors.)

### 28. CORRECTING READINGS OF BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.

#### a. Temperature Correction.

(*1*) The precision aneroid barometers are designed so that the temperature correction at 75° F is zero. At temperatures above and below this value, the indications of the barometer are slightly affected by temperature. However, this correction need not be applied unless it equals or exceeds .1 millibar, since the scale of the barometer cannot be read with greater accuracy than that. Ordinarily, for temperatures 20° F above or below 75° F the correction will not exceed .1 millibar.

(*2*) A temperature correction curve showing the difference in calibration due to temperature is determined for each instrument individually. This curve is plotted on a graph which is mounted on an aluminum plate and is carried inside a pocket in the lid of the carrying case. Figure 11 shows such a correction curve, together with a pressure conversion chart.

#### b. Determining Temperature Correction.

(*1*) Locate the indicated pressure on the horizontal scale of the temperature correction curve. Note the point on the correction curve which is vertically above or below this pressure valve.

(*2*) Read the value of the correction to be applied per degree Fahrenheit (above or below 75° F) from the point on the vertical scale of the graph, corresponding to the point on the curve.

(*3*) Determine the difference between the existing temperature and 75° F.

(*4*) Multiply the correction (found in subparagraph (2) above) by this difference.

(*5*) Add or subtract this value from the observed reading as directed on the graph.

**c. Example of Temperature Correction.**

(*1*) Assume that the indicated pressure is 1010.3 mb and the temperature 110° F.

(*2*) Using the temperature correction chart, find the indicated pressure on the horizontal scale. Move up vertically along this pressure line until it intersects the temperature curve. Determine the correction by locating the value on the vertical scale of the graph which is horizontally opposite this point of intersection.

(*3*) Assume that the temperature correction for this pressure is found to be −.005 mb per degree F. (The correction is estimated to the nearest .001 mb.)

(*4*) A temperature of 110° F is 35° F above 75° F. Therefore, the correction per degree (−.005) is multiplied by 35, giving a total correction of −.175 mb.

(*5*) Since the aneroid barometer reading is taken only to the nearest tenth millibar, the correction becomes −.2 mb. Therefore, the pressure corrected for temperature is:

$$\begin{array}{r} 1010.3 \text{ mb} \\ -.2 \text{ mb} \\ \hline 1010.1 \text{ mb} \end{array}$$

**d. Scale Correction.**

(*1*) A further correction is made in reading aneroid barometers, namely, one for scale error. Barometers ML-331/TM, ML-332/TM, and ML-333/TM have dials which are hand-engraved by the manufacturer from calibration data taken on the individual instruments; hence, the scale errors of these instruments are usually quite small. There is, however, some possibility of slight error in drawing the scales. In addition, the characteristics of the aneroid cell change slightly with time, particularly when the instrument is new. This introduces a further small error. To correct for these errors as nearly as possible, each instrument is calibrated several times before it is shipped to the Regional Control Office. The errors found in these calibrations are tabulated in Form SC 438, section I, and are shown graphically on the curve of the scale calibration correction chart mounted in the lid of the wooden shock-mounting case.

(*2*) Even with these precautions, however, it is doubtful if the calibration curve supplied with the instrument will completely

correct its indication. Between the time the aneroids are last calibrated at Evans Signal Laboratory and the time they are received at the Regional Control Office, a slight shift may occur due to transportation or further aging of the cell. This change, if present, should be quite small if the aneroids are functioning properly.

**e. Determining the Scale Correction as Given on the Calibration Curve.** The following procedure should be employed in obtaining scale corrections as determined from the calibration curve.

(*1*) Locate the pressure indicated by the aneroid on the horizontal scale of the graph in the lid of the mounting case. Note the point on the correction curve which is vertically above or below this pressure value.

(*2*) Read the value of the correction to be applied from the point on the vertical scale of the graph which is horizontally opposite the point on the curve.

(*3*) Note this value, giving it the proper algebraic sign.

**f. Approximate Corrected Aneroid Barometer Reading.** If it could be assumed that no change in calibration of the aneroid barometers had occurred since they left Evans Signal Laboratory, the true pressure would be obtained by adding the scale calibration correction and the temperature correction to each observed reading of the barometers. As noted in subparagraph d (2) above, this assumption is probably not valid. The pressure value thus obtained would be only approximately correct.

**g. Completely Corrected Aneroid Barometer Reading.**

(*1*) It is more likely that aging of the aneroid cell and handling of the instrument has caused some slight deviation from the correction found to be applicable on the basis of calibration at Evans Signal Laboratory. Hence the correction shown on the curve must not be applied without first verifying the correction curve over a limited pressure range by comparative readings between the aneroids and Barometer ML-330/FM, as outlined in paragraph 30. If the average correction obtained from these comparisons is different from that indicated on the correction curve for the same pressure values, a modified correction must be determined. A method of obtaining this *modified correction* is given in paragraph 30g.

(*2*) When the true scale correction has been determined by the method given in paragraph 30g, it should be added algebraically to the temperature correction and this sum of correc-

tions added algebraically to the observed barometer reading to obtain the *completely corrected barometer reading.*

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## SECTION V. OPERATION OF THE SET

### 29. GENERAL.

**a. The Set.** As explained in paragraph 1, *the set* consists of Barometer ML-330/FM which is installed at the Regional Control Office (RCO) and two precision aneroid barometers which are used by Army Air Force weather inspectors to check mercury and aneroid barometers at field stations.

**b. Corrections.** Any correction determined for the precision aneroid barometers in comparision with Barometer ML-330/FM and any corrections at the field stations determined for Barometers ML-2-( ) in comparison with the precision aneroid barometers must consist of a series of 10 comparative readings wherein all instruments involved in the comparison are read as nearly simultaneously as possible.

**c. Forms.** The instructions in this section include the use of the forms furnished with the set. *The success of the entire program of barometer comparisons depends upon complete and meticulous records.* Too much emphasis cannot be placed upon the importance of reading the instruments accurately and recording the data immediately on the forms. An explanation of each form is printed on the form itself and a brief description is given in section X, paragraphs 51 to 53, inclusive.

**d. Temperature at Which Observations Are Made.** It has been emphasized that the barometers (either mercury or aneroid) should not be read when the temperature is changing in excess of 3° F per hour. Actually, it is desirable that the rate of temperature change be even slower than this, if possible. Other things being equal, better data will be obtained when the ambient temperature is constant, or nearly so. When possible, therefore, comparisons should be made in rooms where the temperature is particularly constant, or at times of day when the rate of change is at a minimum.

### 30. COMPARISONS AT REGIONAL CONTROL OFFICE.

**a. Preliminary.**

(*1*) In making comparisons of the barometers it is assumed that a series of readings is made by one man.

(2) The mercury barometer may be read either in inches of mercury or in millibars unless specific instructions have been issued. If readings are taken in inches, however, the corrected

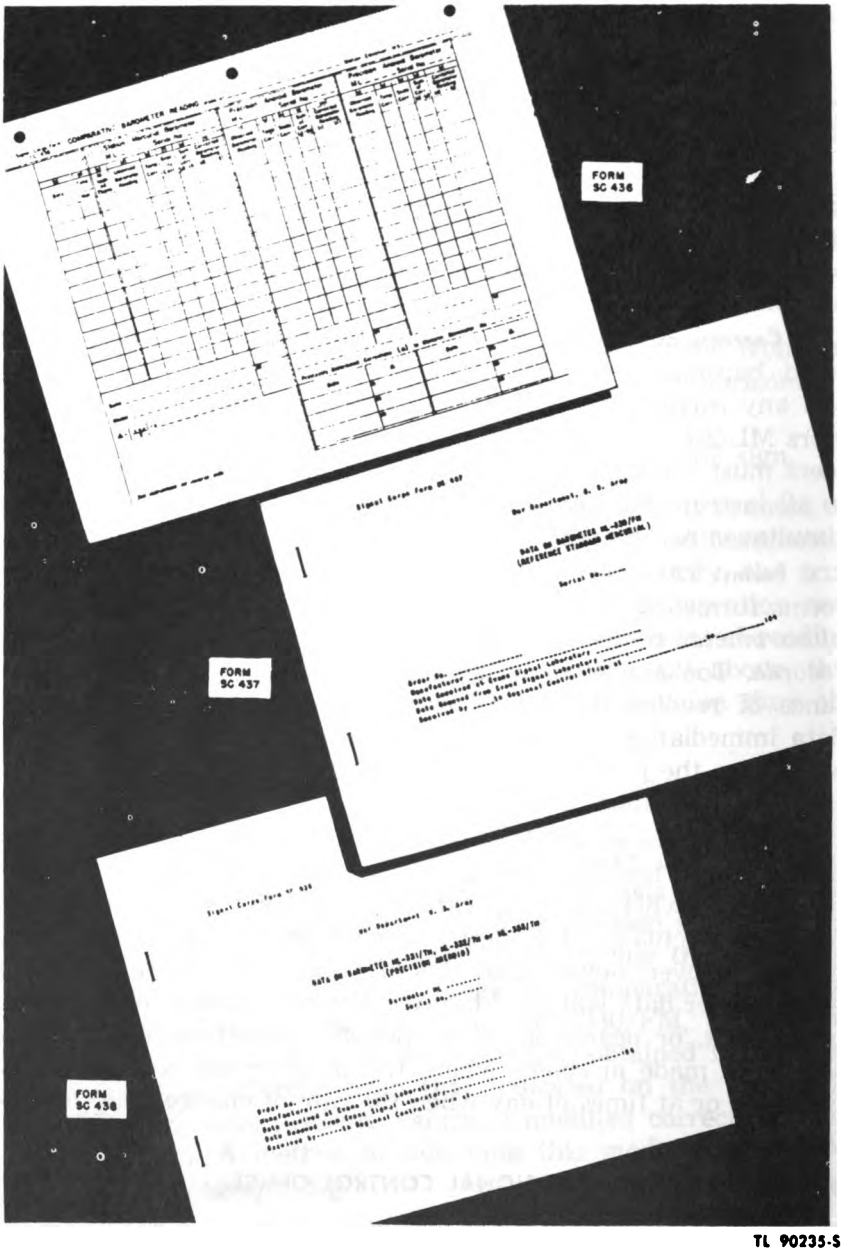


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*Figure 22. Forms for recording data on set of secondary-standard barometers.*

barometer reading must be converted to millibars in order to make comparisons with readings of the precision aneroid barometers.

**b. Form SC 437.** Obtain Form SC 437, section II. Fill in the date and time, giving standard meridian (columns a and b). (If Greenwich time is used, the standard meridian is entered as 0.) Enter the observer's initials in column c. Record the gravity correction (column h) obtained from SC Form No. 79 which is posted near Barometer ML-330/FM. Record in column g the instrumental corrections obtained from Form SC 437, section I, column s. The instrumental correction to be recorded is that for the pressure value, listed in section I, which is nearest the prevailing station pressure.

**c. Taking Readings.**

(*1*) Read the attached thermometer on Barometer ML-330/FM (using the reading glass) in degrees Fahrenheit if the pressure is to be read in inches; in degrees centigrade, if the pressure is to be read in millibars. Apply the thermometer correction (par. 15g) if a correction is supplied and record the corrected temperature in column d.

(*2*) Set the cistern of Barometer ML-330/FM, using the reading glass.

(*3*) Set the vernier (do not use the reading glass), but do not read the height of the mercury column.

(*4*) Immediately read the two aneroid barometers (using the reading glass) and record the indications in column 1.

(*5*) Read the mercury barometer and apply corrections. Temperature corrections are found in Form SC-80. Gravity and instrumental corrections have already been entered on the form (subpar. b above).

(*6*) Record the temperature correction for the pressure reading of Barometer ML-330/FM in column f. In entering the tables to obtain this correction, the temperature to be used is the indication of the thermometer attached to Barometer ML-330/FM corrected for the error of the thermometer if any, as explained in paragraph 22b. Record the algebraic sum of the corrections in column i.

(*7*) Record the corrected reading for Barometer ML-330/FM in column j.

(*8*) Apply temperature corrections to the readings of the aneroid barometers. (Temperature corrections are plotted on the

graph on the aluminum sheet which is in the carrying case of each aneroid barometer.)

(9) Record the temperature correction for each aneroid (column m) and the corrected aneroid reading (column n). Note that this reading is corrected for temperature but not for scale error.

**d. Determining Differences in Pressure.**

(1) Determine the difference between the pressure as indicated by Barometer ML-330/FM and by each of the two precision aneroid barometers (column j minus column n).

(2) Record these differences with proper sign in columns o and p respectively, for each of the aneroid barometers. Note that these differences are the true scale corrections of the aneroids *for the particular pressure at which the comparison was made.*

**e. Completing the Series.** Repeat the operations outlined in subparagraphs b, c, and d above, 10 times, at intervals of 15 to 30 minutes.

**f. Summary.**

(1) Find the sum of all the corrections determined for each aneroid. Compute the mean value of the correction from the sum of these corrections for each aneroid and record the results, with the proper sign, in the space provided on Form SC 437, section II. The average correction for the average ambient pressure prevailing during the comparison has now been determined for each precision aneroid barometer.

(2) Transcribe all of the data obtained in each series of 10 comparisons for each aneroid from Form SC 437, section II, to Form SC 438, section IV. Fill out Form SC 438 for each aneroid barometer. The work involved in the initial comparison is now complete.

NOTE: Form SC 437 must never leave the Regional Control Office; it is kept with Barometer ML-330/FM.

**g. Determining True Scale Corrections for the Precision Aneroids.**

(1) As soon as each set of comparisons between Barometer ML-330/FM and the precision aneroids is completed, steps should be taken to correct the scale calibration correction charts in the lids of the wooden aneroid cases. As noted in paragraph 30f, the average pressure difference obtained in that operation is a true scale correction for the average pressure at which the com-

parisons were made. It is now necessary to obtain a true scale correction for all pressures throughout the range of the aneroids. This must be obtained separately for each aneroid.

(*2*) Move along the horizontal pressure scale of the scale calibration correction chart until the pressure value is reached which corresponds to the average pressure prevailing during the comparative readings between the aneroids and Barometer ML-330 FM. Move vertically above or below this line a distance equal to the average pressure difference found in paragraph 30f(1) for the particular instrument being corrected. Positive values should be plotted above the line, negative values below. Mark this point on the graph with a soft pencil.

(*3*) If the calibration of the aneroid has not changed, this point will plot on the calibration curve supplied with the instrument. If, as predicted in paragraph 28g, the calibration has shifted, the point will not plot on the curve. Determine the difference between the point just plotted on the graph and the correction given by the calibration curve for the same pressure. This difference represents the change in calibration *at that pressure* since the aneroid left Evans Signal Laboratory.

(*4*) The difference (change in correction) thus determined should be small. If it is .1 mb or less, it may be ignored. The difference will probably not exceed .3 mb when the aneroid is first received; should it ever exceed 3 whole mb over a long period of time a replacement aneroid should be requisitioned and the doubtful instrument returned to Evans Signal Laboratory.

(*5*) This difference will not be the same throughout the pressure range of the instrument. Its value appears to vary directly with absolute pressure. For example, if the change in correction for a pressure of 1000 mb is found to be .4 mb, then the change in correction at 750 mb will be only .3 mb and at 500 mb, .2 mb. Since the aneroids are only read to the nearest .1 mb, determination of the corrections need not be made to a closer value. Since the correction at 1000 mb is .4 mb and at 750 mb is .3 mb, the value should shift from .4 to .3 at a point midway between 750 and 1000 mb or at 875 mb. Similarly, the change in correction from .3 to .2 mb will occur halfway between 750 and 500 mb or at 625 mb. When the change in correction for one pressure value has been determined in accordance with paragaph 30g(3), changes in correction should next be determined, as illustrated above, for the entire pressure range on the basis that their value varies directly with absolute pressure.

(6) When the changes in correction have been determined for the entire pressure range, these values should be added algebraically to the scale corrections for the same pressures on the correction curve. The resulting values will be the true scale corrections for the aneroid. These true corrections should be plotted on the graph in pencil and a new correction curve, connecting these points, drawn in pencil over the old curve. It will be found that this new curve can be erased easily when required. A new curve should be drawn each time a set of comparisons is made between the aneroids and Barometer ML-330/FM.

(7) The true scale correction for any pressure may now be obtained by reference to the *new* correction curve. This correction, determined for any particular pressure, is the *modified correction* referred to in paragraph 28g.

**h. Determining Correction to Aneroid Barometers After Return to Regional Control Office from Field Trips.**

(1) Before making a field inspection trip, the mean correction resulting from a series of comparisons with Barometer ML-330/FM has been determined for each aneroid, as described in paragraph 30a to 30f, inclusive. These mean corrections have been entered at the bottom of columns o and p in section II, Form SC 437, and each mean correction is ultimately transcribed to the left side of column b, section II, Form SC 438.

(2) After returning from a field inspection trip, a second series of comparisons should be made with Barometer ML-330/FM as soon as possible and a new mean correction determined as before (pars. 30a to 30f). This mean correction for each aneroid should be entered in the right side of column b, section II, Form SC 438.

(3) For any particular aneroid, there may be a small difference between the values of these corrections which have been determined prior to and subsequent to the field inspection trip. If a difference exists, it should be quite small, but the inspector obviously will not know whether the correction determined *before* he left the Regional Control Office (and the one he used on his field trip) actually was the true correction at the time comparisons were made, or whether the correction found *after* his return was correct. This difference, then, is the measure of the uncertainty in the value of the instrumental corrections that have been obtained for the mercurial barometers in the field stations. Should the difference between the corrections determined before and after the inspection trip (the difference be-

tween the two values entered in column b, section II, Form SC 438) persistently equal or exceed .2 mb, the aneroid should be replaced.

**31. PREPARATIONS FOR FIELD STATION OBSERVATIONS.**

**a. Equipment Needed.** In preparation for his trip to the field station, the inspector will assemble the following equipment:

(*1*) A supply of Form SC 436, with carbon paper and pencil.

(*2*) The two precision aneroid barometers with carrying cases.

(*3*) A reading glass.

(*4*) The aluminum temperature correction and pressure conversion chart pertaining to each aneroid barometer.

(*5*) Form SC 438 for each aneroid barometer.

(*6*) Several SC Forms No. 79.

**b. Recording Data.**

(*1*) On each of the Forms SC 438, section II, record the date of departure from the Regional Control Office, the time (giving standard meridian), and the station from which departure is taken (columns c, d, and e).

(*2*) Enter on Form SC 438, section II, the mean correction to each aneroid as determined by comparison with Barometer ML-330/FM and recorded on Form SC 437, section II. Copy this correction in the left-hand side of column b.

NOTE: Complete data on the correction entered in column b is given in section IV of Form SC 438.

(*3*) Just before departure from the Regional Control Office read the pressure as indicated by the aneroids and record the readings in column a in each Form SC 438, section II.

**c. Packing.**

(*1*) Close the aneroid shock-mounting cases and put them into the carrying cases.

(*2*) Put the aluminum correction chart and Form SC 438 pertaining to each barometer inside the pocket of the proper carrying case.

(*3*) Put Form SC 436 and the carbon paper inside the pocket of one of the carrying cases.

## 32. TRANSPORTATION OF ANEROID BAROMETER BETWEEN REGIONAL CONTROL OFFICE AND FIELD STATIONS.

**a. Sealing Case.** When the aneroid barometer is to be transported from the Regional Control Office on field trips, the metal barometer case should be sealed at the pressure prevailing at the Regional Control Office. As noted in paragraph 10b(6)(d), closing the lid of the wooden shock-mounting case closes the valve. This is not a guarantee that the case is sealed, however, unless the tube-pinching mechanism (par. 10b(6)(c)) is also closed.

**b. Maintaining Pressure in Case.** In order to avoid introducing large hysteresis errors the pressure in the case should be maintained at a value within ±50 mb of the pressure at which the case was sealed. Care must be exercised that this is done during transportation and until immediately before the barometer is used for comparisons with station mercurial barometers. Leakage into or out of the metal barometer cases is usually quite small; in all instances the rate of leakage was less than 3 mb per hour when the barometers left Evans Signal Laboratory. However, in order to insure that the pressure does not change more than ±50 mb during transportation, the barometer should be removed from its canvas carrying case about every 12 hours, the lid of the wooden case opened, and the indication of the barometer checked. Ordinarily a few strokes of the pump will compensate for any leakage which has occurred.

**c. Pressure Change in Case Due to Temperature.** Aside from leakage, temperature change is the principal cause of pressure change within the case while it is sealed. It should be borne in mind that a temperature change of 10° F will cause a pressure change of about 20 mb in the case.

> **CAUTION: It is important to remember this fact. If the barometer is being transported in such a manner that it is exposed to large temperature changes it will be necessary to readjust the pressure in the case much more often than every 12 hours, as recommended above. Wrapping the case in heat-insulating materials will reduce the rate of temperature change in the case and thus make the period of pressure readjustment less frequent. However, every precaution must be taken to insure that the pressure in the case remains within 50 mb of the pressure at which it was sealed.**

## 33. MAKING COMPARATIVE READINGS AT FIELD STATIONS.

**a. Preliminary.**

(*1*) Upon arrival at the field station, remove the barometers from the carrying case and the Forms SC 438 from the pockets.

(*2*) On Form SC 438, section II, record the mode of transportation (air, rail, etc.) in column f; the maximum altitude encountered on trip (applicable only if the trip was by air) in column g; the minimum and maximum temperature encountered during the trip in columns h and i (this may be estimated if it cannot be measured); the destination, column j; date and time of arrival in columns k and l.

(*3*) Open the barometer case, but do not unseal it (that is, do not pull up the push button). Read the pressure and record in column m.

(*4*) If the pressure in the barometer case has changed appreciably (20 to 50 mb) from that at which it was sealed at the Regional Control Office, operate the pump for a few strokes and restore the original pressure. It may be advisable to operate the pump until the pressure is not more than 50 mb beyond the value at which the case was sealed. In this way, the number of times the pump must be operated will be reduced and the average pressure will be more nearly that at which the case was sealed.

(*5*) Record the elevation of the field station in column n, Form SC 438, section II.

(*6*) Record the serial number of the station barometer to be tested in column o.

**NOTE:** Remember that all data entered on Form SC 438, section II, except that in column b, must be repeated for each station visited during an inspection trip.

(*7*) If the pressure in the barometer case has been kept within $\pm 50$ mb of the value at which the case was sealed, wait 2 hours before using the instrument for comparative readings.

**CAUTION: During strong gusty winds or abrupt changes in temperature or pressure, barometer readings are unreliable. Inspectors should wait until the barometer tendency has been steady or changing slightly for a period of 3 hours. The ambient temperature should not have changed more than 3° F per hour during this interval and the maximum gust velocity of the wind should preferably not exceed 20 miles per hour.**

**b. Taking Comparative Readings.** Assuming that conditions are favorable for observations and the necessary time has elapsed

to allow the aneroid barometers to stabilize and reach temperature equilibrium, perform the following steps:

(*1*) Place both precision aneroid barometers at approximately the same elevation as the ivory point of the station mercury barometer. (A tolerance of 6 inches above or below the ivory point is allowed.)

(*2*) Remove Form SC 436 from the lid of the carrying case and using one carbon, record the following: the date (column a), and the time, giving standard meridian, (column b). If the station barometer has both an inch and a millibar scale, it will be necessary to determine an instrumental correction for each scale separately. In this case, two original copies and two carbon copies of Form SC 436 should be prepared. Readings of the inch scale of the station barometer should be entered on one copy of the form; millibar scale readings on the other copy of the form. Temperature corrections and gravity corrections should similarly be entered in inches and millibars on the two forms respectively.

**CAUTION: The inch and millibar scales must be read and the readings recorded separately. Reading one scale only and using conversion tables to obtain the equivalent value on the other scale will not be satisfactory.**

(*3*) Open the valves of each aneroid and allow the pressure in the barometer case to come to equilibrium with the ambient pressure.

(*4*) Read the attached thermometer on the station barometer and record the temperature in column c, Form SC 436. (Barometers ML-2-( ) have no thermometer correction.)

NOTE: If the station barometer has both an inch and a millibar scale, both the Fahrenheit and centigrade scales of the attached thermometer should be read and the temperatures entered on the two copies of SC Form 436. There are a few Barometers ML-2-( ) in use that have an inch and a millibar scale but do not have a centigrade scale on the thermometer. In this case, the reading of the Fahrenheit scale should be reduced to its equivalent value in the centigrade scale.

(*5*) After the valves have been open 15 minutes, set the cistern and vernier of the station barometer, but do not read it.

(*6*) As soon as possible after setting the station barometer read the indication of each aneroid barometer in millibars and record the reading in columns i and n, Form SC 436. If the station barometer is being read in both inches and millibars, enter the aneroid readings on that copy of Form SC 436 which contains the millibar readings of the station barometer.

NOTE: Each inspector will have one Barometer ML-331/TM and one additional aneroid, either ML-331/TM, ML-332/TM, or ML-333/TM. The choice of this second aneroid has been determined by the maximum elevation of the highest weather station in that particular region. Thus, at stations of high elevation, the pressure may be below the range of Barometer ML-331/TM and it will be impossible to obtain a reading on it. A barometer of limited range has been supplied because it is intrinsically more accurate and the readability is greater. It will therefore be possible to obtain more reliable readings at all weather stations in the region which are at an elevation within the range of Barometer ML-331/TM. This will probably include most of the stations.

(7) Read and record the station barometer indication in column d. If the barometer has two scales, read both.

(8) Record the temperature correction to the station barometer (column e, Form SC 436) (obtained from Form SC-80).

(9) Record the gravity correction to the station barometer (found on SC Form No. 79) in column f.

(10) Record the sum of the temperature and gravity corrections in column g.

NOTE: Since the purpose of this comparison is to determine a new instrumental correction to the station barometer, the total instrumental correction, as recorded on SC Form No. 79 for Barometer ML-2-( ) is *not* applied. (The correction listed on the form as *instrumental correction* should not be included.)

(11) Apply the temperature and gravity corrections to the mercurial barometer reading and record the result in column h. The corrected barometer reading in inches, as well as the value in millibars, should be entered in each box in this column.

(12) Determine the temperature corrections for the observed aneroid readings and record them in columns j and o, Form SC 436 (par. 28b).

(13) Determine the true scale correction for the observed aneroid readings and record them in columns k and p. The scale correction is determined from the new scale calibration correction curve that was drawn in in pencil following the last comparison of the aneroid with Barometer ML-330/FM (par. 30g(6)).

(14) Apply the temperature and scale corrections to the observed aneroid readings to obtain the corrected barometer readings and record them in columns m and r, Form SC 436. If both inch and millibar readings are being made, the corrected aneroid readings should be converted to inches and entered in columns m and r of the form used for data in inches.

c. **Converting Readings.** The corrected reading for the precision aneroid barometers is in millibars. When it is necessary to con-

vert the readings of the aneroid barometers into inches of mercury, use table IV in this technical manual. Table III may be used when it is desired to convert from inches into millibars.

**CAUTION: The pressure conversion scale furnished on the aluminum sheet with each precision aneroid barometer should not be used for pressure conversion purposes, since it is not sufficiently accurate. No use is made of this scale in the program of barometer comparisons.**

**d. Repetition.** Ten consecutive comparisons must be made at each station. A period of 15 minutes must elapse after the valve of the aneroid is opened before any data are taken. After observational technique has been improved, it is believed that two observations can be made in a 15-minute period. Not more than this number should be made in a 15-minute interval. These should be made immediately following the original waiting period of 15 minutes since it is not recommended that the barometers be subjected to ambient station pressure for more than 30 minutes at any one time. After this exposure they should again be sealed and pumped up to the pressure at which they were sealed at the Regional Control Office and allowed to remain at this pressure for at least 1 hour before additional comparisons are made. This procedure should be continued until 10 comparative readings are obtained. Each time the valve is reopened, the observer should wait 15 minutes before taking any data. The series may be interrupted at any point as long as the aneroids are sealed and pumped up to their original pressure.

**e. Summary.**

(*1*) Find the sum of the corrected mercurial barometer readings (column h, Form SC 436)

(*2*) Find the sum of the corrected readings for both precision aneroid barometers (columns m and r). Record the sums.

(*3*) Compute the mean corrected barometer reading (derived by adding the 10 or more comparisons and dividing by the number of readings made) for the station mercurial barometer and each of the aneroids.

(*4*) The average of the two means for the aneroids should be obtained by adding the corrected aneroid readings, t and u, and dividing by two. The correction for the station mercurial barometer is then obtained by subtracting s, the mean of the corrected readings of the station mercurial barometer from the average of the two aneroids. The result is the new instrumental

correction to the station mercurial barometer reading. As previously noted, if the station barometer has both an inch and millibar scale, separate readings will have been made and entered on separate forms; hence a separate inch and millibar instrumental correction will have been obtained. If the station barometer is provided with an inch scale only, the average of the two means of the aneroid readings should be converted to inches so that the instrumental correction will also be in inches.

(*5*) Enter the new instrumental correction with the date in the first box at the bottom of Form SC 436.

(*6*) Enter the instrument correction to the station mercurial barometer (determined in subpar. (4) above) on a new SC Form No. 79. Copy other data pertaining to the station mercurial barometer from the old copy of SC Form No. 79 and mount the newly-filled out SC Form No. 79 on top of the old form. *Do not destroy the old form.* If the station mercurial barometer is ever removed to a new location, or returned as being defective, all SC Forms No. 79 should accompany the instrument.

**f. Disposition of Form SC 436.** The original of Form SC 436 is filed at the field station. The carbon copy is returned by the inspector and filed at the Regional Control Office.

**NOTE:** The values of the two means for the aneroids (par. 33e(3)) should always agree to within .3 millibar. Should the disagreement exceed this value, the barometer found to be more in error when they are next compared with Barometer ML-330/FM should be replaced. A replacement barometer may be requisitioned from Evans Signal Laboratory, Belmar, New Jersey. The defective instrument should be returned promptly as soon as a replacement is received. The procedure to be followed in requisitioning new barometers and returning defective instruments is given in paragraph 58.

PART THREE

# MAINTENANCE INSTRUCTIONS

## SECTION VI. PREVENTIVE MAINTENANCE TECHNIQUES

### 34. BAROMETER ML-330/FM.

It cannot be emphasized too strongly that Barometer ML-330 FM is a precision instrument that must not be subjected to jolts, vibrations, or sudden changes in position. The doors of the mounting case must be kept closed when the instrument is not in use. Aside from dusting the case and the instrument lightly with a soft cloth at infrequent intervals, there is no preventive maintenance to be performed. The best care the barometer can have is to be left alone.

### 35. REPLACING BURNED-OUT BULBS IN MOUNTING CASE FOR BAROMETER ML-330/FM.

If the fluorescent bulbs behind the opal glass windows burn out, they must be replaced. Two spare bulbs are mounted inside the case.

**a.** Remove the barometer from the case according to directions in paragraph 16. After removing the barometer from the case, place it on a horizontal surface.

**b.** Loosen the wingnuts in the mounting panel of the case. The panel is hinged to the case. It may now be opened, exposing the interior of the case with the bulbs and wiring (fig. 6).

**c.** Remove the burned-out bulb. Take one of the spare bulbs from the holders in the center and insert it in place of the burned-out bulb. Turn on the switch to make sure the bulb lights.

**d.** Close the mounting panel and tighten the wingnuts.

**e.** *Very slowly* turn the barometer upright and mount it in the case according to directions in paragraph 15.

### 36. TEST FOR VACUUM.

**a.** If there are any doubts as to the accuracy of Barometer ML-330/FM, one method of checking the instrument is to make the *Test for Vacuum*. This test involves compressing the rarified

air, water vapor, etc., above the mercury surface in the glass tube into a small bubble at the top of the tube and measuring its size. The brass casting at the top of the brass tube, containing the swivel hanger by which the barometer is supported, masks the top of the glass tube and must be removed before the bubble can be inspected.

(*1*) First remove the barometer from the mounting case, leaving the level of the mercury in the cistern at its normal height.

**CAUTION: When the barometer is removed from its case without first raising the cistern adjusting screw until the tube is filled with mercury, great care must be exercised to prevent air entering the tube. Under no circumstances should the tube be turned to a horizontal or near-horizontal position. The instrument should be handled very carefully until it is returned to its case.**

(*2*) Rest the cistern of the barometer on the floor, maintaining the tube upright.

(*3*) Loosen the screws in the brass flange (or collar) at the bottom of the scale cover glass until the flange can be lowered on the tube, but do not remove the screws.

(*4*) Lower the flange and the cover glass until the four screws holding the casting at the top of the brass tube are exposed.

(*5*) Remove these screws and lift the casting out of the top of the brass tube. *These screws are very small. Be extremely careful not to lose them or strip their threads when they are replaced.*

(*6*) Carefully remove the cork gasket over the top of the glass tube. The top of the tube is now exposed.

(*7*) Gradually tilt the top of the barometer from a vertical position. As this is done, the top of the mercury column rises in the tube. A metallic click will generally be heard when the tube is filled.

(*8*) Very slowly continue to tilt the top of the instrument until the top of the tube has been lowered vertically a distance of one inch below the point at which the tube was filled. A small bubble will be formed at the top of the tube.

(*9*) Using dividers, or a similar instrument, adjust the points to the diameter of the bubble and measure the diameter on an inch scale.

**b.** The size of the bubble in a new barometer should be $\frac{1}{8}$ inch or less. Its size will generally increase slightly with age of the

barometer, as water vapor and air, not completely removed when the tube was filled, collect above the mercury surface. When the diameter of the bubble is $\frac{1}{8}$ inch, the error in reading the barometer due to these trapped gasses is slightly less than .001 inch. If the bubble diameter increases to $\frac{3}{16}$ inch, the error will be about .003 inch. If this size is reached, it is advisable to requisition another barometer and return the defective instrument to Evans Signal Laboratory, Belmar, New Jersey.

c. The test for vacuum should be applied to each Barometer ML-330/FM when it is first received at the Regional Control Office. Thereafter, this test should be applied about every 6 months or at any intermediate time if the barometer has experienced any unusual treatment.

**37. BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.**

a. The precision aneroid barometers should be handled with great care. They should never be dropped, jolted, or exposed to more than a minimum of vibration. Aside from dusting the top of the shock-mounting case and wiping the cover glass with a soft damp cloth and polishing with a soft dry cloth, there is no maintenance to be performed.

b. Ordinarily, there is no need for removing the metal case from the shock-mounting case and this should not be done. However, there may be a few instances where the average pressure at the Regional Control Office is more than 50 mb *less* than that of some of the stations in the region. In these instances it will be necessary to remove the metal barometer case from the shock-mounting case in order that the rubber tube connection to the pump may be changed so that air can be exhausted from the barometer case. This is done by removing the four screws in the corners of the aluminum plate and removing this plate and the metel barometer case from the hardwood case. When the metal case is free, the rubber tubing and connections for the valve and pump will be exposed. Be sure that the rubber tube has been clamped shut by means of the knurled knob, then remove the rubber tube from its connection to one end of the T-shaped brass tube projecting from the pump and replace it firmly on the other end. The metal barometer case can now be evacuated by the pump. After the instrument is replaced in the shock-mounting case it may be used exactly as described previously, except that it is now kept pumped *down* to the average Regional Control Office pressure between observations. Care should be exercised in replacing the metal case in the hardwood shock-mounting case to insure

that the rubber tubes are free and are not pinched between the sides of the cases. It is emphasized that this procedure is necessary only at stations where the average pressure is more than 50 mb *higher* than that of the Regional Control Office.

**WARNING: No adjustment is to be made to the precision aneroid barometers through the plugged opening in the cover glass. If the error of these instruments exceeds 3 mb, the barometer should be returned to Evans Signal Laboratory, Belmar, New Jersey, where special calibration equipment is available. These instruments are always hand-carried while in service. Defective instruments being returned for replacement may be shipped by common carrier.**

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## SECTION VII. LUBRICATION

### 38. LUBRICATION OF ADJUSTING SCREW OF BAROMETER ML-330/FM.

Because of the weight of the mercury which is raised and lowered by the cistern adjusting screw it will be necessary to oil the screw sparingly at infrequent intervals to prevent wear. To lubricate, coat the threads very lightly with Oil, Lubricating, Preservative, Special (PS). *Under no circumstances should any other part of the barometer be lubricated.*

**CAUTION: When lubricating this screw, be careful not to lower it too far. Never lower the mercury surface in the cistern more than ¼ inch below the tip of the ivory point.**

### 39. LUBRICATION OF BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.

There is no lubrication whatever to the precision aneroid barometers; in fact, lubrication of the aneroid mechanism would be definitely harmful. However, the hinges of the hardwood shock-mounting case may occasionally require a few drops of Oil, Lubricating, Preservative, Special (PS).

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## SECTION VIII. MOISTUREPROOFING AND FUNGIPROOFING

### 40. MOISTUREPROOFING AND FUNGIPROOFING.

The moistureproofing and fungiproofing treatment is not required for Barometers ML-330/FM, ML-331/TM, ML-332/TM, or ML-333/TM. All parts believed subject to deterioration have already been treated.

PART FOUR

# AUXILIARY EQUIPMENT
# (NOT USED)

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PART FIVE

# REPAIR INSTRUCTIONS

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NOTE: Because of the extreme accuracy required of the secondary-standard barometers, and because adjustments and repairs to the equipment require the use of special calibration and pressure equipment, no adjustments or repairs are permitted in the field or at the Regional Control Office. All unserviceable instruments must be returned to Evans Signal Laboratory, Belmar, New Jersey. SC Form No. 79 and Form SC 437 must be returned with the instrument.

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## SECTION IX. THEORY OF EQUIPMENT

### 41. AIR PRESSURE.

a. Air has weight and exerts a pressure. The weight of the layers above compresses and increases the density of the layers below, so that the pressure exerted at a given place is the result of the weight of all the air above it.

b. At sea level, under normal conditions, this pressure is approximately 14.7 pounds per square inch. This is the weight of a column of air having a cross-sectional area of 1 square inch and extending vertically from sea level to the upper limits of the atmosphere. Atmospheric pressure gradually diminishes with elevation above sea level because there is less air above to exert a pressure.

c. The pressure at a given point, however, seldom is constant because the weight of air above it is subject to changes caused by movement of air masses, temperature, water vapor content, and other factors.

**42. MEASURING PRESSURE.**

a. Air pressure is measured by balancing the weight of a column of air against a column of liquid whose weight is known in terms of its height, its density, and the acceleration of gravity at the point where the measurement is made.

b. Galileo, the great Italian physicist who is called "the father of experimental science," proved that a suction pump will not raise water more than 34 feet, and from this inferred that "nature's resistance to a vacuum" at sea level can be measured by a column of water about 34 feet high. In 1643 Galileo's pupil and successor, Evangelista Torricelli, devised a more convenient means of measuring pressure by using a tube of mercury instead of water.

c. Since mercury is approximately 13.6 times heavier than water, normal air pressure at sea level raises mercury to a height of about 30 inches (29.92 inches to be exact). Torricelli proved this by filling a glass tube more than 30 inches long and closed at one end with mercury. He covered the open end and inverted the tube in a vessel containing mercury, keeping the open end below the mercury surface. When the open end of the tube was uncovered, the mercury fell to about 30 inches. From this Torricelli concluded that the column of mercury in the tube was sustained by the pressure of the air on the surface of the mercury in the vessel.

d. In 1648, Pascal, the French mathematician, carried the Torricelli tube to the top of a high tower in Paris and found a slight fall in the height of the mercury column. Other experiments with the tube on a mountain top proved his theory that air pressure depends upon the weight of air above a point and that the higher the elevation above sea level, the lower the pressure.

**43. BAROMETER.**

a. When Torricelli's tube is set up permanently as a means of measuring the pressure of the atmosphere, it is called a mercurial barometer (from Greek *baros,* weight, + meter). Several forms of mercurial barometers have been devised, all based on Torricelli's principle, but differing in construction.

b. Barometer ML-330/FM is of the Fortin type, the distinguishing feature of which is a flexible cistern that enables the level of the mercury to be brought into coincidence with the zero of the scale.

c. Until comparatively recently, all barometer scales were graduated in inches or millimeters, or both. Now, the *bar,* defined as a pressure of 1,000,000 dynes per square centimeter, has been adopted as a unit for measuring atmospheric pressure. For convenience, pressures are actually measured and reported in millibars. A millibar is $\frac{1}{1000}$ of a bar.

d. The millibar is solely a unit of pressure. It cannot, strictly speaking, be used also as a measure of length to measure the height of a mercury column. Similarly, it is theoretically incorrect to use the inch, which is a unit of length, as a unit of air pressure. Air pressure (par. 41) is measured by balancing the weight of a column of liquid against the weight of a column of air. The weight of a column of liquid may be determined by knowing its length, its density, and the acceleration of gravity. If density and acceleration of gravity are always constant, then the weight of a column of liquid will vary directly with its height. Neither density nor gravity remain constant, but, by applying the corrections for temperature and gravity, variable values in density and gravity may be reduced to their respective standard values. When this is done, the height of a column of liquid *can* be used as a measure of weight, or pressure. It is, however, incorrect to speak of the height of a mercury column in inches as being a measure of the pressure of the air until temperature and gravity corrections have been applied to this height to reduce the density of the mercury and the effect of gravity to standard conditions. Even then, the pressure should be referred to as being in inches of mercury.

e. The millibar is not associated with a unit of length in the same sense that a pressure in inches of mercury is associated with a linear measurement in inches. However, since both millibars and inches of mercury are a measure of air pressure, there is, obviously, an equivalent value in millibars for every pressure in inches of mercury. For convenience in use and to avoid making readings in inches and converting the corrected pressure to millibars by use of a table, a scale has been attached to the barometer which is graduated in units of such length that, when the height of the barometer is measured in these units and all corrections applied, the value obtained will be numerically equal to the atmospheric pressure measured in millibar units of pressure.

## 44. GRAVITY ANOMALY.

The gravity corrections given in tables I and II in this manual, are computed on the assumption that the earth is a homogeneous body, of true oblate spheroid shape, the density of which does not vary. This assumption is only approximately correct; mineral deposits, bodies of water, and other elements cause variations in density, while hills and mountains cause variations in shape. These variations, though minor when compared to the average density and diameter of the earth, are sufficient to cause slight differences between the true local value of gravity (or measured value) and the theoretical computed value obtained from tables. These differences,known as *gravity anomaly,* cannot be computed. They must be determined from accurate measurements made at the location where the value of gravity anomaly is desired. In many places on the earth's surface the value of gravity anomaly is not large enough to be significant in pressure measurements; in others, particularly in some of the islands of the Pacific, it is large enough to introduce a noticeable error in barometric measurements. The gravity correction given on SC Form No. 79 includes a gravity anomaly correction. Where the value of the anomaly actually has been measured for the location to which Barometer ML-330/FM was originally shipped, the correction is exact. If measurements have not been made at the location, an estimated value, based on data for the nearest locations, is included.

## 45. PRINCIPLES OF ANEROID BAROMETER.

### a. General.

(*1*) The aneroid is a form of "elastic" barometer, that is, one in which the elastic deformation of some solid system is used as an indicator of atmospheric pressure.

(*2*) The aneroid type of barometer can be made extremely sensitive and is convenient to use because of its portability. A further advantage is that its readings are not affected by variation in the force of gravity.

(*3*) The aneroid barometer is subject to errors due to irregularities in the elasticity of the metal and for this reason it should not be relied upon as an instrument for routine meteorological observations unless compared frequently (at least every 90 days) with a mercurial barometer.

**b. The Vidie Barometer.** The type of aneroid most generally used is one invented in 1843 by Lucien Vidie, which uses a wafer-like cell, (sometimes called diaphragm or capsule) of thin, flexible

metal, usually brass or German silver, which is very nearly exhausted of air. The opposite sides of the cell are kept apart by a strong internal metal spring; some models use a stiff external spring for this purpose. Usually the elastic properties of the spring determine those of the whole instrument. The residual air in the cell can be adjusted to give a partial correction for temperature. The movement of the cell, caused by variations in pressure, is greatly magnified, and is indicated on a dial by a train of gears and levers.

**c. Principle of Operation.** The barometers treated in this manual differ from the Vidie type in that the material of the cell itself serves as a spring, making the use of an internal or external spring unnecessary. The aneroid element of these barometers consists of a cell of beryllium copper which has been almost completely exhausted of air, only enough being left inside to help compensate for changes in the spring properties of the cell as a result of changes in temperature. Corrugations in the cell increase the flexibility of the metal so that there is a greater movement with changes in pressure. Changes in the atmospheric pressure cause the cells to expand and contract. This movement is magnified and transmitted by a lever system connected to a pointer which indicates the pressure on a dial graduated in millibars.

## 46. ERRORS OF ANEROID BAROMETER.

Factors which introduce errors into the readings of the aneroid barometer are hysteresis, temperature, scale errors, and drift.

**a. Hysteresis.**

(*1*) One of the chief causes of error in an aneroid barometer is hysteresis. All elastic materials tend to change shape when placed under stress. As soon as the stress is removed, they return almost to their original shape. The retardation or failure of the material to assume completely its original form is known as hysteresis. All aneroid barometers are subject to the effects of hysteresis although an attempt is made to keep these effects to a minimum by the proper selection and treatment of materials. Over a long period of time hysteresis effects gradually tend to be reduced to a very small amount if the barometer is kept at one location so that pressure changes are small.

(*2*) Hysteresis occurs in the pressure sensitive cell of the aneroid barometer. Appreciable errors may be noticed immediately after a large and rapid pressure change. These errors can

be greatly reduced by waiting a sufficient length of time before taking a reading. It is difficult to make a specific recommendation as to the interval of time necessary to reduce hysteresis errors to a minimum since hysteresis varies with the amount of change in pressure, with the rate of change, and with the time involved, that is, the length of time at which the barometer has been subjected to a pressure differing from current atmospheric values.

(*3*) For pressure changes occurring at any fixed station, hysteresis errors are usually small enough to be neglected. When the barometer is subjected to a comparatively large pressure change for a short time only, and then restored to its previous values, hysteresis effects are small and may quickly disappear, although the length of time will vary with different instruments. Hysteresis errors are probably most pronounced when a barometer is transported by airplane, especially if the flight is of several hours duration and the plane flies at high altitude.

**b. Temperature.** A second and exceedingly important error which affects the aneroid is change in temperature. Without compensation for changes in temperature the errors of an aneroid would be quite large. If a barometer is maintained at a constant pressure, a change in temperature, if not compensated, will cause a movement of the pointer on the dial. This indicated change in pressure is due to a physical change in the dimensions of the instrument and also to variations in the stiffness of the pressure sensitive cell. This latter condition may be compensated, for the most part, by leaving a small amount of air in the cell. Thus, when a change in temperature occurs, the change in pressure of the air inside the cell partially balances the change in strength of the metal. This does not entirely compensate for changes in temperature. Therefore, temperature correction curves are provided for the barometers. These corrections, however, are small, indicating that the greater part of the error has been compensated.

**c. Drift.**

(*1*) Another error to which the barometer is subject is *drift* (often called creep), which is due to changes in the aneroid cell occurring slowly over a long period of time. Drift and hysteresis are probably evidences of the same phenomenon. Drift is apparently caused by molecular readjustments in the metals of which the cell is made. Alterations in the shape of the cell occur because of the tendency of all materials to assume a new permanent shape when placed under steady stress. In meteorological textbooks,

drift is sometimes referred to as "secular change", for it is an error which continues to change over a long period of time.

(2) Drift is manifested by a gradual increase in the difference between the indications of the aneroid barometer and a mercurial barometer with which it may be compared. Errors of drift are largely eliminated in the aneroid barometers covered by this technical manual when they are compared with Barometer ML-330/FM and new calibration curves constructed.

(3) Some barometers seem to drift because of very minute leaks in the evacuated cell. Usually a leaking cell is detected before the instrument leaves the manufacturer's plant, but occasionally a leak can develop in a barometer that has been in use some time. The indications of a leak are progressively lower readings than are normal for the station. There is no way to remedy the defect. Return the barometer and requisition a new one.

(4) For the first few months after the aneroid is built, the drift effects are more pronounced, but after this time they usually

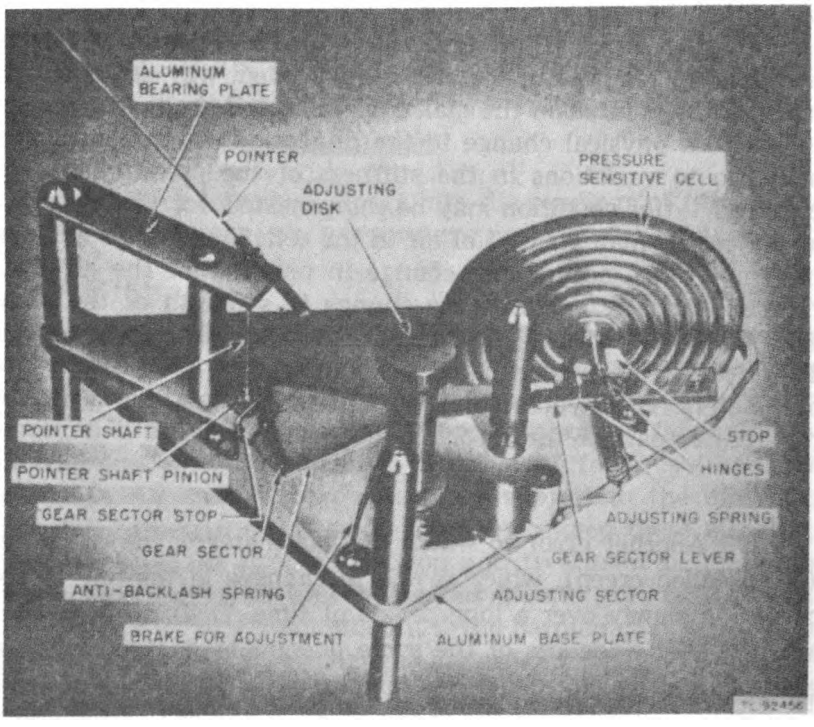



*Figure 23. Aneroid mechanism of Barometer ML-331/TM, ML-332/TM or ML-333/TM.*

become negligible. In general, the longer the barometer is in use, the more consistent the performance is likely to be.

(5) Occasionally a barometer will show a persistent drift. To detect this condition, note the difference for the ambient pressure of the Regional Control Office, between the latest scale calibration curve and the one originally supplied with the instrument. If, over a period of time, this difference exceeds 3 millibars, requisition a new barometer in accordance with instructions supplied by the AAF weather service and return the defective instrument to Evans Signal Laboratory for repair.

**47. BAROMETERS ML-331/TM, ML-332/TM, and ML-333/TM.**

**a. Mechanism.**

(1) The mechanism of these aneroid barometers is built upon a triangular-shaped aluminum base plate. The difference in range of the three instruments is achieved by changing the spring rate of the pressure sensitive cell and the magnification ratio of the lever system. The aneroid element is a single corrugated cell of beryllium copper about 2 inches in diameter and 1/8 inch in thickness. The lead exhaust tube through which the cell is evacuated is pinched off and sealed at the end.

(2) The movement of the cell, caused by the varying pressure of the atmosphere, is transmitted to a gear-sector lever by thin strips of beryllium copper which act as hinges. A fixed hinge serves as the fulcrum of the gear sector lever. The teeth of the gear sector engage a small pinion on the pointer shaft. A wire safety stop prevents the teeth of the gear sector from becoming disengaged from the pinion gear during severe vibrations or rough handling. A small auxiliary coil spring is attached to the gear sector lever. The tension of the spring can be varied by an adjusting disk which has a gear at its lower end which meshes with a brass adjusting sector. The adjusting disk is reached through a plugged opening in the plastic window. The range of adjustment is approximately 10 millibars.

**WARNING: This adjustment is never made in the field or at the Regional Control Office. It is done only by qualified personnel at Evans Signal Laboratory, Belmar, New Jersey.**

Backlash in the gears is removed by means of a small wire spring attached to the lower side of the gear sector. The tension of this spring is transmitted to the pointer shaft by a nylon thread looped once around a small lucite drum at the base of the pointer

shaft. A stop is provided to prevent expansion of the cell below its lower scale limit during air transportation.

(3) The pinion is fastened to the pointer shaft which revolves in a jeweled bearing at the bottom and extends through a hole in the top bearing plate. The pointer, fastened to the end of the shaft, is made of three sections of fine aluminum tubing and is clamped to the shaft by a small setscrew.

**b. Magnification.** Magnification of the cell movement is accomplished in three stages:

(1) The first stage is a simple lever magnification, being the ratio of the distance between the fixed hinge (which acts as the fulcrum of the lever) and the teeth of the gear sector to the distance between the two hinges.

(2) The second stage is the ratio of the diameter of the gear sector to the diameter of the pinion.

(3) The third stage is the ratio of the distance between the pointer shaft and the scale being read to the radius of the pinion.

**8. MEANS EMPLOYED TO REDUCE HYSTERESIS ERRORS IN BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.**

**a.** The use which was to be made of these aneroid barometers eliminated any possibility of keeping them at a reasonably constant pressure such as is experienced by station barometers. It was known that in travelling from station to station throughout a weather region, the changes in pressure involved would be so erratic in nature that it would be impossible to compute hysteresis corrections from calibration data. When these particular barometers were tested, it was found that the hysteresis errors were larger than had been expected, and in cases of large pressure changes, required weeks rather than days to disappear. It was manifestly impossible to require the inspector to wait at high-elevation stations for 2 or 3 weeks before using the instruments, hence some other method of minimizing hysteresis had to be found.

**b.** After many tests, a method was found which, although it would not eliminate hysteresis errors, insured that their value would be nearly constant, provided a special technique was employed. If the barometers were maintained at room pressure for a long interval, the pressure suddenly reduced, the barometer read after a short fixed interval (about 15 minutes), and then the pressure returned to room value for at least 1 hour, this cycle could be repeated many times with unusually constant

results. Obviously, each reading of the barometer contained a relatively large hysteresis error, but this error was nearly constant for a fixed pressure change. If then, the barometers could be calibrated and could be used in the same way, hysteresis errors could be eliminated by calibration. Although the amount of the hysteresis error varies with the amount the pressure is reduced, the error can be reduced to a negligible quantity, provided the same procedure of reading is followed, both in use and in calibration. This was the *only* successful means found by which this error could be so reduced.

c. This special technique has made necessary the use of an airtight case, the inclusion in the barometer of the valve and pump, described in paragraph 10b (6), and has required that the pressure in the barometer case be maintained approximately constant (± 50 mb) regardless of what the ambient pressure may be except immediately prior to the time of use.

d. In calibrating the barometers, the normal room pressure was approximately sea-level pressure. The instruments were calibrated at approximately 30 mb intervals throughout their range. During calibration their pressure was first held at room value, then reduced to 30 mb below room pressure, the instrument read at the end of 15 minutes, and the pressure again increased to room value. After a waiting period of 1 hour the pressure was again reduced, but this time to 60 mb below room value, the instrument read in 15 minutes, and the pressure again increased to room value. This was repeated until the pressure range of the instrument was covered. When the scale calibration correction curve for the instrument is plotted from these data, the correction for the hysteresis error remaining after a 15-minute exposure to a changed pressure is included in the curve. During these tests it was found that hysteresis error for changes in pressure of as much as 50 mb were negligible. It was also found that the change in hysteresis error between 15 and 30 minutes was very little; hence, in use, barometers could remain exposed to reduced pressures for as long as 30 minutes.

e. In use, making field comparisons, the aneroid barometers must be maintained at approximately constant pressure until within 15 minutes of the time of their use. Within 30 minutes after being exposed to a new pressure, however, they should be rescaled and the pressure within the case pumped back to its original value. If this technique is followed, hysteresis error will be negligible; if it is not followed, *this error may be as large as 1.5 mb.*

f. During calibration, the barometers, except during limited intervals, were exposed to sea-level pressure. When in use in the weather regions it would prove difficult and laborious to attempt to maintain them at that pressure, unless the Regional Control Office is located at or near sea level. Thus it seemed advisable to select the average pressure of the Regional Control Office as the pressure value at which they are to be maintained constant (within $\pm 50$ mb) in use. If the average pressure at the Regional Control Office does not differ from sea-level pressure by more than 50 mb, the scale-calibration correction curve, determined at sea level, should be equally valid at the Regional Control Office, except for small differences due to drift after calibration. If there is a large difference between the average pressure at the Regional Control Office and sea-level pressure, the scale calibration correction curve will probably contain some hysteresis error. If a new correction curve is drawn in accordance with the methods given in paragraph 30g (6), this difficulty will be largely eliminated.

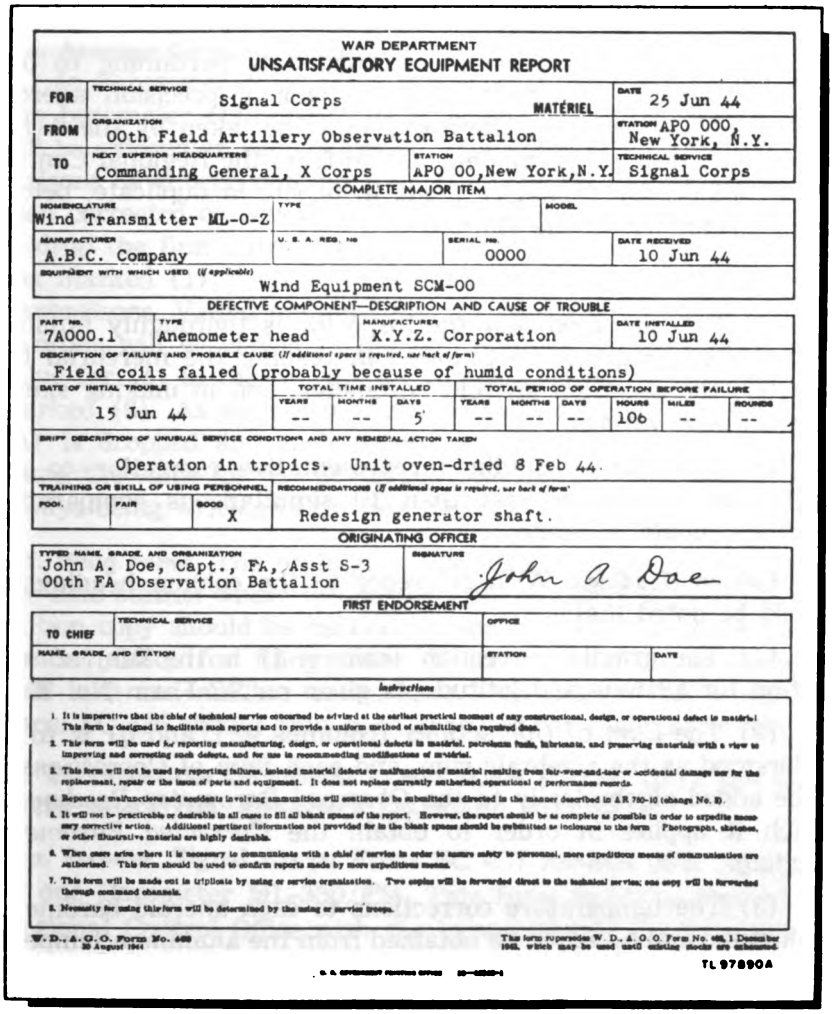
**49. TEMPERATURE CORRECTION CHART USED WITH BAROMETERS ML-331/TM, ML-332/TM, AND ML-333/TM.**

A temperature correction has been plotted individually for each instrument and is given on the aluminum temperature correction and pressure conversion chart. Specific instructions for the use of this temperature curve are given in paragraph 28 b.

**50. UNSATISFACTORY EQUIPMENT REPORT (fig. 24).**

a. When trouble in equipment used by Army Ground Forces or Army Service Forces occurs more often than repair personnel feel is normal, War Department Unsatisfactory Equipment Report, W.D., A.G.O. Form No. 468 should be filled out and forwarded through channels to the Office of the Chief Signal Officer, Washington 25, D. C. Refer to TM 38-250 for complete instructions on the handling of this report.

b. When trouble in equipment used by Army Air Forces occurs more often than repair personnel feel is normal, Army Air Forces Form No. 54 should be filled out and forwarded through channels.



WAR DEPARTMENT

UNSATISFACTORY EQUIPMENT REPORT

FOR — TECHNICAL SERVICE: Signal Corps — MATÉRIEL — DATE: 25 Jun 44

FROM — ORGANIZATION: 00th Field Artillery Observation Battalion — STATION: APO 000, New York, N.Y.

TO — NEXT SUPERIOR HEADQUARTERS: Commanding General, X Corps — STATION: APO 00, New York, N.Y. — TECHNICAL SERVICE: Signal Corps

COMPLETE MAJOR ITEM

| NOMENCLATURE | TYPE | MODEL |
|---|---|---|
| Wind Transmitter ML-0-Z | | |

| MANUFACTURER | U. S. A. REG. No. | SERIAL No. | DATE RECEIVED |
|---|---|---|---|
| A.B.C. Company | | 0000 | 10 Jun 44 |

EQUIPMENT WITH WHICH USED (If applicable): Wind Equipment SCM-00

DEFECTIVE COMPONENT—DESCRIPTION AND CAUSE OF TROUBLE

| PART No. | TYPE | MANUFACTURER | DATE INSTALLED |
|---|---|---|---|
| 7A000.1 | Anemometer head | X.Y.Z. Corporation | 10 Jun 44 |

DESCRIPTION OF FAILURE AND PROBABLE CAUSE (If additional space is required, use back of form): Field coils failed (probably because of humid conditions)

| DATE OF INITIAL TROUBLE | TOTAL TIME INSTALLED | | | TOTAL PERIOD OF OPERATION BEFORE FAILURE | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | YEARS | MONTHS | DAYS | YEARS | MONTHS | DAYS | HOURS | MILES | ROUNDS |
| 15 Jun 44 | -- | -- | 5 | -- | -- | -- | 106 | -- | -- |

BRIEF DESCRIPTION OF UNUSUAL SERVICE CONDITIONS AND ANY REMEDIAL ACTION TAKEN: Operation in tropics. Unit oven-dried 8 Feb 44.

| TRAINING OR SKILL OF USING PERSONNEL | | | RECOMMENDATIONS (If additional space is required, use back of form) |
|---|---|---|---|
| POOR | FAIR | GOOD | |
| | | X | Redesign generator shaft. |

ORIGINATING OFFICER

TYPED NAME, GRADE, AND ORGANIZATION: John A. Doe, Capt., FA, Asst S-3, 00th FA Observation Battalion — SIGNATURE: John A Doe

FIRST ENDORSEMENT

TO CHIEF — TECHNICAL SERVICE — OFFICE

NAME, GRADE, AND STATION — STATION — DATE

Instructions

1. It is imperative that the chief of technical service concerned be advised at the earliest practical moment of any constructional, design, or operational defect in materiel. This form is designed to facilitate such reports and to provide a uniform method of submitting the required data.
2. This form will be used for reporting manufacturing, design, or operational defects in materiel, petroleum fuels, lubricants, and preserving materials with a view to improving and correcting such defects, and for use in recommending modifications of materiel.
3. This form will not be used for reporting failures, isolated material defects or malfunctions of materiel resulting from fair-wear-and-tear or accidental damage nor for the replacement, repair or the issue of parts and equipment. It does not replace currently authorized operational or performance records.
4. Reports of malfunctions and accidents involving ammunition will continue to be submitted as directed in the manner described in AR 750-10 (change No. 2).
5. It will not be practicable or desirable in all cases to fill all blank spaces of the report. However, the report should be as complete as possible in order to expedite necessary corrective action. Additional pertinent information not provided for in the blank spaces should be submitted as inclosure to the form. Photographs, sketches, or other illustrative material are highly desirable.
6. When cases arise where it is necessary to communicate with a chief of service in order to ensure safety to personnel, more expeditious means of communication are authorized. This form should be used to confirm reports made by more expeditious means.
7. This form will be made out in triplicate by using or service organization. Two copies will be forwarded direct to the technical service; one copy will be forwarded through command channels.
8. Necessity for using this form will be determined by the using or service troops.

W. D., A. G. O. Form No. 468
20 August 1941

This form supersedes W. D., A. G. O. Form No. 468, 1 December 1943, which may be used until existing stocks are exhausted.

TL 97890A

*Figure 24. Sample Unsatisfactory Equipment Report (filled out).*

# SECTION X. EXPLANATION OF FORMS

## 51. EXPLANATION OF SIGNAL CORPS FORM SC 436, COMPARATIVE BAROMETER READINGS.

**a. Purpose.** On this form is recorded data pertaining to one station mercurial barometer and the pair of precision aneroid barometers. A supply of the forms must be taken by the Army Air Force inspector to the field station from the Regional Control Office. All entries should be made in pencil, in duplicate, before the inspector leaves the station.

**b. Procedure.**

(*1*) It is assumed that the inspector is thoroughly familiar with the procedure to be followed in reading the mercurial barometer, the precision aneroid barometer, and in making simultaneous observations.

(*2*) In order to obtain a representative correction to the station barometer, no less than 10 simultaneous comparative readings should be made.

**c. Column Headings.** With reference to the column headings it should be noted that:

(*1*) The gravity correction (column f) is the sum of correction for altitude and latitude as given on SC Form No. 79.

(*2*) The *Sum of Corrections* (columns g, l, and q) is to be understood as the algebraic sum, and each *Sum of Corrections* is to be added algebraically to the *Observed Barometer Reading* to which it applies in order to obtain the *Corrected Barometer Reading.*

(*3*) The temperature corrections to each aneroid barometer (columns j and o) are to be obtained from the aluminum temperature correction and pressure conversion chart furnished with each aneroid.

(*4*) The scale correction to each aneroid barometer is obtained from the modified scale calibration correction curve. (This is the curve drawn in pencil, as directed in paragraph 30g(16).) The scale correction is entered in column k for one aneroid and in column p for the other.

**d. Instrumental Correction.** Upon completion of the series of readings, the corrected pressure valves of the station mercurial barometer, and of the two precision aneroid barometers should be added and a mean value for each obtained. The difference between the mean of the readings of the station mercurial barometer and the average of the two means of the aneroid barometer readings is the instrumental correction to the station barometer.

**e. Average Correction.** Under *Previously Determined Corrections* (Δ) *to Barometer No.* _____ the average correction to the station barometer obtained in each *series* of comparative readings will be entered on each Form SC 436. After seven series of comparisons have been entered (i.e., after the station barometer has been corrected on seven separate occasions) it will be necessary to drop the first entry for (Δ) on the form, and to copy in the box marked (1) the (Δ) value obtained in the second series of comparisons. Values obtained for (Δ) in the third series of comparisons will be copied in the box marked (2), and so on, the value for (Δ) in the seventh series being entered in the last box, marked (6). As each new sheet is made out, the top value for (Δ) is dropped and each following correction is advanced one space, the value for (Δ) in the last previous series of comparisons always being written in the box marked (6).

**f. Filing Forms.** The original of Form SC 436 should be filed at the field station where the comparative readings were made. The carbon copy should be carried by the inspector to the Regional Control Office for filing there. If instrumental corrections for both inch and millibar scales have been determined, a separate Form SC 436 should have been executed for each correction.

## 52. EXPLANATION OF SIGNAL CORPS FORM SC 437, DATA ON BAROMETER ML-330/FM, REFERENCE STANDARD MERCURIAL.

**a. Purpose.** Signal Corps Form SC 437 records data pertaining to one Barometer ML-330/FM. This form is to be kept at the Regional Control Office with the barometer. If the barometer is removed from its initial location for use elsewhere, or if it is returned to Evans Signal Laboratory, this form must accompany it. Data in section I is recorded at Evans Signal Laboratory, Belmar, New Jersey; nothing is added to section I after the barometer reaches the Regional Control Office. Section II provides for recording data obtained in simultaneous comparisons of the three barometers (Barometer ML-330/FM and the two precision aneroid barometers) at the Regional Control Office.

**b. Section I (Pink Sheet).** Section I gives the instrumental correction for each Barometer ML-330/FM. It contains data obtained in simultaneous comparative readings on two secondary-standard mercurial barometers and Barometer ML-330/FM at the time of the original scale calibration of the instrument at Evans Signal Laboratory, Belmar, New Jersey. On the basis of calibration data obtained, separate instrumental corrections will have been determined for the inch scale and the millibar scale and these corrections entered in column s. Comparisons are made over the entire range of the scale. The corrections entered in column s are for different pressure points over the range. The pressure value for which the correction applies is found in column r.

**c. Section II (White Sheet).**

(*1*) Section II of Form SC 437 is provided for recording data obtained in comparative simultaneous readings of Barometer ML-330/FM and the two precision aneroid barometers which compose the set furnished to each Regional Control Office.

**CAUTION: When comparative readings are taken, there will always be data from two aneroids to be recorded. In order that data for each comparative reading may be segregated from other comparisons, alternate lines of section II of the form run completely across the form. Data for the two aneroid readings should be entered above and below the intermediate shorter lines. Data for Barometer ML-330/FM should be entered opposite the aneroid data above or below the dotted portion of the intermediate line.**

(*2*) The procedure in recording data is outlined below:

(*a*) In column a, record day, month, and year.

(*b*) In column b, enter the standard meridian.

(*c*) Provision has been made for the use of either the inch or the millibar scale of the barometer. If the inch scale is used, the attached thermometer should be read in degrees Fahrenheit, and the corrected barometer reading, in inches, entered in the proper box in column j. The corrected barometer reading, in inches, must then be converted into millibars by the use of table III in this manual and entered in the box in column j below the inch value.

(*d*) If the millibar scale is read, the centigrade scale of the attached thermometer should be used, the appropriate corrections, in millibars, applied to the barometer reading, and the

corrected barometer reading, in millibars, entered in the proper box in column j. When the millibar scale is used, no entries should be made on the dashed line in columns d to j, inclusive.

(*e*) In column i, the *Sum of Corrections* is to be understood as the *algebraic* sum and is to be added algebraically to the Barometer Reading (column e) to obtain the *Corrected Barometer Reading* (column j).

(*f*) Enter the complete nomenclature of the instrument as well as the serial number in column k.

(*g*) Record the readings of each precision aneroid barometer to the nearest tenth of a millibar in column l.

(*h*) Evaluate the temperature correction to each aneroid barometer reading from the curve on the chart *Temperature Correction per Degree F above or below 75° F* furnished with each instrument and record in column m.

(*i*) Add the *Temperature Correction* algebraically to the *Aneroid Barometer Reading* to obtain the *Corrected Aneroid Barometer Reading* and record in column n.

(*j*) Determine the correction to each aneroid barometer in each comparison and enter in columns o and p.

(*k*) Summarize the corrections obtained for each aneroid barometer in a series of 10 comparisons and record in columns o and p at the bottom of the page. Obtain the mean.

**53. EXPLANATION OF SIGNAL CORPS FORM SC 438, DATA ON BAROMETERS ML-331/TM, ML-332/TM, OR ML-333/TM (PRECISION ANEROID).**

**a. General.** Data recorded on this form are to be used as a complete and permanent record of the history and performance of one precision aneroid barometer. When the form is not in use, it is to be kept in the pocket in the lid of the carrying case of the aneroid barometer to which it pertains, whether the barometer is at the Regional Control Office, on a field trip, or is returned to Evans Signal Laboratory. When the instrument is returned to the laboratory, data entered on this form will enable the performance of the instrument to be evaluated properly.

**b. Section I (White Sheet).** Entries in this section of the form will be completed before the aneroid barometer is issued from Evans Signal Laboratory.

(*1*) Values in the column headed *Temperature Corrections per °F above or below 75° F* are identical to the values on the

temperature correction curve and pressure conversion chart furnished with each precision aneroid barometer.

(*2*) The column headed *Scale Correction at 75° F* contains data on which the scale calibration correction chart (in the lid of the shock-mounting case) is based. Should that chart become lost, a new scale calibration correction curve may be constructed on the basis of the data entered in this column.

(*3*) If the precision aneroid barometer is returned to Evans Signal Laboratory for recalibration, new calibration data will be entered in section I of the form.

**c. Section II (Pink Sheet).**

(*1*) This section of the form provides for entry of data pertaining to field trips of the aneroid barometer. A separate line of the form is used for each field station visited, except that in column b only one entry is made in the column *Before Trip* and only one in the column *After Trip*, regardless of the number of stations visited during the trip.

(*2*) The column entries are as follows:

(*a*) In column b, left side, enter average correction to the precision aneroid as determined by comparison with Barometer ML-330/FM.

(*b*) In column g, enter data only when barometer is transported by air.

(*c*) In columns h and i, estimated values may be entered if measured values are unavailable. The temperature values desired are the highest and lowest temperatures to which the instrument was exposed during transport.

(*d*) In column o, enter the nomenclature of the instrument (Barometer ML-2-( )), as well as the serial number of the tested barometer.

(*e*) In column p, enter the average correction determined for the station barometer at each different station.

**d. Section III (Green Sheet).** Data obtained in each comparative reading in series with the station mercurial are recorded in this section. This information is a repetition of that given in Signal Corps Form SC 436 *Comparative Barometer Readings* and is repeated in Form SC 438 in order to make this form a complete and independent record of a given aneroid barometer. The column entries are as follows:

(*1*) In heading of column b, enter standard meridian.

(2) In columns g and n, the *Sum of Corrections* is the *algebraic* sum.

(3) In columns h and o, to obtain the *Corrected Barometer Reading* add the *Sum of Corrections algebraically* to the observed barometer reading.

(4) In column i, enter the nomenclature (ML-2-( ) ) as well as the serial number of the instrument.

(5) In column p enter the correction obtained for each reading of the barometer. After a complete series of observations have been made, obtain the sum and mean of *Correction to Mercurial Barometer* and enter them immediately below the last entry in column p.

e. **Section IV (White Sheet).** This section provides for recording each comparative reading in a series of comparisons made on Barometer ML-330/FM and one precision aneroid, prior to and upon completion of each inspection trip in which the aneroid barometer is used. Column headings are self-explanatory.

## 54. EXPLANATION OF FORM SC-80, SECTIONS 1, 2, AND 3, CORRECTION OF MERCURIAL BAROMETER FOR TEMPERATURE, ENGLISH MEASURES.

### a. Formula for Reducing Readings to Standard Temperatures.

(1) Temperature correction tables are computed by simple formulas taking into account the known coefficients of expansion of the mercury and of the brass scale. The scale here refers to all metal parts between the ivory point and the top of the mercury column. It is assumed that the temperature of the scale is the same as that of the mercury and that it can be read on the attached thermometer.

(2) The formula for reducing the observed readings in inches to standard temperature is:

$$C = -B\,\frac{m(t-32°)-l(t-62°)}{1+m(t-32°)}$$

where $B$ is the observed height of the barometer in inches; $t$ is the temperature of the attached thermometer in degrees Fahrenheit; $m = .0001010$, the cubical expansion of mercury per degree Fahrenheit and $l = .0000102$, the linear expansion of brass per degree Fahrenheit. It will be seen that the cubical expansion of mercury is approximately 10 times as great as the linear expansion of brass.

**b. Interpolation.**

(*1*) *Purpose.*

(*a*) Form SC-80 (sections 1, 2, and 3) gives the temperature corrections to be applied to each reading of the barometer in inches. When the observed thermometer or pressure reading falls between two of the values given in the table, the temperature correction must be derived by interpolation; that is, by obtaining an intermediate term between two values given in the table.

*1.* Sections 1, 2, and 3 list temperature corrections only for barometer readings in whole and half inches, yet actual readings are obtained to the nearest .001 inch.

*2.* Thermometer readings are taken to the nearest ¼° F. Half-degree temperatures are listed from 60° to 95°. Temperatures below 60° and above 96°, however, are given in whole degrees. It is necessary, then, to interpolate when the thermometer reading involves an intermediate quarter-degree temperature.

(*b*) Interpolating for *either* the barometer reading or the thermometer reading is called *single interpolation.* Interpolating for *both* barometer and thermometer readings is called *double interpolation.*

(*2*) *Single Interpolation.*

(*a*) *Thermometer Reading.* When the thermometer reading is not listed in Form SC-80 but the barometer reading is, find the correction values for the temperature immediately above and below the observed reading. A value between the two will be the interpolated temperature value.

**EXAMPLE:** Thermometer reading 95.5° F; observed barometer reading 30.000 inches. The pertinent part of the tables which would be used in obtaining the correction under these circumstances is:

| °F | Height of barometer in inches |
|---|---|
| | 30.000 |
| 95 | .180 |
| (95.5) | (.181) |
| 96 | .182 |

*(Interpolated data which has been added to the table is shown in parentheses.)*

Since the correction at 30.0 inches is .180 for 95° and .182 for 96°, it is obvious that the value for 95.5° is .181. The reading of the barometer corrected for temperature is then: 30.000 − .181, 29.819 inches.

(*b*) *Barometer Reading.* When the thermometer reading is listed in the table but the pressure reading is not, proceed as follows: Locate the thermometer reading in the tables and follow the horizontal line across to the two values in the vertical pressure columns immediately below and above the observed reading. Subtract the lower value from the higher. Locate the difference thus obtained (.001, .002, .003, or .004) in the first column of the interpolation table at the bottom of the pages. In the horizontal line opposite this difference, a series of decimal pressure intervals is listed; for example, after .001 the intervals .000—.250, .500—.750, .251—.500, and .751—.000 are listed. Locate the decimal part of the observed barometer reading in one of these intervals on the same horizontal line with the difference in correction already obtained. Suppose the observed reading is 30.886 inches and the difference between the corrections for 30.5 and for 31.0 inches is .002 inch. Follow the horizontal line opposite .002 to the last pressure interval listed (.875—.000). The decimal value .886 occurs in the interval between .875—.000. The column heading above this interval gives the amount to be added to the correction listed in the table for the pressure value immediately below the observed pressure. The sum obtained is the interpolated temperature correction which is subtracted from the observed reading of the barometer to obtain true pressure.

**EXAMPLE:** Thermometer reading: 86° F; observed height of barometer: 30.297 inches. The pertinent part of the table is:

| °F | Height of barometer in inches | | |
|---|---|---|---|
| | 30.000 | (30.297) | 30.500 |
| 86 | .155 | (.157) | .158 |

(*Data added to tables to illustrate interpolated values are in parentheses.*)

The difference between the lower correction and the higher correction is:

$$\begin{array}{r} .158 \\ -.155 \\ \hline .003 \end{array}$$

In the first column of the interpolation table of sections 1, 2, and 3, Form SC-80, designated "Differences between adjacent tabulated corrections," find the horizontal line marked .003. Follow this line across to the box which contains the decimal value of the observed reading. This value (.297) is between .250—.416. According to the column heading, the amount to be added to the lower value of the correction is .002.

The lower value of the correction is: .155
The sum to be added is: +.002

Thus, the sum of the correction is: .157.
This amount is subtracted from the observed reading of the barometer.

30.297
−.157

30.140 is the barometer reading corrected for temperature.

(3) *Double Interpolation.*

(a) *Necessity.* When neither the thermometer reading nor the barometer reading is listed in the table, it is necessary to interpolate for both. Double interpolation involves both types of single interpolation. That is, it is finding an intermediate value between two thermometer values given in the table and finding an intermediate value between two pressure values given in the table.

(b) *Disposal of Decimals.* The interpolated value will contain three or four decimal places, depending on the value of the corrections between which interpolation is to be made. Only three decimal places are used in the final value of the temperature correction, and while it is doubtful whether the accuracy obtained justifies consideration of the fourth decimal value, certain rules have been established for determining corrections which involve four decimal places and these rules are in general use throughout the weather services of the United States. It is recommended, therefore, that these rules be applied in determining interpolated values. When the value obtained by interpolation contains four digits in the decimal, it must be reduced to three as follows:

1. Drop the fourth digit when it is less than five (.0634=.063).

2. Increase the preceding figure by one if the fourth digit is more than five (.0637=.064).

*3.* When the fourth digit is five, drop it if the third digit is an even number (.0685=.068); increase the third digit by one if it (the third digit) is an odd number (.0615=.062).

(*c*) *Examples of Double Interpolation.* There are three types of double interpolation. An example of each is given below:

**EXAMPLE 1.** Thermometer reading: 52.5° F, observed barometer reading: 30.297 inches. Interpolate first for temperature by taking the midvalue between 52° and 53° for barometer height of 30.000 and 30.500 inches, as follows:

| °F | Height of barometer in inches | | |
|---|---|---|---|
| | 30.000 | (30.297) | 30.500 |
| 52 | .064 | | .065 |
| (52.5) | (.065) | (.066) | (.066) |
| 53 | .066 | | .067 |

(*Interpolated values are in parentheses.*)

To find the interpolated pressure, subtract the lower interpolated temperature correction value from the higher.

$$\begin{array}{r} .066 \\ -.065 \\ \hline .001 \end{array}$$

This leaves .001. Find this value in the first column of the interpolation table and follow the line across to the decimal part of the barometer reading (.297). Since the decimal value is between .251—.500, this is the box headed .001, and this amount is added to the lower value of the correction.

$$\begin{array}{r} .065 \\ +.001 \\ \hline .066 \end{array}$$

Subtracting this value from the observed reading:

$$\begin{array}{l} 30.297 \text{ inches} \\ -.066 \\ \hline 30.231 \text{ inches is the pressure reading corrected for temperature.} \end{array}$$

**EXAMPLE 2.** Thermometer reading: 115.5° F; observed barometer reading: 29.834 inches. Interpolate first for temperature as before:

| °F | Height of barometer in inches | | |
|---|---|---|---|
| | 29.500 | (29.834) | 30.000 |
| 115 | .229 | | .233 |
| (115.5) | (.2305) | (.234) | (.2345) |
| 116 | .232 | | .236 |

(*Interpolated values are in parentheses.*)

Subtract the lower interpolated correction value, .2305, from the greater, .2345. The remainder is .004. This is the last line in the interpolation table. Follow it across to the box containing .834, the decimal part of the observed reading, between .813—.937. The amount to be added to the lower value is .003.

$$\begin{array}{r} .2305 \\ +.003 \\ \hline .2335 \end{array}$$

When the value obtained by interpolation contains four digits in the decimal, it must be reduced to three according to the rules given in subparagraph (b), disposal of decimals. Following this rule, the interpolated correction, .2335, becomes .234. Subtract the interpolated value from the observed barometer reading.

$$\begin{array}{l} 29.834 \text{ inches} \\ -.234 \\ \hline 29.600 \text{ inches is the barometer reading, corrected for temperature.} \end{array}$$

**EXAMPLE 3.** Thermometer reading: 110.5° F; observed barometer reading: 30.395 inches.

| °F | Height of barometer in inches | | |
|---|---|---|---|
| | 30.000 | (30.395) | 30.500 |
| 110 | .220 | | .224 |
| 110.5 | (.2215) | (.224) | (.2250) |
| 111 | .223 | | .226 |

(*Interpolated values are shown in parentheses.*)

To obtain the temperature correction for 110.5° F take the midvalue between .220 and .223 which is .2215. The midvalue between .224 and .226 is .2250. Subtracting the lower value from the higher, the result is .0035. Since this value is halfway between .003 and .004, the correction for both of these values must be obtained from the interpolation table. For a difference of .003, the amount to be added is .002; for a difference of .004, the amount to be added is .003. Adding these two and finding the mean gives .0025.

$$\begin{array}{r} .002 \\ +.003 \\ \hline 2).005 \\ \hline .0025 \end{array}$$

When this amount is added to .2215, the lower value of the interpolated temperature correction, the result is as follows:

$$\begin{array}{r} .2215 \\ +.0025 \\ \hline .224 \end{array}$$

Subtract this amount from 30.395 for the observed barometer reading.

$$\begin{array}{ll} 30.395 & \text{inches} \\ -.224 & \text{inches} \\ \hline 30.171 & \text{inches is the barometer reading corrected for temperature.} \end{array}$$

**c. Extension of Form SC-80, Sections 1, 2, and 3, English Measures.**

(*1*) In sections 1, 2, and 3 the column headed 10.0 inches is provided to permit extension of these tables to pressures below 22 inches of mercury.

(*2*) Since the temperature correction for any given temperature is directly proportional to the observed height of the barometer, the correction can be computed by adding or subtracting the individual corrections for any combination of pressures which totals the observed pressure.

(*3*) For example, to compute the temperature correction for a pressure of 20.0 inches with a thermometer reading of 65° F, proceed as follows:

(*a*) At 65° F, pressure 30.0 inches, correction is −.099.

(*b*) At 65° F, pressure 10.0 inches, correction is −.033.

(*c*) Subtracting pressures and corresponding temperature corrections, the correction for a pressure of 20.0 inches at 65° F, is −.066.

**55. EXPLANATION OF FORM SC-80, SECTIONS 4 AND 5, CORRECTION OF MERCURIAL BAROMETER FOR TEMPERATURE, DYNAMIC MEASURES.**

**a. Formula.** The formula for reducing observed reading to the standard temperature, 0° C is:

$$C = -B\frac{(m-l)t}{1+mt}$$

where $B$ is the observed height of the barometer in millibars; $t$ is the temperature of the attached thermometer in degrees centigrade; $m = .0001818$, and $l = .0000184$. Since the observed height can be determined to the nearest .05 millibar only, the tabulated temperature corrections have been rounded off to this order of accuracy.

**b. Interpolation.**

(*1*) *Thermometer Reading.* The centigrade scale of the thermometer is read to .1° C intervals. Since the tables list corrections for only whole and half degree intervals, it will be necessary to interpolate between values listed in the tables for temperatures intermediate between whole and half degrees. It will be noted from the tables that the differences in correction between half degrees are always either .05 or .10 millibar. Since barometer heights are measured only to the nearest .05 millibar, interpolated corrections to less than .05 millibar would not improve the accuracy of the

reading and should not be made. The only places where interpolation is possible, then, is where the difference in correction is .10 mb. When the difference between adjacent corrections is .10 millibar and the temperature is intermediate between tabulated corrections, add .05 millibar to the correction for the next lowest temperature listed.

**EXAMPLE:** If the temperature is 20.1° or 20.6°, use the correction for 20° or 20.5°, respectively. If the temperature is 20.4° or 20.9°, use the correction for 20.5° or 21°. If the temperature is 20.2° or 20.3°, add .05 mb to the correction for 20°. If the temperature is 20.7° or 20.8°, add .05 mb to the correction for 20.5°. When the difference between adjacent corrections is .05 mb, use the lower correction for temperatures whose decimal parts are .1°, .2°, .6°, and .7°; use the higher correction for decimal parts of .3°, .4°, .8°, and .9°.

(*2*) *Barometer Reading.* The interpolation table at the bottom of sections 4 and 5, Form SC-80 is similar in construction and principle to the interpolation table for English measures. (See paragraph 54.) It should be used in the same way except as noted below.

**EXAMPLE:** Observed barometer reading: 753.65 millibars; temperature: 37.5° C. Obtain the two correction values from the table for the nearest pressure above and below the observed value. In this instance, these values are 4.50 millibars (correction for 740 millibars) and 4.65 millibars (correction for 760 millibars). Subtracting the lower value from the higher, the difference is .15 millibar. Locate this value in the interpolation table in the column "Differences between adjacent tabulation corrections." From the observed barometer reading, 753.65 millibars, subtract the next lower tabulated pressure value, in this case, 740 millibars. The difference is 13.65. Follow the line marked .15, in the left column of the interpolation table, across the table until a pressure interval, or "box," is found which includes 13.65. This will be found in the box designated 10.05—16.65. According to the column heading, the correction to be added is .10 millibar. This value is added to 4.50, the lower value of the correction, and makes the total tem-

perature correction 4.60 millibars. Subtract this from the observed pressure.

753.65 millibars
−4.60
749.05 millibars

The barometer reading corrected for temperature is 749.05 millibars.

(*3*) *Comparison of Methods.*

(*a*) In the examples given above, there *appears* to be a difference in the way the interpolation tables for inches and for millibars are used. In the inch table, the decimal part of the observed reading was used in entering the interpolation table. In the millibar table, the difference between the observed reading and the next lower tabulated pressure value was used. These procedures are, actually, the same.

(*b*) Since pressure values are tabulated for each inch and half inch, using the decimal part of the observed reading actually amounts to subtracting the next lower tabulated pressure from the observed reading. For decimal parts over .500 this may not at first seem to be true. Note, however, that there are *two* pressure intervals listed in each of the correction columns in the interpolation table for inches. Note also that the minimum and maximum values of these pressure intervals differ from each other by exactly .500; hence, a decimal having a value of .287 has the same correction as the decimal part .787.

(*c*) As an example, a pressure of 30.287 inches differs from the next lower tabulated pressure value (30.000 inches) by .287 inch. A pressure of 30.787 inches also differs from the next lower tabulated pressure value (30.500 inches) by .287 inch. Therefore, both of these pressures would have the same correction applied and the two interpolation tables are the same in principle of use.

**c. Extension of Form SC-80, Sections 4 and 5, Dynamic Measures.**

In the millibar table the column headed 300 (millibars) has been provided to permit extension of these tables to pressures below 740 millibars. The principle involved in this extension is identical to that discussed in paragraph for extension of the inch table. For example, the temperature correction for a pressure of 680 millibars at 22.0° C can be computed by evaluating the differences in tabulated corrections for the 980- and 300-millibar columns, as follows:

(*1*) At 22° C, barometer 980 millibars, correction is: 3.50 millibars.

(*2*) At 22° C, barometer 300 millibars, correction is: 1.05 millibars.

(*3*) Subtract pressures and corresponding temperature corrections. For pressure 680 millibars and temperature 22° C, the correction is 2.45 millibars.

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## SECTION XI. EXPLANATION OF TABLES

### 56. EXPLANATION OF TABLE I, REDUCTION OF BAROMETER TO STANDARD GRAVITY, ALTITUDE TERM, ENGLISH MEASURES, AND TABLE II, REDUCTION OF BAROMETER TO STANDARD GRAVITY, LATITUDE TERM, ENGLISH MEASURES.

**a. General.** As noted in paragraph 26c, the gravity corrections furnished on SC Form No. 79 for use with Barometer ML-330/FM are, in most cases, based either on actually measured gravity values or on values interpolated from actual measurements. Hence, these corrections may differ in magnitude from corresponding corrections obtained from the tables. As noted in paragraph 26c(2), however, when the location of a station is changed, and a correction based on measured values of gravity is not immediately available, a gravity correction for emergency use must be computed from tables I and II on the basis of the altitude, latitude, and average annual pressure of the station. A gravity correction for the barometer must be computed for each separate station on the basis of the average annual pressure. This correction is entered on SC Form No. 79 and is applied to each barometer reading. The value of the correction varies with changes in pressure but for a particular location, the variation from the annual average, caused by fluctuations in atmospheric pressure, is so small that it may be neglected.

**b. Altitude Correction.** The total gravity correction consists of two parts: a correction for the *altitude* of the station and a correction for its *latitude*. An altitude correction must be applied because the value of the acceleration of gravity decreases with elevation above sea level, hence for the same pressure and temperature a vertical mercury column will actually be longer at a higher elevation than at a lower one. In order that pressures measured at

different stations may be compared, the altitude correction must be subtracted from the observed reading to reduce the length of the mercury column to the length it would have *at the same pressure* at sea level. (This must not be confused with sea level pressure. The altitude correction is applied to obtain a more nearly correct value of station pressure, which at elevations above sea level is obviously less than sea-level pressure.) In the rare case where a station may be located below sea level, the altitude correction should be determined from the table in the same manner as for stations above sea level, but it should be *added* to the observed barometer reading rather than subtracted.

**c. Use of Altitude Tables.**

(*1*) Altitude corrections are given in table I. The column of figures in the extreme left of this table gives station elevation in intervals of 300 feet from sea level (zero elevation) to 3,000 feet above sea level, and in intervals of 500 feet from 3,000 to 15,000 feet above sea level. The line of figures extending horizontally across the top of the table headed "Observed height of the barometer in inches" gives the mean annual station pressure from 16 to 30 inches.

(*2*) When either the station elevation or mean pressure is not listed in the table, it will be necessary to find the value of the correction by single interpolation. When neither the elevation nor the mean pressure is listed in the table, double interpolation must be used,

(*3*) As an example of the application of double interpolation in this table, assume that the station elevation is 7,740 feet and that the mean pressure is 21.06 inches. The applicable part of table I will be:

| Height above sea level | Observed height of barometer in inches | | |
|---|---|---|---|
| | 20 | (21.06) | 22 |
| 7,500 | .014 | | .016 |
| (7,740) | (.0145) | (.016) | (.0165) |
| 8,000 | .015 | | .017 |

(*Interpolated values added to table are in parentheses.*)

(*a*) First interpolate to obtain the corrections at 20 and 22 inches for 7,740 feet. The difference between the true elevation and the next lower tabular value is: 7,740−7,500=240 feet. The difference between tabulated elevation intervals is 500 feet. The difference between the corrections for both 20 and 22 inches at the tabulated intervals is .001 inch (.015−.014 and .017−.016).

(*b*) The following proportion may be set up where $x$ is equal to the amount that must be added to the lower value of the correction to obtain the true value:

$$\frac{240}{500} = \frac{x}{.001}, \; x = .00048$$

Reducing to four decimals, the true corrections for 20 and 22 inches, then, will be: .014+.0005=.0145 and .016+.0005=.0165.

(*c*) By a similar equation of proportion, the correction for 21.06 inches may be found:

$$21.06 - 20.00 = 1.06, \; 22 - 20 = 2.$$
$$.0165 - .0145 = .002$$

Then, $\frac{1.06}{2.00} = \frac{x}{.002}$ $x = .00106$, or reducing to four decimals, $x = .0011$. Then the correction for 7,740 feet and 21.6 inches mean pressure is .0145+.0011=.0156. Reducing to the nearest thousandth inch, the correction is .016 inch.

NOTE: See paragraph 54b(3)(b) for rules for reducing decimals.

**d. Latitude Correction.**

(*1*) The latitude correction is applied to compensate for the shape of the earth. Since the distance from the surface to the center of the earth gradually decreases towards the poles, the value of the acceleration of gravity increases from the equator toward each pole. By common agreement, the acceleration of gravity at 45° latitude was selected as a standard value to which all barometer readings would be corrected. Since this agreement was reached, more accurate measurements have been made to determine the acceleration of gravity and the value agreed upon for 45° latitude has been found to be slightly in error. The value selected for standard gravity actually occurs at about 45½° latitude.

(2) As noted in b above, all other factors remaining constant, the height of a vertical mercury column increases with decreasing values of the acceleration of gravity. If, then, the gravity correction is zero at 45½° latitude, a mercury column will be higher than it should be at all latitudes below 45½° since the value of the acceleration of gravity is lower than the standard value in these latitudes. Conversely, for latitudes above 45½°, where the acceleration of gravity has a higher value than standard, a mercury column will be shorter than it should be. If all readings of a barometer are to be reduced to standard gravity, a correction must be added when the barometer is located above 45½° and a correction subtracted when it is in latitudes below 45½°.

**e. Use of Latitude Tables.** Latitude corrections to be applied are given in table II. In the column on the left side of the tables, latitudes from 0° to 90° are listed by degree intervals. Across the top of the table the mean annual station pressure is listed in 1-inch intervals from 16 to 31 inches. Corrections in decimal parts of an inch are given in the body of the table. When the latitude and mean pressure of the station are not listed in the table, the value of the correction must be obtained by interpolation.

NOTE: The corrections given in tables I and II are given in inches of mercury only. When gravity corrections in millibars are to be computed, obtain the gravity correction in inches from the table and multiply this value by 33.86395.

## 57. EXPLANATION OF TABLE III, INCHES OF MERCURY INTO MILLIBARS, AND TABLE IV, MILLIBARS INTO INCHES OF MERCURY.

**a.** Table III, *Inches of Mercury into Millibars,* is provided so that mercurial barometer readings in inches may be converted into millibars.

**b.** Table IV, *Millibars into Inches of Mercury,* is provided so that barometer readings in millibars may be converted into inches of mercury.

**c.** Readings of the mercurial barometer in either inches or millibars must be corrected for gravity and temperature before the conversion tables are used.

## SECTION XII. REQUISITIONING INFORMATION

### 58. REQUISITIONING NEW INSTRUMENTS.

The process by which new instruments are requisitioned and unserviceable instruments are returned is different from that usually employed for requisitioning and shipping equipment. The procedure to be followed is outlined in a letter from the Army Air Force weather service to the Regional Control Office.

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## SECTION XIII. GLOSSARY

### 59. GLOSSARY OF TERMS USED IN THIS MANUAL.

*Ambient temperature (or pressure).* The temperature or pressure of the air surrounding the thermometer or barometer.

*Anomaly.* The departure of a meteorological element from its normal value. In this manual used chiefly in connection with gravity to indicate the departure from the theoretical value.

*Attached thermometer.* A thermometer attached to a mercurial barometer for the purpose of ascertaining its temperature.

*Capillarity.* The action by which the surface of a liquid, when in contact with the sides of a tube of small bore, is elevated or depressed.

*Centering ring.* A metal ring, fitted with three screws, which maintains the mercurial barometer in a vertical position.

*Centigrade.* A temperature scale, in which, at standard pressure, the melting point of ice is 0° and the boiling point of water, 100°.

*Cistern.* A reservoir which contains part of the mercury of a Fortin-type mercurial barometer and defines the zero point of the barometer. The outside housing is of brass with a glass cylinder at the top to permit a view of the mercury surface; the mass of mercury is held within a kid leather bag, the amount being controlled by an adjusting screw at the bottom.

*Correction.* A quantity to be applied, when required, to the indication (or the recording) of an instrument to cause the indicated value to equal the true value. When the true value is subtracted from the indicated value, the difference is termed an error; when the

indicated value is subtracted from the true value, the difference is called a correction. In a given case, error and correction are numerically of the same magnitude, but of opposite sign. The application of the correction compensates for the error.

*Fahrenheit.* The scale generally used in English-speaking countries for measuring temperature in which, at standard pressure, the melting point of ice is 32°, and the boiling point of water, 212°. Named for Gabriel Daniel Fahrenheit, born 1686, in Danzig.

*Ivory point.* A small cone-shaped piece of ivory attached to the inside surface of the top of the barometer cistern, the point of the cone being the zero end of the barometer scales.

*Meniscus.* The convex upper surface of a mercury column in a barometer tube.

*Millibar.* A unit of measurement of atmospheric pressure, in use since 1914. A millibar is one-thousandth of a bar: the bar is defined as a pressure of one million dynes per square centimeter.

*Precision aneroid barometers.* The term *precision* is applied to Barometers ML-331/TM, ML-332/TM, and ML-333/TM, because of their higher-than-average degree of accuracy.

*Regional Control Office.* Headquarters of an Army Air Force weather region.

*Vernier.* An auxiliary scale for estimating fractions of a scale division when the reading to the nearest whole division on the main scale is not sufficient. The vernier is made to slide alongside the divisions of the main scale. It is named for its inventor Pierre Vernier, a French mathematician.

*Zero level.* When the surface of the mercury in the cistern is adjusted to the tip of the ivory point, it is said to be adjusted to *zero level* since the end of the ivory point is the zero end of the barometer scales, the point from which all measurements of the height of the mercury column are made.

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## SECTION XIV. MAINTENANCE PARTS

### 60. MAINTENANCE PARTS FOR BAROMETERS ML-330/FM, ML-331/TM, ML-332/TM, AND ML-333/TM.

This equipment will not be repaired in the field but will be returned to Evans Signal Laboratory, Belmar, New Jersey, for repairs and recalibration.

# SECTION XV. TABLES

## Table I.

## REDUCTION OF BAROMETER TO STANDARD GRAVITY ALTITUDE TERM, ENGLISH MEASURES

[Correction to be subtracted for height above sea level]

| Height above sea level in feet | Observed height of barometer in inches | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
| 0 | | | | | | | 0.000 | 0.000 |
| 300 | | | | | | | .001 | .001 |
| 600 | | | | | | | .002 | .002 |
| 900 | | | | | | 0.002 | .003 | .003 |
| 1200 | | | | | | .003 | .003 | .004 |
| 1500 | | | | | | .004 | .004 | .004 |
| 1800 | | | | | 0.004 | .004 | .005 | .005 |
| 2100 | | | | | .005 | .005 | .006 | .006 |
| 2400 | | | | | .006 | .006 | .006 | |
| 2700 | | | | | .006 | .007 | .007 | |
| 3000 | | | | 0.006 | .007 | .008 | .008 | |
| 3500 | | | | .007 | .008 | .009 | .010 | |
| 4000 | | | | .009 | .009 | .010 | | |
| 4500 | | | | .010 | .010 | .011 | | |
| 5000 | | | 0.010 | .011 | .011 | .012 | | |
| 5500 | | | .011 | .012 | .013 | .014 | | |
| 6000 | | | .011 | .013 | .014 | .015 | | |
| 6500 | | 0.011 | .012 | .014 | .015 | | | |
| 7000 | | .012 | .013 | .015 | .016 | | | |
| 7500 | | .013 | .014 | .016 | .017 | | | |
| 8000 | | .014 | .015 | .017 | .018 | | | |
| 8500 | | .015 | .016 | .018 | | | | |
| 9000 | | .016 | .017 | .019 | | | | |
| 9500 | | .016 | .018 | .020 | | | | |
| 10000 | 0.015 | .017 | .019 | .021 | | | | |
| 10500 | .016 | .018 | .020 | .022 | | | | |
| 11000 | .017 | .019 | .021 | | | | | |
| 11500 | .018 | .020 | .022 | | | | | |
| 12000 | .018 | .021 | .023 | | | | | |
| 12500 | .019 | .021 | .024 | | | | | |
| 13000 | .020 | .022 | .025 | | | | | |
| 13500 | .021 | .023 | .026 | | | | | |
| 14000 | .021 | .024 | | | | | | |
| 14500 | .022 | .025 | | | | | | |
| 15000 | .023 | .026 | | | | | | |

Adapted from Table 134, Smithsonian Physical Tables Eighth Revised Edition, 1934.

## Table II.

## REDUCTION OF BAROMETER TO STANDARD GRAVITY, LATITUDE TERM, ENGLISH MEASURES

[From latitude 0° to 45°, correction to be subtracted]

| Latitude (°) | Height of barometer in inches | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| | Correction | | | | | | | Subtract | | | | Correction | | | | |
| 0 | 0.043 | 0.046 | 0.048 | 0.051 | 0.054 | 0.056 | 0.059 | 0.062 | 0.064 | 0.067 | 0.070 | 0.072 | 0.075 | 0.078 | 0.080 | 0.083 |
| 5 | .042 | .045 | .047 | .050 | .053 | .055 | .058 | .061 | .063 | .066 | .069 | .071 | .074 | .077 | .079 | .082 |
| 6 | .042 | .045 | .047 | .050 | .052 | .055 | .058 | .060 | .063 | .066 | .068 | .071 | .073 | .076 | .079 | .081 |
| 7 | .042 | .044 | .047 | .049 | .052 | .055 | .057 | .060 | .062 | .065 | .068 | .070 | .073 | .075 | .078 | .081 |
| 8 | .041 | .044 | .046 | .049 | .052 | .054 | .057 | .059 | .062 | .064 | .067 | .070 | .072 | .075 | .077 | .080 |
| 9 | .041 | .043 | .046 | 048 | .051 | .054 | .056 | .059 | .061 | .064 | .066 | .069 | .071 | .074 | .076 | .079 |
| 10 | .040 | .043 | .045 | .048 | .050 | .053 | .055 | .058 | .060 | .063 | .066 | .068 | .071 | .073 | .076 | .078 |
| 11 | .040 | .042 | .045 | .047 | .050 | .052 | .055 | .057 | .060 | .062 | .065 | .067 | .070 | .072 | .075 | .077 |
| 12 | .039 | .042 | .044 | .047 | .049 | .051 | .054 | .056 | .059 | .061 | .064 | .066 | .069 | .071 | .074 | .076 |
| 13 | .039 | .041 | .043 | .046 | .048 | .051 | .053 | .055 | .058 | .060 | .063 | .065 | .068 | .070 | .072 | .075 |
| 14 | .038 | .040 | .043 | .045 | .047 | .050 | .052 | .055 | .057 | .059 | .062 | .064 | .066 | .069 | .071 | .073 |
| 15 | .037 | .040 | .042 | .044 | .047 | .049 | .051 | .053 | .056 | .058 | .060 | .063 | .065 | .067 | .070 | .072 |
| 16 | .036 | .039 | .041 | .043 | .046 | .048 | .050 | .052 | .055 | .057 | .059 | .062 | .064 | .066 | .068 | .071 |
| 17 | .036 | .038 | .040 | .042 | .045 | .047 | .049 | .051 | .053 | .056 | .058 | .060 | .062 | .065 | .067 | .069 |
| 18 | .035 | .037 | .039 | .041 | .044 | .046 | .048 | .050 | .052 | .054 | .057 | .059 | .061 | .063 | .065 | .067 |
| 19 | .034 | .036 | .038 | .040 | .042 | .045 | .047 | .049 | .051 | .053 | .055 | .057 | .059 | .062 | .064 | .066 |
| 20 | .033 | .035 | .037 | .039 | .041 | .043 | 045 | .047 | .050 | .052 | .054 | .056 | .058 | .060 | .062 | .064 |
| 21 | .032 | .034 | .036 | .038 | .040 | .042 | 044 | .046 | .048 | .050 | .052 | .054 | .056 | .058 | .060 | .062 |
| 22 | .031 | .033 | .035 | .037 | .039 | .041 | .043 | .045 | .047 | .049 | .050 | .052 | .054 | .056 | .058 | .060 |
| 23 | .030 | .032 | .034 | .036 | .038 | .039 | .041 | .043 | .045 | .047 | .049 | .051 | .053 | .054 | .056 | .058 |
| 24 | .029 | .031 | .033 | .034 | .036 | .038 | .040 | .042 | .043 | .045 | .047 | .049 | .051 | .052 | .054 | 056 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | .028 | .030 | .031 | .033 | .035 | .037 | .038 | .040 | .042 | .043 | .045 | .047 | .04[8] | .050 | .052 | .054 |
| 26 | .027 | .028 | .030 | .032 | .033 | .035 | .037 | .038 | .040 | .042 | .043 | .045 | .047 | .048 | .050 | .052 |
| 27 | .026 | .027 | .029 | .030 | .032 | .033 | .035 | .037 | .038 | .040 | .041 | .043 | .045 | .046 | .048 | .049 |
| 28 | .024 | .026 | .027 | .029 | .030 | .032 | .033 | .035 | .036 | .038 | .039 | .041 | .043 | .044 | .046 | .047 |
| 29 | .023 | .025 | .026 | .027 | .029 | .030 | .032 | .033 | .035 | .036 | .037 | .039 | .040 | .042 | .043 | .045 |
| 30 | .022 | .023 | .025 | .026 | .027 | .029 | .030 | .031 | .033 | .034 | .035 | .037 | .038 | .040 | .041 | .042 |
| 31 | .021 | .022 | .023 | .024 | .026 | .027 | .028 | .030 | .031 | .032 | .033 | .035 | .036 | .037 | .038 | .040 |
| 32 | .019 | .020 | .022 | .023 | .024 | .025 | .026 | .028 | .029 | .030 | .031 | .032 | .034 | .035 | .036 | .037 |
| 33 | .018 | .019 | .020 | .021 | .022 | .023 | .025 | .026 | .027 | .028 | .029 | .030 | .031 | .032 | .034 | .035 |
| 34 | .017 | .018 | .019 | .020 | .021 | .022 | .023 | .024 | .025 | .026 | .027 | .028 | .029 | .030 | .031 | .032 |
| 35 | .015 | .016 | .017 | .018 | .019 | .020 | .021 | .022 | .023 | .024 | .025 | .026 | .027 | .027 | .028 | .029 |
| 36 | .014 | .015 | .015 | .016 | .017 | .018 | .019 | .020 | .021 | .022 | .022 | .023 | .024 | .025 | .026 | .027 |
| 37 | .012 | .013 | .014 | .015 | .015 | .016 | .017 | .018 | .019 | .019 | .020 | .021 | .022 | .022 | .023 | .024 |
| 38 | .011 | .012 | .012 | .013 | .014 | .014 | .015 | .016 | .016 | .017 | .018 | .018 | .019 | .020 | .020 | .021 |
| 39 | .009 | .010 | .011 | .011 | .012 | .012 | .013 | .014 | .014 | .015 | .015 | .016 | .017 | .017 | .018 | .018 |
| 40 | .008 | .009 | .009 | .010 | .010 | .011 | .011 | .012 | .012 | .013 | .013 | .014 | .014 | .015 | .015 | .016 |
| 41 | .007 | .007 | .007 | .008 | .008 | .009 | .009 | .009 | .010 | .010 | .011 | .011 | .012 | .012 | .012 | .013 |
| 42 | .005 | .005 | .006 | .006 | .006 | .007 | .007 | .007 | .008 | .008 | .008 | .009 | .009 | .009 | .010 | .010 |
| 43 | .004 | .004 | .004 | .004 | .005 | .005 | .005 | .005 | .005 | .006 | .006 | .006 | .006 | .007 | .007 | .007 |
| 44 | .002 | .002 | .002 | .003 | .003 | .003 | .003 | .003 | .003 | .003 | .004 | .004 | .004 | .004 | .004 | .004 |
| 45 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 | .001 |

**Adapted from Table 49, Smithsonian Meteorological Tables, Fifth Revised Edition, 1939.**

## Table II.

## REDUCTION OF BAROMETER TO STANDARD GRAVITY, LATITUDE TERM, ENGLISH MEASURES, (CONTD)

[From latitude 46° to 90°, correction to be added]

| Latitude (°) | Height of barometer in inches | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| | Correction | | | | | | | | Add | Correction | | | | | | |
| 46 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| 47 | .002 | .002 | .003 | .003 | .003 | .003 | .003 | .003 | .003 | .003 | .004 | .004 | .004 | .004 | .004 | .004 |
| 48 | .004 | .004 | .004 | .004 | .005 | .005 | .005 | .005 | .006 | .006 | .006 | .006 | .006 | .007 | .007 | .007 |
| 49 | .005 | .005 | .006 | .006 | .006 | .007 | .007 | .007 | .008 | .008 | .008 | .009 | .009 | .009 | .010 | .010 |
| 50 | .007 | .007 | .007 | .008 | .008 | .009 | .009 | .010 | .010 | .010 | .011 | .011 | .012 | .012 | .012 | .013 |
| 51 | .008 | .009 | .009 | .010 | .010 | .011 | .011 | .012 | .012 | .013 | .013 | .014 | .014 | .015 | .015 | .016 |
| 52 | .010 | .010 | .011 | .011 | .012 | .012 | .013 | .014 | .014 | .015 | .015 | .016 | .016 | .017 | .018 | .018 |
| 53 | .011 | 012 | .012 | .013 | .014 | .014 | .015 | .016 | .016 | .017 | .018 | .018 | .019 | .019 | .020 | .021 |
| 54 | .012 | .013 | .014 | .015 | .015 | .016 | .017 | .018 | .019 | .019 | .020 | .021 | .022 | .022 | .023 | .024 |
| 55 | .014 | .015 | .015 | .016 | .017 | .018 | .019 | .020 | .021 | .021 | .022 | .023 | .024 | .025 | .026 | .027 |
| 56 | .015 | .016 | .017 | .018 | .019 | .020 | .021 | .022 | .023 | .024 | .024 | .026 | .026 | .027 | .028 | .029 |
| 57 | .016 | .018 | .019 | .020 | .021 | .022 | .023 | .024 | .025 | .026 | .027 | .028 | .029 | .030 | .031 | .032 |
| 58 | .018 | .019 | .020 | .021 | .022 | .023 | .025 | .026 | .027 | .028 | .029 | .030 | .031 | .032 | .033 | .035 |
| 59 | .019 | .020 | .022 | .028 | .024 | .025 | .026 | .028 | .029 | .030 | .031 | .032 | .033 | .035 | .036 | .037 |
| 60 | .020 | .022 | .023 | .024 | .026 | .027 | .028 | .029 | .031 | .032 | .033 | .034 | .036 | .037 | .038 | .040 |
| 61 | .022 | .023 | .024 | .026 | .027 | .028 | .030 | .031 | .033 | .034 | .035 | .037 | .038 | .039 | .041 | .042 |
| 62 | .023 | .024 | .026 | .027 | .029 | .030 | .032 | .033 | .034 | .036 | .037 | .039 | 040 | .042 | .043 | .044 |
| 63 | .024 | .026 | .027 | .029 | .030 | .032 | .033 | .035 | .036 | .038 | .039 | .041 | .042 | .044 | .045 | .047 |
| 64 | .025 | .027 | .028 | .030 | .032 | .033 | .035 | .036 | .038 | .040 | .041 | .043 | .044 | .046 | .047 | .049 |
| 65 | .026 | .028 | .030 | .031 | 033 | .035 | .036 | .038 | .040 | .041 | .043 | .045 | .046 | .048 | .050 | .051 |
| 66 | .028 | .029 | .031 | .033 | .034 | .036 | .038 | .040 | .041 | .043 | .045 | .047 | .048 | .050 | .052 | .053 |
| 67 | .029 | .030 | .032 | .034 | .036 | .038 | .039 | .041 | .043 | .045 | .047 | .048 | .050 | .052 | .054 | .056 |
| 68 | .030 | .032 | .033 | .035 | .037 | .039 | .041 | .043 | .045 | .046 | .048 | .050 | .052 | .054 | .056 | .058 |
| 69 | .031 | .033 | .035 | .036 | .038 | .040 | .042 | .044 | .046 | .048 | .050 | .052 | .054 | .056 | .058 | .060 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70 | .032 | .034 | .036 | .038 | .040 | .042 | .044 | .046 | .048 | .050 | .052 | .053 | .055 | .057 | .059 | 061 |
| 71 | .033 | .035 | .037 | .039 | .041 | .043 | .045 | .047 | .049 | .051 | .053 | .055 | .057 | .059 | .061 | .063 |
| 72 | .034 | .036 | .038 | .040 | .042 | .044 | .046 | .048 | .050 | .052 | .054 | .057 | .059 | .061 | .063 | .065 |
| 73 | .034 | 037 | .039 | .041 | .043 | .045 | .047 | .049 | .052 | .054 | .056 | .058 | .060 | .062 | .064 | .067 |
| 74 | .035 | .037 | .040 | .042 | .044 | .046 | .048 | .051 | .053 | .055 | .057 | .059 | .062 | .064 | .066 | .068 |
| 75 | .036 | .038 | .040 | .043 | .045 | .047 | .049 | .052 | .054 | .056 | .058 | .061 | .063 | .065 | .067 | .070 |
| 76 | .037 | .039 | .041 | .044 | .046 | .048 | .050 | .053 | .055 | .057 | .060 | .062 | .064 | .066 | .069 | .071 |
| 77 | .037 | .040 | .042 | .044 | .047 | .049 | .051 | .054 | .056 | .058 | .061 | .063 | .065 | 068 | .070 | .072 |
| 78 | .038 | 040 | .043 | .045 | .047 | .050 | .052 | .055 | .057 | .059 | .062 | .064 | .066 | .069 | .071 | .074 |
| 79 | .039 | .041 | .043 | .046 | .048 | .051 | .053 | .055 | .058 | .060 | .063 | .065 | .067 | .070 | .072 | .075 |
| 80 | .039 | .042 | .044 | .046 | .049 | .051 | .054 | .056 | .059 | .061 | .063 | .066 | .068 | .071 | .073 | .076 |
| 81 | .040 | .042 | .045 | .047 | .049 | .052 | .054 | .057 | .059 | .062 | .064 | .067 | .069 | .072 | .074 | .077 |
| 82 | .040 | .042 | .045 | .047 | .050 | .052 | .055 | .057 | .060 | .062 | .065 | .067 | .070 | .072 | .075 | .077 |
| 83 | .040 | .043 | .045 | .048 | .050 | .053 | .056 | .058 | .061 | .063 | .066 | .068 | .071 | .073 | .076 | .078 |
| 84 | .041 | .043 | .046 | .048 | .051 | .053 | .056 | .059 | .061 | .064 | .066 | .069 | .071 | .074 | .076 | .079 |
| 85 | .041 | .044 | .046 | .049 | .051 | .054 | .056 | .059 | .061 | .064 | .067 | .069 | .072 | .074 | .077 | .079 |
| 90 | .042 | .044 | .047 | .049 | .052 | .055 | .057 | .060 | .062 | .065 | .068 | .070 | .073 | .075 | .078 | .081 |

Adapted from Table 49, Smithsonian Meteorological Tables, Fifth Revised Edition, 1939.

## Table III

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16.00 | 541.8 | 541.9 | 542.0 | 542.0 | 542.1 | 16.45 | 557.1 | 557.1 | 557.2 | 557.3 | 557.3 |
| 16.01 | 542.2 | 542.2 | 542.3 | 542.4 | 542.4 | 16.46 | 557.4 | 557.5 | 557.5 | 557.6 | 557.7 |
| 16.02 | 542.5 | 542.6 | 542.6 | 542.7 | 542.8 | 16.47 | 557.7 | 557.8 | 557.9 | 557.9 | 558.0 |
| 16.03 | 542.8 | 542.9 | 543.0 | 543.0 | 543.1 | 16.48 | 558.1 | 558.1 | 558.2 | 558.3 | 558.3 |
| 16.04 | 543.2 | 543.2 | 543.3 | 543.4 | 543.4 | 16.49 | 558.4 | 558.5 | 558.6 | 558.6 | 558.7 |
| 16.05 | 543.5 | 543.6 | 543.7 | 543.7 | 543.8 | 16.50 | 558.8 | 558.8 | 558.9 | 559.0 | 559.0 |
| 16.06 | 543.9 | 543.9 | 544.0 | 544.1 | 544.1 | 16.51 | 559.1 | 559.2 | 559.2 | 559.3 | 559.4 |
| 16.07 | 544.2 | 544.3 | 544.3 | 544.4 | 544.5 | 16.52 | 559.4 | 559.5 | 559.6 | 559.6 | 559.7 |
| 16.08 | 544.5 | 544.6 | 544.7 | 544.7 | 544.8 | 16.53 | 559.8 | 559.8 | 559.9 | 560.0 | 560.0 |
| 16.09 | 544.9 | 544.9 | 545.0 | 545.1 | 545.1 | 16.54 | 560.1 | 560.2 | 560.2 | 560.3 | 560.4 |
| 16.10 | 545.2 | 545.3 | 545.3 | 545.4 | 545.5 | 16.55 | 560.4 | 560.5 | 560.6 | 560.7 | 560.7 |
| 16.11 | 545.5 | 545.6 | 545.7 | 545.7 | 545.8 | 16.56 | 560.8 | 560.9 | 560.9 | 561.0 | 561.1 |
| 16.12 | 545.9 | 546.0 | 546.0 | 546.1 | 546.2 | 16.57 | 561.1 | 561.2 | 561.3 | 561.3 | 561.4 |
| 16.13 | 546.2 | 546.3 | 546.4 | 546.4 | 546.5 | 16.58 | 561.5 | 561.5 | 561.6 | 561.7 | 561.7 |
| 16.14 | 546.6 | 546.6 | 546.7 | 546.8 | 546.8 | 16.59 | 561.8 | 561.9 | 561.9 | 562.0 | 562.1 |
| 16.15 | 546.9 | 547.0 | 547.0 | 547.1 | 547.2 | 16.60 | 562.1 | 562.2 | 562.3 | 562.3 | 562.4 |
| 16.16 | 547.2 | 547.3 | 547.4 | 547.4 | 547.5 | 16.61 | 562.5 | 562.5 | 562.6 | 562.7 | 562.8 |
| 16.17 | 547.6 | 547.6 | 547.7 | 547.8 | 547.9 | 16.62 | 562.8 | 562.9 | 563.0 | 563.0 | 563.1 |
| 16.18 | 547.9 | 548.0 | 548.1 | 548.1 | 548.2 | 16.63 | 563.2 | 563.2 | 563.3 | 563.4 | 563.4 |
| 16.19 | 548.3 | 548.3 | 548.4 | 548.5 | 548.5 | 16.64 | 563.5 | 563.6 | 563.6 | 563.7 | 563.8 |
| 16.20 | 548.6 | 548.7 | 548.7 | 548.8 | 548.9 | 16.65 | 563.8 | 563.9 | 564.0 | 564.0 | 564.1 |
| 16.21 | 548.9 | 549.0 | 549.1 | 549.1 | 549.2 | 16.66 | 564.2 | 564.2 | 564.3 | 564.4 | 564.4 |
| 16.22 | 549.3 | 549.3 | 549.4 | 549.5 | 549.5 | 16.67 | 564.5 | 564.6 | 564.6 | 564.7 | 564.8 |
| 16.23 | 549.6 | 549.7 | 549.7 | 549.8 | 549.9 | 16.68 | 564.9 | 564.9 | 565.0 | 565.1 | 565.1 |
| 16.24 | 550.0 | 550.0 | 550.1 | 550.2 | 550.2 | 16.69 | 565.2 | 565.3 | 565.3 | 565.4 | 565.5 |
| 16.25 | 550.3 | 550.4 | 550.4 | 550.5 | 550.6 | 16.70 | 565.5 | 565.6 | 565.7 | 565.7 | 565.8 |
| 16.26 | 550.6 | 550.7 | 550.8 | 550.8 | 550.9 | 16.71 | 565.9 | 565.9 | 566.0 | 566.1 | 566.1 |
| 16.27 | 551.0 | 551.0 | 551.1 | 551.2 | 551.3 | 16.72 | 566.2 | 566.3 | 566.3 | 566.4 | 566.5 |
| 16.28 | 551.3 | 551.4 | 551.4 | 551.5 | 551.6 | 16.73 | 566.5 | 566.6 | 566.7 | 566.7 | 566.8 |
| 16.29 | 551.6 | 551.7 | 551.8 | 551.8 | 551.9 | 16.74 | 566.9 | 567.0 | 567.0 | 567.1 | 567.2 |
| 16.30 | 552.0 | 552.1 | 552.1 | 552.2 | 552.3 | 16.75 | 567.2 | 567.3 | 567.4 | 567.4 | 567.5 |
| 16.31 | 552.3 | 552.4 | 552.5 | 552.5 | 552.6 | 16.76 | 567.6 | 567.6 | 567.7 | 567.8 | 567.8 |
| 16.32 | 552.7 | 552.7 | 552.8 | 552.9 | 552.9 | 16.77 | 567.9 | 568.0 | 568.0 | 568.1 | 568.2 |
| 16.33 | 553.0 | 553.1 | 553.1 | 553.2 | 553.3 | 16.78 | 568.2 | 568.3 | 568.4 | 568.4 | 568.5 |
| 16.34 | 553.3 | 553.4 | 553.5 | 553.5 | 553.6 | 16.79 | 568.6 | 568.6 | 568.7 | 568.8 | 568.8 |
| 16.35 | 553.7 | 553.7 | 553.8 | 553.9 | 553.9 | 16.80 | 568.9 | 569.0 | 569.0 | 569.1 | 569.2 |
| 16.36 | 554.0 | 554.1 | 554.1 | 554.2 | 554.3 | 16.81 | 569.3 | 569.3 | 569.4 | 569.5 | 569.5 |
| 16.37 | 554.4 | 554.4 | 554.5 | 554.6 | 554.6 | 16.82 | 569.6 | 569.7 | 569.7 | 569.8 | 569.9 |
| 16.38 | 554.7 | 554.8 | 554.8 | 554.9 | 555.0 | 16.83 | 569.9 | 570.0 | 570.1 | 570.1 | 570.2 |
| 16.39 | 555.0 | 555.1 | 555.2 | 555.2 | 555.3 | 16.84 | 570.3 | 570.3 | 570.4 | 570.5 | 570.5 |
| 16.40 | 555.4 | 555.4 | 555.5 | 555.6 | 555.6 | 16.85 | 570.6 | 570.7 | 570.7 | 570.8 | 570.9 |
| 16.41 | 555.7 | 555.8 | 555.8 | 555.9 | 556.0 | 16.86 | 570.9 | 571.0 | 571.1 | 571.1 | 571.2 |
| 16.42 | 556.0 | 556.1 | 556.2 | 556.2 | 556.3 | 16.87 | 571.3 | 571.4 | 571.4 | 571.5 | 571.6 |
| 16.43 | 556.4 | 556.5 | 556.5 | 556.6 | 556.7 | 16.88 | 571.6 | 571.7 | 571.8 | 571.8 | 571.9 |
| 16.44 | 556.7 | 556.8 | 556.9 | 556.9 | 557.0 | 16.89 | 572.0 | 572.0 | 572.1 | 572.2 | 572.2 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 16.90 | 572.3 | 572.4 | 572.4 | 572.5 | 572.6 | 17.35 | 587.5 | 587.6 | 587.7 | 587.7 | 587.8 |
| 16.91 | 572.6 | 572.7 | 572.8 | 572.8 | 572.9 | 17.36 | 587.9 | 587.9 | 588.0 | 588.1 | 588.1 |
| 16.92 | 573.0 | 573.0 | 573.1 | 573.2 | 573.2 | 17.37 | 588.2 | 588.3 | 588.4 | 588.4 | 588.5 |
| 16.93 | 573.3 | 573.4 | 573.5 | 573.5 | 573.6 | 17.38 | 588.6 | 588.6 | 588.7 | 588.8 | 588.8 |
| 16.94 | 573.7 | 573.7 | 573.8 | 573.9 | 573.9 | 17.39 | 588.9 | 589.0 | 589.0 | 589.1 | 589.2 |
| 16.95 | 574.0 | 574.1 | 574.1 | 574.2 | 574.3 | 17.40 | 589.2 | 589.3 | 589.4 | 589.4 | 589.5 |
| 16.96 | 574.3 | 574.4 | 574.5 | 574.5 | 574.6 | 17.41 | 589.6 | 589.6 | 589.7 | 589.8 | 589.8 |
| 16.97 | 574.7 | 574.7 | 574.8 | 574.9 | 574.9 | 17.42 | 589.9 | 590.0 | 590.0 | 590.1 | 590.2 |
| 16.98 | 575.0 | 575.1 | 575.1 | 575.2 | 575.3 | 17.43 | 590.2 | 590.3 | 590.4 | 590.5 | 590.5 |
| 16.99 | 575.3 | 575.4 | 575.5 | 575.6 | 575.6 | 17.44 | 590.6 | 590.7 | 590.7 | 590.8 | 590.9 |
| 17.00 | 575.7 | 575.8 | 575.8 | 575.9 | 576.0 | 17.45 | 590.9 | 591.0 | 591.1 | 591.1 | 591.2 |
| 17.01 | 576.0 | 576.1 | 576.2 | 576.2 | 576.3 | 17.46 | 591.3 | 591.3 | 591.4 | 591.5 | 591.5 |
| 17.02 | 576.4 | 576.4 | 576.5 | 576.6 | 576.6 | 17.47 | 591.6 | 591.7 | 591.7 | 591.8 | 591.9 |
| 17.03 | 576.7 | 576.8 | 576.8 | 576.9 | 576.0 | 17.48 | 591.9 | 592.0 | 592.1 | 592.1 | 592.2 |
| 17.04 | 577.0 | 577.1 | 577.2 | 577.2 | 577.3 | 17.49 | 592.3 | 592.3 | 592.4 | 592.5 | 592.6 |
| 17.05 | 577.4 | 577.4 | 577.5 | 577.6 | 577.7 | 17.50 | 592.6 | 592.7 | 592.8 | 592.8 | 592.9 |
| 17.06 | 577.7 | 577.8 | 577.9 | 577.9 | 578.0 | 17.51 | 593.0 | 593.0 | 593.1 | 593.2 | 593.2 |
| 17.07 | 578.1 | 578.1 | 578.2 | 578.3 | 578.3 | 17.52 | 593.3 | 593.4 | 593.4 | 593.5 | 593.6 |
| 17.08 | 578.4 | 578.5 | 578.5 | 578.6 | 578.7 | 17.53 | 593.6 | 593.7 | 593.8 | 593.8 | 593.9 |
| 17.09 | 578.7 | 578.8 | 578.9 | 578.9 | 579.0 | 17.54 | 594.0 | 594.0 | 594.1 | 594.2 | 594.2 |
| 17.10 | 579.1 | 579.1 | 579.2 | 579.3 | 579.3 | 17.55 | 594.3 | 594.4 | 594.4 | 594.5 | 594.6 |
| 17.11 | 579.4 | 579.5 | 579.5 | 579.6 | 579.7 | 17.56 | 594.7 | 594.7 | 594.8 | 594.9 | 594.9 |
| 17.12 | 579.8 | 579.8 | 579.9 | 580.0 | 580.0 | 17.57 | 595.0 | 595.1 | 595.1 | 595.2 | 595.3 |
| 17.13 | 580.1 | 580.2 | 580.2 | 580.3 | 580.4 | 17.58 | 595.3 | 595.4 | 595.5 | 595.5 | 595.6 |
| 17.14 | 580.4 | 580.5 | 580.6 | 580.6 | 580.7 | 17.59 | 595.7 | 595.7 | 595.8 | 595.9 | 595.9 |
| 17.15 | 580.8 | 580.8 | 580.9 | 581.0 | 581.0 | 17.60 | 596.0 | 596.1 | 596.1 | 596.2 | 596.3 |
| 17.16 | 581.1 | 581.2 | 581.2 | 581.3 | 581.4 | 17.61 | 596.3 | 596.4 | 596.5 | 596.5 | 596.6 |
| 17.17 | 581.4 | 581.5 | 581.6 | 581.6 | 581.7 | 17.62 | 596.7 | 596.8 | 596.8 | 596.9 | 597.0 |
| 17.18 | 581.8 | 581.9 | 581.9 | 582.0 | 582.1 | 17.63 | 597.0 | 597.1 | 597.2 | 597.2 | 597.3 |
| 17.19 | 582.1 | 582.2 | 582.3 | 582.3 | 582.4 | 17.64 | 597.4 | 597.4 | 597.5 | 597.6 | 597.6 |
| 17.20 | 582.5 | 582.5 | 582.6 | 582.7 | 582.7 | 17.65 | 597.7 | 597.8 | 597.8 | 597.9 | 598.0 |
| 17.21 | 582.8 | 582.9 | 583.0 | 583.0 | 583.1 | 17.66 | 598.0 | 598.1 | 598.2 | 598.2 | 598.3 |
| 17.22 | 583.1 | 583.2 | 583.3 | 583.3 | 583.4 | 17.67 | 598.4 | 598.4 | 598.5 | 598.6 | 598.6 |
| 17.23 | 583.5 | 583.5 | 583.6 | 583.7 | 583.7 | 17.68 | 598.7 | 598.8 | 598.9 | 598.9 | 599.0 |
| 17.24 | 583.8 | 583.9 | 583.9 | 584.0 | 584.1 | 17.69 | 599.1 | 599.1 | 599.2 | 599.3 | 599.3 |
| 17.25 | 584.2 | 584.2 | 584.3 | 584.4 | 584.4 | 17.70 | 599.4 | 599.5 | 599.5 | 599.6 | 599.7 |
| 17.26 | 584.5 | 584.6 | 584.6 | 584.7 | 584.8 | 17.71 | 599.7 | 599.8 | 599.9 | 599.9 | 600.0 |
| 17.27 | 584.8 | 584.9 | 585.0 | 585.0 | 585.1 | 17.72 | 600.1 | 600.1 | 600.2 | 600.3 | 600.3 |
| 17.28 | 585.2 | 585.2 | 585.3 | 585.4 | 585.4 | 17.73 | 600.4 | 600.5 | 600.5 | 600.6 | 600.7 |
| 17.29 | 585.5 | 585.6 | 585.6 | 585.7 | 585.8 | 17.74 | 600.7 | 600.8 | 600.9 | 600.9 | 601.0 |
| 17.30 | 585.8 | 585.9 | 586.0 | 586.0 | 586.1 | 17.75 | 601.1 | 601.2 | 601.2 | 601.3 | 601.4 |
| 17.31 | 586.2 | 586.3 | 586.3 | 586.4 | 586.5 | 17.76 | 601.4 | 601.5 | 601.6 | 601.6 | 601.7 |
| 17.32 | 586.5 | 586.6 | 586.7 | 586.7 | 586.8 | 17.77 | 601.8 | 601.8 | 601.9 | 602.0 | 602.0 |
| 17.33 | 586.9 | 586.9 | 587.0 | 587.1 | 587.1 | 17.78 | 602.1 | 602.2 | 602.2 | 602.3 | 602.4 |
| 17.34 | 587.2 | 587.3 | 587.3 | 587.4 | 587.5 | 17.79 | 602.4 | 602.5 | 602.6 | 602.6 | 602.7 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 17.80 | 602.8 | 602.8 | 602.9 | 603.0 | 603.0 | 18.25 | 618.0 | 618.1 | 618.2 | 618.2 | 618.3 |
| 17.81 | 603.1 | 603.2 | 603.3 | 603.3 | 603.4 | 18.26 | 618.4 | 618.4 | 618.5 | 618.6 | 618.6 |
| 17.82 | 603.5 | 603.5 | 503.6 | 603.7 | 603.7 | 18.27 | 618.7 | 618.8 | 618.8 | 618.9 | 619.0 |
| 17.83 | 603.8 | 603.9 | 603.9 | 604.0 | 604.1 | 18.28 | 619.0 | 619.1 | 619.2 | 619.2 | 619.3 |
| 17.84 | 604.1 | 604.2 | 604.3 | 604.3 | 604.4 | 18.29 | 619.4 | 619.4 | 619.5 | 619.6 | 619.6 |
| 17.85 | 604.5 | 604.5 | 604.6 | 604.7 | 604.7 | 18.30 | 619.7 | 619.8 | 619.8 | 619.9 | 620.0 |
| 17.86 | 604.8 | 604.9 | 604.9 | 605.0 | 605.1 | 18.31 | 620.0 | 620.1 | 620.2 | 620.3 | 620.3 |
| 17.87 | 605.1 | 605.2 | 605.3 | 605.4 | 605.4 | 18.32 | 620.4 | 620.5 | 620.5 | 620.6 | 620.7 |
| 17.88 | 605.5 | 605.6 | 605.6 | 605.7 | 605.8 | 18.33 | 620.7 | 620.8 | 620.9 | 620.9 | 621.0 |
| 17.89 | 605.8 | 605.9 | 606.0 | 606.0 | 606.1 | 18.34 | 621.1 | 621.1 | 621.2 | 621.3 | 621.3 |
| 17.90 | 606.2 | 606.2 | 606.3 | 606.4 | 606.4 | 18.35 | 621.4 | 621.5 | 621.5 | 621.6 | 621.7 |
| 17.91 | 606.5 | 606.6 | 606.6 | 606.7 | 606.8 | 18.36 | 621.7 | 621.8 | 621.9 | 621.9 | 622.0 |
| 17.92 | 606.8 | 606.9 | 607.0 | 607.0 | 607.1 | 18.37 | 622.1 | 622.1 | 622.2 | 622.3 | 622.4 |
| 17.93 | 607.2 | 607.2 | 607.3 | 607.4 | 607.5 | 18.38 | 622.4 | 622.5 | 622.6 | 622.6 | 622.7 |
| 17.94 | 607.5 | 607.6 | 607.7 | 607.7 | 607.8 | 18.39 | 622.8 | 622.8 | 622.9 | 623.0 | 623.0 |
| 17.95 | 607.9 | 607.9 | 608.0 | 608.1 | 608.1 | 18.40 | 623.1 | 623.2 | 623.2 | 623.3 | 623.4 |
| 17.96 | 608.2 | 608.3 | 608.3 | 608.4 | 608.5 | 18.41 | 623.4 | 623.5 | 623.6 | 623.6 | 623.7 |
| 17.97 | 608.5 | 608.6 | 608.7 | 608.7 | 608.8 | 18.42 | 623.8 | 623.8 | 623.9 | 624.0 | 624.0 |
| 17.98 | 608.9 | 608.9 | 609.0 | 609.1 | 609.1 | 18.43 | 624.1 | 624.2 | 624.2 | 624.3 | 624.4 |
| 17.99 | 609.2 | 609.3 | 609.3 | 609.4 | 609.5 | 18.44 | 624.5 | 624.5 | 624.6 | 624.7 | 624.7 |
| 18.00 | 609.6 | 609.6 | 609.7 | 609.8 | 609.8 | 18.45 | 624.8 | 624.9 | 624.9 | 625.0 | 625.1 |
| 18.01 | 609.9 | 610.0 | 610.0 | 610.1 | 610.2 | 18.46 | 625.1 | 625.2 | 625.3 | 625.3 | 625.4 |
| 18.02 | 610.2 | 610.3 | 610.4 | 610.4 | 610.5 | 18.47 | 625.5 | 625.5 | 625.6 | 625.7 | 625.7 |
| 18.03 | 610.6 | 610.6 | 610.7 | 610.8 | 610.8 | 18.48 | 625.8 | 625.9 | 625.9 | 626.0 | 626.1 |
| 18.04 | 610.9 | 611.0 | 611.0 | 611.1 | 611.2 | 18.49 | 626.1 | 626.2 | 626.3 | 626.3 | 626.4 |
| 18.05 | 611.2 | 611.3 | 611.4 | 611.4 | 611.5 | 18.50 | 626.5 | 626.6 | 626.6 | 626.7 | 626.8 |
| 18.06 | 611.6 | 611.7 | 611.7 | 611.8 | 611.9 | 18.51 | 626.8 | 626.9 | 627.0 | 627.0 | 627.1 |
| 18.07 | 611.9 | 612.0 | 612.1 | 612.1 | 612.2 | 18.52 | 627.2 | 627.2 | 627.3 | 627.4 | 627.4 |
| 18.08 | 612.3 | 612.3 | 612.4 | 612.5 | 612.5 | 18.53 | 627.5 | 627.6 | 627.6 | 627.7 | 627.8 |
| 18.09 | 612.6 | 612.7 | 612.7 | 612.8 | 612.9 | 18.54 | 627.8 | 627.9 | 628.0 | 628.0 | 628.1 |
| 18.10 | 612.9 | 613.0 | 613.1 | 613.1 | 613.2 | 18.55 | 628.2 | 628.2 | 628.3 | 628.4 | 628.4 |
| 18.11 | 613.3 | 613.3 | 613.4 | 613.5 | 613.5 | 18.56 | 628.5 | 628.6 | 628.7 | 628.7 | 628.8 |
| 18.12 | 613.6 | 613.7 | 613.8 | 613.8 | 613.9 | 18.57 | 628.9 | 628.9 | 629.0 | 629.1 | 629.1 |
| 18.13 | 614.0 | 614.0 | 614.1 | 614.2 | 614.2 | 18.58 | 629.2 | 629.3 | 629.3 | 629.4 | 629.5 |
| 18.14 | 614.3 | 614.4 | 614.4 | 614.5 | 614.6 | 18.59 | 629.5 | 629.6 | 629.7 | 629.7 | 629.8 |
| 18.15 | 614.6 | 614.7 | 614.8 | 614.8 | 614.9 | 18.60 | 629.9 | 629.9 | 630.0 | 630.1 | 630.1 |
| 18.16 | 615.0 | 615.0 | 615.1 | 615.2 | 615.2 | 18.61 | 630.2 | 630.3 | 630.3 | 630.4 | 630.5 |
| 18.17 | 615.3 | 615.4 | 615.4 | 615.5 | 615.6 | 18.62 | 630.5 | 630.6 | 630.7 | 630.7 | 630.8 |
| 18.18 | 615.6 | 615.7 | 615.8 | 615.8 | 615.9 | 18.63 | 630.9 | 631.0 | 631.0 | 631.1 | 631.2 |
| 18.19 | 616.0 | 616.1 | 616.1 | 616.2 | 616.3 | 18.64 | 631.2 | 631.3 | 631.4 | 631.4 | 631.5 |
| 18.20 | 616.3 | 616.4 | 616.5 | 616.5 | 616.6 | 18.65 | 631.6 | 631.6 | 631.7 | 631.8 | 631.8 |
| 18.21 | 616.7 | 616.7 | 616.8 | 616.9 | 616.9 | 18.66 | 631.9 | 632.0 | 632.0 | 632.1 | 632.2 |
| 18.22 | 617.0 | 617.1 | 617.1 | 617.2 | 617.3 | 18.67 | 632.2 | 632.3 | 632.4 | 632.4 | 632.5 |
| 18.23 | 617.3 | 617.4 | 617.5 | 617.5 | 617.6 | 18.68 | 632.6 | 632.6 | 632.7 | 632.8 | 632.8 |
| 18.24 | 617.7 | 617.7 | 617.8 | 617.9 | 617.9 | 18.69 | 632.9 | 633.0 | 633.1 | 633.1 | 633.2 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 18.70 | 633.3 | 633.3 | 633.4 | 633.5 | 633.5 | 19.15 | 648.5 | 648.6 | 648.6 | 648.7 | 648.8 |
| 18.71 | 633.6 | 633.7 | 633.7 | 633.8 | 633.9 | 19.16 | 648.8 | 648.9 | 649.0 | 649.0 | 649.1 |
| 18.72 | 633.9 | 634.0 | 634.1 | 634.1 | 634.2 | 19.17 | 649.2 | 649.2 | 649.3 | 649.4 | 649.4 |
| 18.73 | 634.3 | 634.3 | 634.4 | 634.5 | 634.5 | 19.18 | 649.5 | 649.6 | 649.6 | 649.7 | 649.8 |
| 18.74 | 634.6 | 634.7 | 634.7 | 634.8 | 634.9 | 19.19 | 649.8 | 649.9 | 650.0 | 650.1 | 650.1 |
| 18.75 | 634.9 | 635.0 | 635.1 | 635.2 | 635.2 | 19.20 | 650.2 | 650.3 | 650.3 | 650.4 | 650.5 |
| 18.76 | 635.3 | 635.4 | 635.4 | 635.5 | 635.6 | 19.21 | 650.5 | 650.6 | 650.7 | 650.7 | 650.8 |
| 18.77 | 635.6 | 635.7 | 635.8 | 635.8 | 635.9 | 19.22 | 650.9 | 650.9 | 651.0 | 651.1 | 651.1 |
| 18.78 | 636.0 | 636.0 | 636.1 | 636.2 | 636.2 | 19.23 | 651.2 | 651.3 | 651.3 | 651.4 | 651.5 |
| 18.79 | 636.3 | 636.4 | 636.4 | 636.5 | 636.6 | 19.24 | 651.5 | 651.6 | 651.7 | 651.7 | 651.8 |
| 18.80 | 636.6 | 636.7 | 636.8 | 636.8 | 636.9 | 19.25 | 651.9 | 651.9 | 652.0 | 652.1 | 652.2 |
| 18.81 | 637.0 | 637.0 | 637.1 | 637.2 | 637.3 | 19.26 | 652.2 | 652.3 | 652.4 | 652.4 | 652.5 |
| 18.82 | 637.3 | 637.4 | 637.5 | 637.5 | 637.6 | 19.27 | 652.6 | 652.6 | 652.7 | 652.8 | 652.8 |
| 18.83 | 637.7 | 637.7 | 637.8 | 637.9 | 637.9 | 19.28 | 652.9 | 653.0 | 653.0 | 653.1 | 653.2 |
| 18.84 | 638.0 | 638.1 | 638.1 | 638.2 | 638.3 | 19.29 | 653.2 | 653.3 | 653.4 | 653.4 | 653.5 |
| 18.85 | 638.3 | 638.4 | 638.5 | 638.5 | 638.6 | 19.30 | 653.6 | 653.6 | 653.7 | 653.8 | 653.8 |
| 18.86 | 638.7 | 638.7 | 638.8 | 638.9 | 638.9 | 19.31 | 653.9 | 654.0 | 654.0 | 654.1 | 654.2 |
| 18.87 | 639.0 | 639.1 | 639.1 | 639.2 | 639.3 | 19.32 | 654.3 | 654.3 | 654.4 | 654.5 | 654.5 |
| 18.88 | 639.4 | 639.4 | 639.5 | 639.6 | 639.6 | 19.33 | 654.6 | 654.7 | 654.7 | 654.8 | 654.9 |
| 18.89 | 639.7 | 639.8 | 639.8 | 639.9 | 640.0 | 19.34 | 654.9 | 655.0 | 655.1 | 655.1 | 655.2 |
| 18.90 | 640.0 | 640.1 | 640.2 | 640.2 | 640.3 | 19.35 | 655.3 | 655.3 | 655.4 | 655.5 | 655.5 |
| 18.91 | 640.4 | 640.4 | 640.5 | 640.6 | 640.6 | 19.36 | 655.6 | 655.7 | 655.7 | 655.8 | 655.9 |
| 18.92 | 640.7 | 640.8 | 640.8 | 640.9 | 641.0 | 19.37 | 655.9 | 656.0 | 656.1 | 656.1 | 656.2 |
| 18.93 | 641.0 | 641.1 | 641.2 | 641.2 | 641.3 | 19.38 | 656.3 | 656.4 | 656.4 | 656.5 | 656.6 |
| 18.94 | 641.4 | 641.5 | 641.5 | 641.6 | 641.7 | 19.39 | 656.6 | 656.7 | 656.8 | 656.8 | 656.9 |
| 18.95 | 641.7 | 641.8 | 641.9 | 641.9 | 642.0 | 19.40 | 657.0 | 657.0 | 657.1 | 657.2 | 657.2 |
| 18.96 | 642.1 | 642.1 | 642.2 | 642.3 | 642.3 | 19.41 | 657.3 | 657.4 | 657.4 | 657.5 | 657.6 |
| 18.97 | 642.4 | 642.5 | 642.5 | 642.6 | 642.7 | 19.42 | 657.6 | 657.7 | 657.8 | 657.8 | 657.9 |
| 18.98 | 642.7 | 642.8 | 642.9 | 642.9 | 643.0 | 19.43 | 658.0 | 658.0 | 658.1 | 658.2 | 658.2 |
| 18.99 | 643.1 | 643.1 | 643.2 | 643.3 | 643.3 | 19.44 | 658.3 | 658.4 | 658.5 | 658.5 | 658.6 |
| 19.00 | 643.4 | 643.5 | 643.6 | 643.6 | 643.7 | 19.45 | 658.7 | 658.7 | 658.8 | 658.9 | 658.9 |
| 19.01 | 643.8 | 643.8 | 643.9 | 644.0 | 644.0 | 19.46 | 659.0 | 659.1 | 659.1 | 659.2 | 659.3 |
| 19.02 | 644.1 | 644.2 | 644.2 | 644.3 | 644.4 | 19.47 | 659.3 | 659.4 | 659.5 | 659.5 | 659.6 |
| 19.03 | 644.4 | 644.5 | 644.6 | 644.6 | 644.7 | 19.48 | 659.7 | 659.7 | 659.8 | 659.9 | 659.9 |
| 19.04 | 644.8 | 644.8 | 644.9 | 645.0 | 645.0 | 19.49 | 660.0 | 660.1 | 660.1 | 660.2 | 660.3 |
| 19.05 | 645.1 | 645.2 | 645.2 | 645.3 | 645.4 | 19.50 | 660.3 | 660.4 | 660.5 | 660.6 | 660.6 |
| 19.06 | 645.4 | 645.5 | 645.6 | 645.7 | 645.7 | 19.51 | 660.7 | 660.8 | 660.8 | 660.9 | 661.0 |
| 19.07 | 645.8 | 645.9 | 645.9 | 646.0 | 646.1 | 19.52 | 661.0 | 661.1 | 661.2 | 661.2 | 661.3 |
| 19.08 | 646.1 | 646.2 | 646.3 | 646.3 | 646.4 | 19.53 | 661.4 | 661.4 | 661.5 | 661.? | 661.6 |
| 19.09 | 646.5 | 646.5 | 646.6 | 646.7 | 646.7 | 19.54 | 661.7 | 661.8 | 661.8 | 661.9 | 662.0 |
| 19.10 | 646.8 | 646.9 | 646.9 | 647.0 | 647.1 | 19.55 | 662.0 | 662.1 | 662.2 | 662.2 | 662.3 |
| 19.11 | 647.1 | 647.2 | 647.3 | 647.3 | 647.4 | 19.56 | 662.4 | 662.4 | 662.5 | 662.6 | 662.6 |
| 19.12 | 647.5 | 647.5 | 647.6 | 647.7 | 647.7 | 19.57 | 662.7 | 662.8 | 662.9 | 662.9 | 663.0 |
| 19.13 | 647.8 | 647.9 | 648.0 | 648.0 | 648.1 | 19.58 | 663.1 | 663.1 | 663.2 | 663.3 | 663.3 |
| 19.14 | 648.2 | 648.2 | 648.3 | 648.4 | 648.4 | 19.59 | 663.4 | 663.5 | 663.5 | 663.6 | 663.7 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19.60 | 663.7 | 663.8 | 663.9 | 663.9 | 664.0 | 20.05 | 679.0 | 679.0 | 679.1 | 679.2 | 679.2 |
| 19.61 | 664.1 | 664.1 | 664.2 | 664.3 | 664.3 | 20.06 | 679.3 | 679.4 | 679.4 | 679.5 | 679.6 |
| 19.62 | 664.4 | 664.5 | 664.5 | 664.6 | 664.7 | 20.07 | 679.6 | 679.7 | 679.8 | 679.9 | 679.9 |
| 19.63 | 664.7 | 664.8 | 664.9 | 665.0 | 665.0 | 20.08 | 680.0 | 680.1 | 680.1 | 680.2 | 680.3 |
| 19.64 | 665.1 | 665.2 | 665.2 | 665.3 | 665.4 | 20.09 | 680.3 | 680.4 | 680.5 | 680.5 | 680.6 |
| 19.65 | 665.4 | 665.5 | 665.6 | 665.6 | 665.7 | 20.10 | 680.7 | 680.7 | 680.8 | 680.9 | 680.9 |
| 19.66 | 665.8 | 665.8 | 665.9 | 666.0 | 666.0 | 20.11 | 681.0 | 681.1 | 681.1 | 681.2 | 681.3 |
| 19.67 | 666.1 | 666.2 | 666.2 | 666.3 | 666.4 | 20.12 | 681.3 | 681.4 | 681.5 | 681.5 | 681.6 |
| 19.68 | 666.4 | 666.5 | 666.6 | 666.6 | 666.7 | 20.13 | 681.7 | 681.7 | 681.8 | 681.9 | 682.0 |
| 19.69 | 666.8 | 666.8 | 666.9 | 667.0 | 667.1 | 20.14 | 682.0 | 682.1 | 682.2 | 682.2 | 682.3 |
| 19.70 | 667.1 | 667.2 | 667.3 | 667.3 | 667.4 | 20.15 | 682.4 | 682.4 | 682.5 | 682.6 | 682.6 |
| 19.71 | 667.5 | 667.5 | 667.6 | 667.7 | 667.7 | 20.16 | 682.7 | 682.8 | 682.8 | 682.9 | 683.0 |
| 19.72 | 667.8 | 667.9 | 667.9 | 668.0 | 668.1 | 20.17 | 683.0 | 683.1 | 683.2 | 683.2 | 683.3 |
| 19.73 | 668.1 | 668.2 | 668.3 | 668.3 | 668.4 | 20.18 | 683.4 | 683.4 | 683.5 | 683.6 | 683.6 |
| 19.74 | 668.5 | 668.5 | 668.6 | 668.7 | 668.7 | 20.19 | 683.7 | 683.8 | 683.8 | 683.9 | 684.0 |
| 19.75 | 668.8 | 668.9 | 668.9 | 669.0 | 669.1 | 20.20 | 684.1 | 684.1 | 684.2 | 684.3 | 684.3 |
| 19.76 | 669.2 | 669.2 | 669.3 | 669.4 | 669.4 | 20.21 | 684.4 | 684.5 | 684.5 | 684.6 | 684.7 |
| 19.77 | 669.5 | 669.6 | 669.6 | 669.7 | 669.8 | 20.22 | 684.7 | 684.8 | 684.9 | 684.9 | 685.0 |
| 19.78 | 669.8 | 669.9 | 670.0 | 670.0 | 670.1 | 20.23 | 685.1 | 685.1 | 685.2 | 685.3 | 685.3 |
| 19.79 | 670.2 | 670.2 | 670.3 | 670.4 | 670.4 | 20.24 | 685.4 | 685.5 | 685.5 | 685.6 | 685.7 |
| 19.80 | 670.5 | 670.6 | 670.6 | 670.7 | 670.8 | 20.25 | 685.7 | 685.8 | 685.9 | 685.9 | 686.0 |
| 19.81 | 670.8 | 670.9 | 671.0 | 671.0 | 671.1 | 20.26 | 686.1 | 686.2 | 686.2 | 686.3 | 686.4 |
| 19.82 | 671.2 | 671.3 | 671.3 | 671.4 | 671.5 | 20.27 | 686.4 | 686.5 | 686.6 | 686.6 | 686.7 |
| 19.83 | 671.5 | 671.6 | 671.7 | 671.7 | 671.8 | 20.28 | 686.8 | 686.8 | 686.9 | 687.0 | 687.0 |
| 19.84 | 671.9 | 671.9 | 672.0 | 672.1 | 672.1 | 20.29 | 687.1 | 687.2 | 687.2 | 687.3 | 687.4 |
| 19.85 | 672.2 | 672.3 | 672.3 | 672.4 | 672.5 | 20.30 | 687.4 | 687.5 | 687.6 | 687.6 | 687.7 |
| 19.86 | 672.5 | 672.6 | 672.7 | 672.7 | 672.8 | 20.31 | 687.8 | 687.8 | 687.9 | 688.0 | 688.0 |
| 19.87 | 672.9 | 672.9 | 673.0 | 673.1 | 673.1 | 20.32 | 688.1 | 688.2 | 688.3 | 688.3 | 688.4 |
| 19.88 | 673.2 | 673.3 | 673.4 | 673.4 | 673.5 | 20.33 | 688.5 | 688.5 | 688.6 | 688.7 | 688.7 |
| 19.89 | 673.6 | 673.6 | 673.7 | 673.8 | 673.8 | 20.34 | 688.8 | 688.9 | 688.9 | 689.0 | 689.1 |
| 19.90 | 673.9 | 674.0 | 674.0 | 674.1 | 674.2 | 20.35 | 689.1 | 689.2 | 689.3 | 689.3 | 689.4 |
| 19.91 | 674.2 | 674.3 | 674.4 | 674.4 | 674.5 | 20.36 | 689.5 | 689.5 | 689.6 | 689.7 | 689.7 |
| 19.92 | 674.6 | 674.6 | 674.7 | 674.8 | 674.8 | 20.37 | 689.8 | 689.9 | 689.9 | 690.0 | 690.1 |
| 19.93 | 674.9 | 675.0 | 675.0 | 675.1 | 675.2 | 20.38 | 690.1 | 690.2 | 690.3 | 690.4 | 690.4 |
| 19.94 | 675.2 | 675.3 | 675.4 | 675.5 | 675.5 | 20.39 | 690.5 | 690.6 | 690.6 | 690.7 | 690.8 |
| 19.95 | 675.6 | 675.7 | 675.7 | 675.8 | 675.9 | 20.40 | 690.8 | 690.9 | 691.0 | 691.0 | 691.1 |
| 19.96 | 675.9 | 676.0 | 676.1 | 676.1 | 676.2 | 20.41 | 691.2 | 691.2 | 691.3 | 691.4 | 691.4 |
| 19.97 | 676.3 | 676.3 | 676.4 | 676.5 | 676.5 | 20.42 | 691.5 | 691.6 | 691.6 | 691.7 | 691.8 |
| 19.98 | 676.6 | 676.7 | 676.7 | 676.8 | 676.9 | 20.43 | 691.8 | 691.9 | 692.0 | 692.0 | 692.1 |
| 19.99 | 676.9 | 677.0 | 677.1 | 677.1 | 677.2 | 20.44 | 692.2 | 692.2 | 692.3 | 692.4 | 692.5 |
| 20.00 | 677.3 | 677.3 | 677.4 | 677.5 | 677.5 | 20.45 | 692.5 | 692.6 | 692.7 | 692.7 | 692.8 |
| 20.01 | 677.6 | 677.7 | 677.8 | 677.8 | 677.9 | 20.46 | 692.9 | 692.9 | 693.0 | 693.1 | 693.1 |
| 20.02 | 678.0 | 678.0 | 678.1 | 678.2 | 678.2 | 20.47 | 693.2 | 693.3 | 693.3 | 693.4 | 693.5 |
| 20.03 | 678.3 | 678.4 | 678.4 | 678.5 | 678.6 | 20.48 | 693.5 | 693.6 | 693.7 | 693.7 | 693.8 |
| 20.04 | 678.6 | 678.7 | 678.8 | 678.8 | 678.9 | 20.49 | 693.9 | 693.9 | 694.0 | 694.1 | 694.1 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20.50 | 694.2 | 694.3 | 694.3 | 694.4 | 694.5 | 20.95 | 709.4 | 709.5 | 709.6 | 709.7 | 709.7 |
| 20.51 | 694.5 | 694.6 | 694.7 | 694.8 | 694.8 | 20.96 | 709.8 | 709.9 | 709.9 | 710.0 | 710.1 |
| 20.52 | 694.9 | 695.0 | 695.0 | 695.1 | 695.2 | 20.97 | 710.1 | 710.2 | 710.3 | 710.3 | 710.4 |
| 20.53 | 695.2 | 695.3 | 695.4 | 695.4 | 695.5 | 20.98 | 710.5 | 710.5 | 710.6 | 710.7 | 710.7 |
| 20.54 | 695.6 | 695.6 | 695.7 | 695.8 | 695.8 | 20.99 | 710.8 | 710.9 | 710.9 | 711.0 | 711.1 |
| 20.55 | 695.9 | 696.0 | 696.0 | 696.1 | 696.2 | 21.00 | 711.1 | 711.2 | 711.3 | 711.3 | 711.4 |
| 20.56 | 696.2 | 696.3 | 696.4 | 696.4 | 696.5 | 21.01 | 711.5 | 711.5 | 711.6 | 711.7 | 711.8 |
| 20.57 | 696.6 | 696.6 | 696.7 | 696.8 | 696.9 | 21.02 | 711.8 | 711.9 | 712.0 | 712.0 | 712.1 |
| 20.58 | 696.9 | 697.0 | 697.1 | 697.1 | 697.2 | 21.03 | 712.2 | 712.2 | 712.3 | 712.4 | 712.4 |
| 20.59 | 697.3 | 697.3 | 697.4 | 697.5 | 697.5 | 21.04 | 712.5 | 712.6 | 712.6 | 712.7 | 712.8 |
| 20.60 | 697.6 | 697.7 | 697.7 | 697.8 | 697.9 | 21.05 | 712.8 | 712.9 | 713.0 | 713.0 | 713.1 |
| 20.61 | 697.9 | 698.0 | 698.1 | 698.1 | 698.2 | 21.06 | 713.2 | 713.2 | 713.3 | 713.4 | 713.4 |
| 20.62 | 698.3 | 698.3 | 698.4 | 698.5 | 698.5 | 21.07 | 713.5 | 713.6 | 713.6 | 713.7 | 713.8 |
| 20.63 | 698.6 | 698.7 | 698.7 | 698.8 | 698.9 | 21.08 | 713.9 | 713.9 | 714.0 | 714.1 | 714.1 |
| 20.64 | 699.0 | 699.0 | 699.1 | 699.2 | 699.2 | 21.09 | 714.2 | 714.3 | 714.3 | 714.4 | 714.5 |
| 20.65 | 699.3 | 699.4 | 699.4 | 699.5 | 699.6 | 21.10 | 714.5 | 714.6 | 714.7 | 714.7 | 714.8 |
| 20.66 | 699.6 | 699.7 | 699.8 | 699.8 | 699.9 | 21.11 | 714.9 | 714.9 | 715.0 | 715.1 | 715.1 |
| 20.67 | 700.0 | 700.0 | 700.1 | 700.2 | 700.2 | 21.12 | 715.2 | 715.3 | 715.3 | 715.4 | 715.5 |
| 20.68 | 700.3 | 700.4 | 700.4 | 700.5 | 700.6 | 21.13 | 715.5 | 715.6 | 715.7 | 715.7 | 715.8 |
| 20.69 | 700.6 | 700.7 | 700.8 | 700.8 | 700.9 | 21.14 | 715.9 | 716.0 | 716.0 | 716.1 | 716.2 |
| 20.70 | 701.0 | 701.1 | 701.1 | 701.2 | 701.3 | 21.15 | 716.2 | 716.3 | 716.4 | 716.4 | 716.5 |
| 20.71 | 701.3 | 701.4 | 701.5 | 701.5 | 701.6 | 21.16 | 716.6 | 716.6 | 716.7 | 716.8 | 716.8 |
| 20.72 | 701.7 | 701.7 | 701.8 | 701.9 | 701.9 | 21.17 | 716.9 | 717.0 | 717.0 | 717.1 | 717.2 |
| 20.73 | 702.0 | 702.1 | 702.1 | 702.2 | 702.3 | 21.18 | 717.2 | 717.3 | 717.4 | 717.4 | 717.5 |
| 20.74 | 702.3 | 702.4 | 702.5 | 702.5 | 702.6 | 21.19 | 717.6 | 717.6 | 717.7 | 717.8 | 717.8 |
| 20.75 | 702.7 | 702.7 | 702.8 | 702.9 | 702.9 | 21.20 | 717.9 | 718.0 | 718.1 | 718.1 | 718.2 |
| 20.76 | 703.0 | 703.1 | 703.2 | 703.2 | 703.3 | 21.21 | 718.3 | 718.3 | 718.4 | 718.5 | 718.5 |
| 20.77 | 703.4 | 703.4 | 703.5 | 703.6 | 703.6 | 21.22 | 718.6 | 718.7 | 718.7 | 718.8 | 718.9 |
| 20.78 | 703.7 | 703.8 | 703.8 | 703.9 | 704.0 | 21.23 | 718.9 | 719.0 | 719.1 | 719.1 | 719.2 |
| 20.79 | 704.0 | 704.1 | 704.2 | 704.2 | 704.3 | 21.24 | 719.3 | 719.3 | 719.4 | 719.5 | 719.5 |
| 20.80 | 704.4 | 704.4 | 704.5 | 704.6 | 704.6 | 21.25 | 719.6 | 719.7 | 719.7 | 719.8 | 719.9 |
| 20.81 | 704.7 | 704.8 | 704.8 | 704.9 | 705.0 | 21.26 | 719.9 | 220.0 | 720.1 | 720.2 | 720.2 |
| 20.82 | 705.0 | 705.1 | 705.2 | 705.3 | 705.3 | 21.27 | 720.3 | 720.4 | 720.4 | 720.5 | 720.6 |
| 20.83 | 705.4 | 705.5 | 705.5 | 705.6 | 705.7 | 21.28 | 720.6 | 720.7 | 720.8 | 720.8 | 720.9 |
| 20.84 | 705.7 | 705.8 | 705.9 | 705.9 | 706.0 | 21.29 | 721.0 | 721.0 | 721.1 | 721.2 | 721.2 |
| 20.85 | 706.1 | 706.1 | 706.2 | 706.3 | 706.3 | 21.30 | 721.3 | 721.4 | 721.4 | 721.5 | 721.6 |
| 20.86 | 706.4 | 706.5 | 706.5 | 706.6 | 706.7 | 21.31 | 721.6 | 721.7 | 721.8 | 721.8 | 721.9 |
| 20.87 | 706.7 | 706.8 | 706.9 | 706.9 | 707.0 | 21.32 | 722.0 | 722.0 | 722.1 | 722.2 | 722.3 |
| 20.88 | 707.1 | 707.1 | 707.2 | 707.3 | 707.4 | 21.33 | 722.3 | 722.4 | 722.5 | 722.5 | 722.6 |
| 20.89 | 707.4 | 707.5 | 707.6 | 707.6 | 707.7 | 21.34 | 722.7 | 722.7 | 722.8 | 722.9 | 722.9 |
| 20.90 | 707.8 | 707.8 | 707.9 | 708.0 | 708.0 | 21.35 | 723.0 | 723.1 | 723.1 | 723.2 | 723.2 |
| 20.91 | 708.1 | 708.2 | 708.2 | 708.3 | 708.4 | 21.36 | 723.3 | 723.4 | 723.5 | 723.5 | 723.6 |
| 20.92 | 708.4 | 708.5 | 708.6 | 708.6 | 708.7 | 21.37 | 723.7 | 723.7 | 723.8 | 723.9 | 723.9 |
| 20.93 | 708.8 | 708.8 | 708.9 | 709.0 | 709.0 | 21.38 | 724.0 | 724.1 | 724.1 | 724.2 | 724.3 |
| 20.94 | 709.1 | 709.2 | 709.2 | 709.3 | 709.4 | 21.39 | 724.3 | 724.4 | 724.5 | 724.6 | 724.6 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| .hes | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 21.40 | 724.7 | 724.8 | 724.8 | 724.9 | 725.0 | 21.85 | 739.9 | 740.0 | 740.1 | 740.1 | 740.2 |
| 21.41 | 725.0 | 725.1 | 725.2 | 725.2 | 725.3 | 21.86 | 740.3 | 740.3 | 740.4 | 740.5 | 740.5 |
| 21.42 | 725.4 | 725.4 | 725.5 | 725.6 | 725.6 | 21.87 | 740.6 | 740.7 | 740.7 | 740.8 | 740.9 |
| 21.43 | 725.7 | 725.8 | 725.8 | 725.9 | 726.0 | 21.88 | 740.9 | 741.0 | 741.1 | 741.1 | 741.2 |
| 21.44 | 726.0 | 726.1 | 726.2 | 726.2 | 726.3 | 21.89 | 741.3 | 741.3 | 741.4 | 741.5 | 741.6 |
| 21.45 | 726.4 | 726.4 | 726.5 | 726.6 | 726.7 | 21.90 | 741.6 | 741.7 | 741.8 | 741.8 | 741.9 |
| 21.46 | 726.7 | 726.8 | 726.9 | 726.9 | 727.0 | 21.91 | 742.0 | 742.0 | 742.1 | 742.2 | 742.2 |
| 21.47 | 727.1 | 727.1 | 727.2 | 727.3 | 727.3 | 21.92 | 742.3 | 742.4 | 742.4 | 741.5 | 741.6 |
| 21.48 | 727.4 | 727.5 | 727.5 | 727.6 | 727.7 | 21.93 | 742.6 | 742.7 | 742.8 | 742.8 | 742.9 |
| 21.49 | 727.7 | 727.8 | 727.9 | 727.9 | 728.0 | 21.94 | 743.0 | 743.0 | 743.1 | 743.2 | 743.2 |
| 21.50 | 728.1 | 728.1 | 728.2 | 728.3 | 728.3 | 21.95 | 743.3 | 743.4 | 743.4 | 743.5 | 743.6 |
| 21.51 | 728.4 | 728.5 | 728.5 | 728.6 | 728.7 | 21.96 | 743.7 | 743.7 | 743.8 | 743.9 | 743.9 |
| 21.52 | 728.8 | 728.8 | 728.9 | 729.0 | 729.0 | 21.97 | 744.0 | 744.1 | 744.1 | 744.2 | 744.3 |
| 21.53 | 729.1 | 729.2 | 729.2 | 729.3 | 729.4 | 21.98 | 744.3 | 744.4 | 744.5 | 744.5 | 744.6 |
| 21.54 | 729.4 | 729.5 | 729.6 | 729.6 | 729.7 | 21.99 | 744.7 | 744.7 | 744.8 | 744.9 | 744.9 |
| 21.55 | 729.8 | 729.8 | 729.9 | 730.0 | 730.0 | 22.00 | 745.0 | 745.1 | 745.1 | 745.2 | 745.3 |
| 21.56 | 730.1 | 730.2 | 730.2 | 730.3 | 730.4 | 22.01 | 745.3 | 745.4 | 745.5 | 745.5 | 745.6 |
| 21.57 | 730.4 | 730.5 | 730.6 | 730.6 | 730.7 | 22.02 | 745.7 | 745.8 | 745.8 | 745.9 | 746.0 |
| 21.58 | 730.8 | 730.9 | 730.9 | 731.0 | 731.1 | 22.03 | 746.0 | 746.1 | 746.2 | 746.2 | 746.3 |
| 21.59 | 731.1 | 721.2 | 731.3 | 731.3 | 731.4 | 22.04 | 746.4 | 746.4 | 746.5 | 746.6 | 746.6 |
| 21.60 | 731.5 | 731.5 | 731.6 | 731.7 | 731.7 | 22.05 | 746.7 | 746.8 | 746.8 | 746.9 | 747.0 |
| 21.61 | 731.8 | 731.9 | 731.9 | 732.0 | 732.1 | 22.06 | 747.0 | 747.1 | 747.2 | 747.2 | 747.3 |
| 21.62 | 732.1 | 732.2 | 732.3 | 732.3 | 732.4 | 22.07 | 747.4 | 747.4 | 747.5 | 747.6 | 747.6 |
| 21.63 | 732.5 | 732.5 | 732.6 | 732.7 | 732.7 | 22.08 | 747.7 | 747.8 | 747.9 | 747.9 | 748.0 |
| 21.64 | 732.8 | 732.9 | 733.0 | 733.0 | 733.1 | 22.09 | 748.1 | 748.1 | 748.2 | 748.3 | 748.3 |
| 21.65 | 733.2 | 733.2 | 733.3 | 733.4 | 733.4 | 22.10 | 748.4 | 748.5 | 748.5 | 748.6 | 748.7 |
| 21.66 | 733.5 | 733.6 | 733.6 | 733.7 | 733.8 | 22.11 | 748.7 | 748.8 | 748.9 | 748.9 | 749.0 |
| 21.67 | 733.8 | 733.9 | 734.0 | 734.0 | 734.1 | 22.12 | 749.1 | 749.1 | 749.2 | 749.3 | 749.3 |
| 21.68 | 734.2 | 734.2 | 734.3 | 734.4 | 734.4 | 22.13 | 749.4 | 749.5 | 749.5 | 749.6 | 749.7 |
| 21.69 | 734.5 | 734.6 | 734.6 | 734.7 | 734.8 | 22.14 | 749.7 | 749.8 | 749.9 | 750.0 | 750.0 |
| 21.70 | 734.8 | 734.9 | 735.0 | 735.1 | 735.1 | 22.15 | 750.1 | 750.2 | 750.2 | 750.3 | 750.4 |
| 21.71 | 735.2 | 735.3 | 735.3 | 735.4 | 735.5 | 22.16 | 750.4 | 750.5 | 750.6 | 750.6 | 750.7 |
| 21.72 | 735.5 | 735.6 | 735.7 | 735.7 | 735.8 | 22.17 | 750.8 | 750.8 | 750.9 | 751.0 | 751.0 |
| 21.73 | 735.9 | 735.9 | 736.0 | 736.1 | 736.1 | 22.18 | 751.1 | 751.2 | 751.2 | 751.3 | 751.4 |
| 21.74 | 736.2 | 736.3 | 736.3 | 736.4 | 736.5 | 22.19 | 751.4 | 751.5 | 751.6 | 751.6 | 751.7 |
| 21.75 | 736.5 | 736.6 | 736.7 | 736.7 | 736.8 | 22.20 | 751.8 | 751.8 | 751.9 | 752.0 | 752.1 |
| 21.76 | 736.9 | 736.9 | 737.0 | 737.1 | 737.2 | 22.21 | 752.1 | 752.2 | 752.3 | 752.3 | 752.4 |
| 21.77 | 737.2 | 737.3 | 737.4 | 737.4 | 737.5 | 22.22 | 752.5 | 752.5 | 752.6 | 752.7 | 752.7 |
| 21.78 | 737.6 | 737.6 | 737.7 | 737.8 | 737.8 | 22.23 | 752.8 | 752.9 | 752.9 | 753.0 | 753.1 |
| 21.79 | 737.9 | 738.0 | 738.0 | 738.1 | 738.2 | 22.24 | 753.1 | 753.2 | 753.3 | 753.3 | 753.4 |
| 21.80 | 738.2 | 738.3 | 738.4 | 738.4 | 738.5 | 22.25 | 753.5 | 753.5 | 753.6 | 753.7 | 753.7 |
| 21.81 | 738.6 | 738.6 | 738.7 | 738.8 | 738.8 | 22.26 | 753.8 | 753.9 | 753.9 | 754.0 | 754.1 |
| 21.82 | 738.9 | 739.0 | 739.0 | 739.1 | 739.2 | 22.27 | 754.2 | 754.2 | 754.3 | 754.4 | 754.4 |
| 21.83 | 739.3 | 739.3 | 739.4 | 739.5 | 739.5 | 22.28 | 754.5 | 754.6 | 754.6 | 754.7 | 754.8 |
| 21.84 | 739.6 | 739.7 | 739.7 | 739.8 | 739.9 | 22.29 | 754.8 | 754.9 | 755.0 | 755.0 | 755.1 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 22.30 | 755.2 | 755.2 | 755.3 | 755.4 | 755.4 | 22.75 | 770.4 | 770.5 | 770.5 | 770.6 | 770.7 |
| 22.31 | 755.5 | 755.6 | 755.6 | 755.7 | 755.8 | 22.76 | 770.7 | 770.8 | 770.9 | 770.9 | 771.0 |
| 22.32 | 755.8 | 755.9 | 756.0 | 756.0 | 756.1 | 22.77 | 771.1 | 771.1 | 771.2 | 771.3 | 771.4 |
| 22.33 | 756.2 | 756.2 | 756.3 | 756.4 | 756.5 | 22.78 | 771.4 | 771.5 | 771.6 | 771.6 | 771.7 |
| 22.34 | 756.5 | 756.6 | 756.7 | 756.7 | 756.8 | 22.79 | 771.8 | 771.8 | 771.9 | 772.0 | 772.0 |
| 22.35 | 756.9 | 756.9 | 757.0 | 757.1 | 757.1 | 22.80 | 772.1 | 772.2 | 772.2 | 772.3 | 772.4 |
| 22.36 | 757.2 | 757.3 | 757.3 | 757.4 | 757.5 | 22.81 | 772.4 | 772.5 | 772.6 | 772.6 | 772.7 |
| 22.37 | 757.5 | 757.6 | 757.7 | 757.7 | 757.8 | 22.82 | 772.8 | 772.8 | 772.9 | 773.0 | 773.0 |
| 22.38 | 757.9 | 757.9 | 758.0 | 758.1 | 758.1 | 22.83 | 773.1 | 773.2 | 773.2 | 773.3 | 773.4 |
| 22.39 | 758.2 | 758.3 | 758.3 | 758.4 | 758.5 | 22.84 | 773.5 | 773.5 | 773.6 | 773.7 | 773.7 |
| 22.40 | 758.6 | 758.6 | 758.7 | 758.8 | 758.8 | 22.85 | 773.8 | 773.9 | 773.9 | 774.0 | 774.1 |
| 22.41 | 758.9 | 759.0 | 759.0 | 759.1 | 759.2 | 22.86 | 774.1 | 774.2 | 774.3 | 774.3 | 774.4 |
| 22.42 | 759.2 | 759.3 | 759.4 | 759.4 | 759.5 | 22.87 | 774.5 | 774.5 | 774.6 | 774.7 | 774.7 |
| 22.43 | 759.6 | 759.6 | 759.7 | 759.8 | 759.8 | 22.88 | 774.8 | 774.9 | 774.9 | 775.0 | 775.1 |
| 22.44 | 759.9 | 760.0 | 760.0 | 760.1 | 760.2 | 22.89 | 775.1 | 775.2 | 775.3 | 775.3 | 775.4 |
| 22.45 | 760.2 | 760.3 | 760.4 | 760.4 | 760.5 | 22.90 | 775.5 | 775.6 | 775.6 | 775.7 | 775.8 |
| 22.46 | 760.6 | 760.7 | 760.7 | 760.8 | 760.9 | 22.91 | 775.8 | 775.9 | 776.0 | 776.0 | 776.1 |
| 22.47 | 760.9 | 761.0 | 761.1 | 761.1 | 761.2 | 22.92 | 776.2 | 776.2 | 776.3 | 776.4 | 776.4 |
| 22.48 | 761.3 | 761.3 | 761.4 | 761.5 | 761.5 | 22.93 | 776.5 | 776.6 | 776.6 | 776.7 | 776.8 |
| 22.49 | 761.6 | 761.7 | 761.7 | 761.8 | 761.9 | 22.94 | 776.8 | 776.9 | 777.0 | 777.0 | 777.1 |
| 22.50 | 761.9 | 762.0 | 762.1 | 762.1 | 762.2 | 22.95 | 777.2 | 777.2 | 777.3 | 777.4 | 777.4 |
| 22.51 | 762.3 | 762.3 | 762.4 | 762.5 | 762.5 | 22.96 | 777.5 | 777.6 | 777.7 | 777.7 | 777.8 |
| 22.52 | 762.6 | 762.7 | 762.8 | 762.8 | 762.9 | 22.97 | 777.9 | 777.9 | 778.0 | 778.1 | 778.1 |
| 22.53 | 763.0 | 763.0 | 763.1 | 763.2 | 763.2 | 22.98 | 778.2 | 778.3 | 778.3 | 778.4 | 778.5 |
| 22.54 | 763.3 | 763.4 | 763.4 | 763.5 | 763.6 | 22.99 | 778.5 | 778.6 | 778.7 | 778.7 | 778.8 |
| 22.55 | 763.6 | 763.7 | 763.8 | 763.8 | 763.9 | 23.00 | 778.9 | 778.9 | 779.0 | 779.1 | 779.1 |
| 22.56 | 764.0 | 764.0 | 764.1 | 764.2 | 764.2 | 23.01 | 779.2 | 779.3 | 779.3 | 779.4 | 779.5 |
| 22.57 | 764.3 | 764.4 | 764.4 | 764.5 | 764.6 | 23.02 | 779.5 | 779.6 | 779.7 | 779.8 | 779.8 |
| 22.58 | 764.6 | 764.7 | 764.8 | 764.9 | 764.9 | 23.03 | 779.9 | 780.0 | 780.0 | 780.1 | 780.2 |
| 22.59 | 765.0 | 765.1 | 765.1 | 765.2 | 765.3 | 23.04 | 780.2 | 780.3 | 780.4 | 780.4 | 780.5 |
| 22.60 | 765.3 | 765.4 | 765.5 | 765.5 | 765.6 | 23.05 | 780.6 | 780.6 | 780.7 | 780.8 | 780.8 |
| 22.61 | 765.7 | 765.7 | 765.8 | 765.9 | 765.9 | 23.06 | 780.9 | 781.0 | 781.0 | 781.1 | 781.2 |
| 22.62 | 766.0 | 766.1 | 766.1 | 766.2 | 766.3 | 23.07 | 781.2 | 781.3 | 781.4 | 781.4 | 781.5 |
| 22.63 | 766.3 | 766.4 | 766.5 | 766.5 | 766.6 | 23.08 | 781.6 | 781.6 | 781.7 | 781.8 | 781.9 |
| 22.64 | 766.7 | 766.7 | 766.8 | 766.9 | 767.0 | 23.09 | 781.9 | 782.0 | 782.1 | 782.1 | 782.2 |
| 22.65 | 767.0 | 767.1 | 767.2 | 767.2 | 767.3 | 23.10 | 782.3 | 782.3 | 782.4 | 782.5 | 782.5 |
| 22.66 | 767.4 | 767.4 | 767.5 | 767.6 | 767.6 | 23.11 | 782.6 | 782.7 | 782.7 | 782.8 | 782.9 |
| 22.67 | 767.7 | 767.8 | 767.8 | 767.9 | 768.0 | 23.12 | 782.9 | 783.0 | 783.1 | 783.1 | 783.2 |
| 22.68 | 768.0 | 768.1 | 768.2 | 768.2 | 768.3 | 23.13 | 783.3 | 783.3 | 783.4 | 783.5 | 783.5 |
| 22.69 | 768.4 | 768.4 | 768.5 | 768.6 | 768.6 | 23.14 | 783.6 | 783.7 | 783.7 | 783.8 | 783.9 |
| 22.70 | 768.7 | 768.8 | 768.8 | 768.9 | 769.0 | 23.15 | 784.0 | 784.0 | 784.1 | 784.2 | 784.2 |
| 22.71 | 769.1 | 769.1 | 769.2 | 769.3 | 769.3 | 23.16 | 784.3 | 784.4 | 784.4 | 784.5 | 784.6 |
| 22.72 | 769.4 | 769.5 | 769.5 | 769.6 | 769.7 | 23.17 | 784.6 | 784.7 | 784.8 | 784.8 | 784.9 |
| 22.73 | 769.7 | 769.8 | 769.9 | 769.9 | 770.0 | 23.18 | 785.0 | 785.0 | 785.1 | 785.2 | 785.2 |
| 22.74 | 770.1 | 770.1 | 770.2 | 770.3 | 770.3 | 23.19 | 785.3 | 785.4 | 785.4 | 785.5 | 785.6 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 23.20 | 785.6 | 785.7 | 785.8 | 785.8 | 785.9 | 23.65 | 800.9 | 801.0 | 801.0 | 801.1 | 801.2 |
| 23.21 | 786.0 | 786.1 | 786.1 | 786.2 | 786.3 | 23.66 | 801.2 | 801.3 | 801.4 | 801.4 | 801.5 |
| 23.22 | 786.3 | 786.4 | 786.5 | 786.5 | 786.6 | 23.67 | 801.6 | 801.6 | 801.7 | 801.8 | 801.8 |
| 23.23 | 786.7 | 786.7 | 786.8 | 786.9 | 786.9 | 23.68 | 801.9 | 802.0 | 802.0 | 802.1 | 802.2 |
| 23.24 | 787.0 | 787.1 | 787.1 | 787.2 | 787.3 | 23.69 | 802.2 | 802.3 | 802.4 | 802.4 | 802.5 |
| 23.25 | 787.3 | 787.4 | 787.5 | 787.5 | 787.6 | 23.70 | 802.6 | 802.6 | 802.7 | 802.8 | 802.8 |
| 23.26 | 787.7 | 787.7 | 787.8 | 787.9 | 787.9 | 23.71 | 802.9 | 803.0 | 803.0 | 803.1 | 803.2 |
| 23.27 | 788.0 | 788.1 | 788.1 | 788.2 | 788.3 | 23.72 | 803.3 | 803.3 | 803.4 | 803.5 | 803.5 |
| 23.28 | 788.4 | 788.4 | 788.5 | 788.6 | 788.6 | 23.73 | 803.6 | 803.7 | 803.7 | 803.8 | 803.9 |
| 23.29 | 788.7 | 788.8 | 788.8 | 788.9 | 789.0 | 23.74 | 803.9 | 804.0 | 804.1 | 804.1 | 804.2 |
| 23.30 | 789.0 | 789.1 | 789.2 | 789.2 | 789.3 | 23.75 | 804.3 | 804.3 | 804.4 | 804.5 | 804.5 |
| 23.31 | 789.4 | 789.4 | 789.5 | 789.6 | 789.6 | 23.76 | 804.6 | 804.7 | 804.7 | 804.8 | 804.9 |
| 23.32 | 789.7 | 789.8 | 789.8 | 789.9 | 790.0 | 23.77 | 804.9 | 805.0 | 805.1 | 805.1 | 805.2 |
| 23.33 | 790.0 | 790.1 | 790.2 | 790.2 | 790.3 | 23.78 | 805.3 | 805.4 | 805.4 | 805.5 | 805.6 |
| 23.34 | 790.4 | 790.5 | 790.5 | 790.6 | 790.7 | 23.79 | 805.6 | 805.7 | 805.8 | 805.8 | 805.9 |
| 23.35 | 790.7 | 790.8 | 790.9 | 790.9 | 791.0 | 23.80 | 806.0 | 806.0 | 806.1 | 806.2 | 806.2 |
| 23.36 | 791.1 | 791.1 | 791.2 | 791.3 | 791.3 | 23.81 | 806.3 | 806.4 | 806.4 | 806.5 | 806.6 |
| 23.37 | 791.4 | 191.5 | 791.5 | 791.6 | 791.7 | 23.82 | 806.6 | 806.7 | 806.8 | 806.8 | 806.9 |
| 23.38 | 791.7 | 791.8 | 791.9 | 791.9 | 792.0 | 23.83 | 807.0 | 807.0 | 807.1 | 807.2 | 807.2 |
| 23.39 | 792.1 | 792.1 | 792.2 | 792.3 | 792.3 | 23.84 | 807.3 | 807.4 | 807.5 | 807.5 | 807.6 |
| 23.40 | 792.4 | 792.5 | 792.6 | 792.6 | 792.7 | 23.85 | 807.7 | 807.7 | 807.8 | 807.9 | 807.9 |
| 23.41 | 292.8 | 792.8 | 792.9 | 793.0 | 793.0 | 23.86 | 808.0 | 808.1 | 808.1 | 808.2 | 808.3 |
| 23.42 | 793.1 | 793.2 | 793.2 | 793.3 | 793.4 | 23.87 | 808.3 | 808.4 | 808.5 | 808.5 | 808.6 |
| 23.43 | 793.4 | 793.5 | 793.6 | 793.6 | 793.7 | 23.88 | 808.7 | 808.7 | 808.8 | 808.9 | 808.9 |
| 23.44 | 793.8 | 793.8 | 793.9 | 794.0 | 794.0 | 23.89 | 809.0 | 809.1 | 809.1 | 809.2 | 809.3 |
| 23.45 | 794.1 | 794.2 | 794.2 | 794.3 | 794.4 | 23.90 | 809.3 | 809.4 | 809.5 | 809.6 | 809.6 |
| 23.46 | 794.4 | 794.5 | 794.6 | 794.7 | 794.7 | 23.91 | 809.7 | 809.8 | 809.8 | 809.9 | 810.0 |
| 23.47 | 794.8 | 794.9 | 794.9 | 795.0 | 795.1 | 23.92 | 810.0 | 810.1 | 810.2 | 810.2 | 810.3 |
| 23.48 | 795.1 | 795.2 | 795.3 | 795.3 | 795.4 | 23.93 | 810.4 | 810.4 | 810.5 | 810.6 | 810.6 |
| 23.49 | 795.5 | 795.5 | 795.6 | 795.7 | 795.7 | 23.94 | 810.7 | 810.8 | 810.8 | 810.9 | 811.0 |
| 23.50 | 795.8 | 795.9 | 795.9 | 796.0 | 796.1 | 23.95 | 811.0 | 811.1 | 811.2 | 811.2 | 811.3 |
| 23.51 | 796.1 | 796.2 | 796.3 | 796.3 | 796.4 | 23.96 | 811.4 | 811.4 | 811.5 | 811.6 | 811.7 |
| 23.52 | 796.5 | 796.5 | 796.6 | 796.7 | 796.8 | 23.97 | 811.7 | 811.8 | 811.9 | 811.9 | 812.0 |
| 23.53 | 796.8 | 796.9 | 797.0 | 797.0 | 797.1 | 23.98 | 812.1 | 812.1 | 812.2 | 812.3 | 812.3 |
| 23.54 | 797.2 | 797.2 | 797.3 | 797.4 | 797.4 | 23.99 | 812.4 | 812.5 | 812.5 | 812.6 | 812.7 |
| 23.55 | 797.5 | 797.6 | 797.6 | 797.7 | 797.8 | 24.00 | 812.7 | 812.8 | 812.9 | 812.9 | 813.0 |
| 23.56 | 797.8 | 797.9 | 798.0 | 798.0 | 798.1 | 24.01 | 813.1 | 813.1 | 813.2 | 813.3 | 813.3 |
| 23.57 | 798.2 | 798.2 | 798.3 | 798.4 | 798.4 | 24.02 | 813.4 | 813.5 | 813.5 | 813.6 | 813.7 |
| 23.58 | 798.5 | 798.6 | 798.6 | 798.7 | 798.8 | 24.03 | 813.8 | 813.8 | 813.9 | 814.0 | 814.0 |
| 23.59 | 798.9 | 798.9 | 799.0 | 799.1 | 799.1 | 24.04 | 814.1 | 814.2 | 814.2 | 814.3 | 814.4 |
| 23.60 | 799.2 | 799.3 | 799.3 | 799.4 | 799.5 | 24.05 | 814.4 | 814.5 | 814.6 | 814.6 | 814.7 |
| 23.61 | 799.5 | 799.6 | 799.7 | 799.7 | 799.8 | 24.06 | 814.8 | 814.8 | 814.9 | 815.0 | 815.0 |
| 23.62 | 799.9 | 799.9 | 800.0 | 800.1 | 800.1 | 24.07 | 815.1 | 815.2 | 815.2 | 815.3 | 815.4 |
| 23.63 | 800.2 | 800.3 | 800.3 | 800.4 | 800.5 | 24.08 | 815.4 | 815.5 | 815.6 | 815.6 | 815.7 |
| 23.64 | 800.5 | 800.6 | 800.7 | 800.7 | 800.8 | 24.09 | 815.8 | 815.9 | 815.9 | 816.0 | 816.1 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 24.10 | 816.1 | 816.2 | 816.3 | 816.3 | 816.4 | 24.55 | 831.4 | 831.4 | 831.5 | 831.6 | 831.6 |
| 24.11 | 816.5 | 816.5 | 816.6 | 816.7 | 816.7 | 24.56 | 831.7 | 831.8 | 831.8 | 831.9 | 832.0 |
| 24.12 | 816.8 | 816.9 | 816.9 | 817.0 | 817.1 | 24.57 | 832.0 | 832.1 | 832.2 | 832.2 | 832.3 |
| 24.13 | 817.1 | 817.2 | 817.3 | 817.3 | 817.4 | 24.58 | 832.4 | 832.4 | 832.5 | 832.6 | 832.6 |
| 24.14 | 817.5 | 817.5 | 817.6 | 817.7 | 817.7 | 24.59 | 832.7 | 832.8 | 832.8 | 832.9 | 833.0 |
| 24.15 | 817.8 | 817.9 | 817.9 | 818.0 | 818.1 | 24.60 | 833.1 | 833.1 | 833.2 | 833.3 | 833.3 |
| 24.16 | 818.2 | 818.2 | 818.3 | 818.4 | 818.4 | 24.61 | 833.4 | 833.5 | 833.5 | 833.6 | 833.7 |
| 24.17 | 818.5 | 818.6 | 818.6 | 818.7 | 818.8 | 24.62 | 833.7 | 833.8 | 833.9 | 833.9 | 834.0 |
| 24.18 | 818.8 | 818.9 | 819.0 | 819.0 | 819.1 | 24.63 | 834.1 | 834.1 | 834.2 | 834.3 | 834.3 |
| 24.19 | 819.2 | 819.2 | 819.3 | 819.4 | 819.4 | 24.64 | 834.4 | 834.5 | 834.5 | 834.6 | 834.7 |
| 24.20 | 819.5 | 819.6 | 819.6 | 819.7 | 819.8 | 24.65 | 834.7 | 834.8 | 834.9 | 834.9 | 835.0 |
| 24.21 | 819.8 | 819.9 | 820.0 | 820.0 | 820.1 | 24.66 | 835.1 | 835.2 | 835.2 | 835.3 | 835.4 |
| 24.22 | 820.2 | 820.3 | 820.3 | 820.4 | 820.5 | 24.67 | 835.4 | 835.5 | 835.6 | 835.6 | 835.7 |
| 24.23 | 820.5 | 820.6 | 820.7 | 820.7 | 820.8 | 24.68 | 835.8 | 835.8 | 835.9 | 836.0 | 836.0 |
| 24.24 | 820.9 | 820.9 | 821.0 | 821.1 | 821.1 | 24.69 | 836.1 | 836.2 | 836.2 | 836.3 | 836.4 |
| 24.25 | 821.2 | 821.3 | 821.3 | 821.4 | 821.5 | 24.70 | 836.4 | 836.5 | 836.6 | 836.6 | 836.7 |
| 24.26 | 821.5 | 821.6 | 821.7 | 821.7 | 821.8 | 24.71 | 836.8 | 836.8 | 836.9 | 837.0 | 837.0 |
| 24.27 | 821.9 | 821.9 | 822.0 | 822.1 | 822.1 | 24.72 | 837.1 | 837.2 | 837.3 | 837.3 | 837.4 |
| 24.28 | 822.2 | 822.3 | 822.4 | 822.4 | 822.5 | 24.73 | 837.5 | 837.5 | 837.6 | 837.7 | 837.7 |
| 24.29 | 822.6 | 822.6 | 822.7 | 822.8 | 822.8 | 24.74 | 837.8 | 837.9 | 837.9 | 838.0 | 838.1 |
| 24.30 | 822.9 | 823.0 | 823.0 | 823.1 | 823.2 | 24.75 | 838.1 | 838.2 | 838.3 | 838.3 | 838.4 |
| 24.31 | 823.2 | 823.3 | 823.4 | 823.4 | 823.5 | 24.76 | 838.5 | 838.5 | 838.6 | 838.7 | 838.7 |
| 24.32 | 823.6 | 823.6 | 823.7 | 823.8 | 823.8 | 24.77 | 838.8 | 838.9 | 838.9 | 839.0 | 839.1 |
| 24.33 | 823.9 | 824.0 | 824.0 | 824.1 | 824.2 | 24.78 | 839.1 | 839.2 | 839.3 | 839.4 | 839.4 |
| 24.34 | 824.2 | 824.3 | 824.4 | 824.5 | 824.5 | 24.79 | 839.5 | 839.6 | 839.6 | 839.7 | 839.8 |
| 24.35 | 824.6 | 824.7 | 824.7 | 824.8 | 824.9 | 24.80 | 839.8 | 839.9 | 840.0 | 840.0 | 840.1 |
| 24.36 | 824.9 | 825.0 | 825.1 | 825.1 | 825.2 | 24.81 | 840.2 | 840.2 | 840.3 | 840.4 | 840.4 |
| 24.37 | 825.3 | 825.3 | 825.4 | 825.5 | 825.5 | 24.82 | 840.5 | 840.6 | 840.6 | 840.7 | 840.8 |
| 24.38 | 825.6 | 825.7 | 825.7 | 825.8 | 825.9 | 24.83 | 840.8 | 840.9 | 841.0 | 841.0 | 841.1 |
| 24.39 | 825.9 | 826.0 | 826.1 | 826.1 | 826.2 | 24.84 | 841.2 | 841.2 | 841.3 | 841.4 | 841.5 |
| 24.40 | 826.3 | 826.3 | 826.4 | 826.5 | 826.6 | 24.85 | 841.5 | 841.6 | 841.7 | 841.7 | 841.8 |
| 24.41 | 826.6 | 826.7 | 826.8 | 826.8 | 826.9 | 24.86 | 841.9 | 841.9 | 842.0 | 842.1 | 842.1 |
| 24.42 | 827.0 | 827.0 | 827.1 | 827.2 | 827.2 | 24.87 | 842.2 | 842.3 | 842.3 | 842.4 | 842.5 |
| 24.43 | 827.3 | 827.4 | 827.4 | 827.5 | 827.6 | 24.88 | 842.5 | 842.6 | 842.7 | 842.7 | 842.8 |
| 24.44 | 827.6 | 827.7 | 827.8 | 827.8 | 827.9 | 24.89 | 842.9 | 842.9 | 843.0 | 843.1 | 843.1 |
| 24.45 | 828.0 | 828.0 | 828.1 | 828.2 | 828.2 | 24.90 | 843.2 | 843.3 | 843.3 | 843.4 | 843.5 |
| 24.46 | 828.3 | 828.4 | 828.4 | 828.5 | 828.6 | 24.91 | 843.6 | 843.6 | 843.7 | 843.8 | 843.8 |
| 24.47 | 828.7 | 828.7 | 828.8 | 828.9 | 828.9 | 24.92 | 843.9 | 844.0 | 844.0 | 844.1 | 844.2 |
| 24.48 | 829.0 | 829.1 | 829.1 | 829.2 | 829.3 | 24.93 | 844.2 | 844.3 | 844.4 | 844.4 | 844.5 |
| 24.49 | 829.3 | 829.4 | 829.5 | 829.5 | 829.6 | 24.94 | 844.6 | 844.6 | 844.7 | 844.8 | 844.8 |
| 24.50 | 829.7 | 829.7 | 829.8 | 829.9 | 829.9 | 24.95 | 844.9 | 845.0 | 845.0 | 845.1 | 845.2 |
| 24.51 | 830.0 | 830.1 | 830.1 | 830.2 | 830.3 | 24.96 | 845.2 | 845.3 | 845.4 | 845.4 | 845.5 |
| 24.52 | 830.3 | 830.4 | 830.5 | 830.5 | 830.6 | 24.97 | 845.6 | 845.7 | 845.7 | 845.8 | 845.9 |
| 24.53 | 830.7 | 830.8 | 830.8 | 830.9 | 831.0 | 24.98 | 845.9 | 846.0 | 846.1 | 846.1 | 846.2 |
| 24.54 | 831.0 | 831.1 | 831.2 | 831.2 | 831.3 | 24.99 | 846.3 | 846.3 | 846.4 | 846.5 | 846.5 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.00 | 846.6 | 846.7 | 846.7 | 846.8 | 846.9 | 25.45 | 861.8 | 861.9 | 862.0 | 862.0 | 862.1 |
| 25.01 | 846.9 | 847.0 | 847.1 | 847.1 | 847.2 | 25.46 | 862.2 | 862.2 | 862.3 | 862.4 | 862.4 |
| 25.02 | 847.3 | 847.3 | 847.4 | 847.5 | 847.5 | 25.47 | 862.5 | 862.6 | 862.7 | 862.7 | 862.8 |
| 25.03 | 847.6 | 847.7 | 847.8 | 847.8 | 847.9 | 25.48 | 862.9 | 862.9 | 863.0 | 863.1 | 863.1 |
| 25.04 | 848.0 | 848.0 | 848.1 | 848.2 | 848.2 | 25.49 | 863.2 | 863.3 | 863.8 | 863.4 | 863.5 |
| 25.05 | 848.3 | 848.4 | 848.4 | 848.5 | 848.6 | 25.50 | 863.5 | 863.6 | 863.7 | 863.7 | 863.8 |
| 25.06 | 848.6 | 848.7 | 848.8 | 848.8 | 848.9 | 25.51 | 863.9 | 863.9 | 864.0 | 864.1 | 864.1 |
| 25.07 | 849.0 | 849.0 | 849.1 | 849.2 | 849.2 | 25.52 | 864.2 | 864.3 | 864.3 | 864.4 | 864.5 |
| 25.08 | 849.3 | 849.4 | 849.4 | 849.5 | 849.6 | 25.53 | 864.5 | 864.6 | 864.7 | 864.7 | 864.8 |
| 25.09 | 849.6 | 849.7 | 849.8 | 849.8 | 849.9 | 25.54 | 864.9 | 865.0 | 865.0 | 865.1 | 865.2 |
| 25.10 | 850.0 | 850.1 | 850.1 | 850.2 | 850.3 | 25.55 | 865.2 | 865.3 | 865.4 | 865.4 | 865.5 |
| 25.11 | 850.3 | 850.4 | 850.5 | 850.5 | 850.6 | 25.56 | 865.6 | 865.6 | 865.7 | 865.8 | 865.8 |
| 25.12 | 850.7 | 850.7 | 850.8 | 850.9 | 850.9 | 25.57 | 865.9 | 866.0 | 866.0 | 866.1 | 866.2 |
| 25.13 | 851.0 | 851.1 | 851.1 | 851.2 | 851.3 | 25.58 | 866.2 | 866.3 | 866.4 | 866.4 | 866.5 |
| 25.14 | 851.3 | 851.4 | 851.5 | 851.5 | 851.6 | 25.59 | 866.6 | 866.6 | 866.7 | 866.8 | 866.8 |
| 25.15 | 851.7 | 851.7 | 851.8 | 851.9 | 851.9 | 25.60 | 866.9 | 867.0 | 867.1 | 867.1 | 867.2 |
| 25.16 | 852.0 | 852.1 | 852.2 | 852.2 | 852.3 | 25.61 | 867.3 | 867.3 | 867.4 | 867.5 | 867.5 |
| 25.17 | 852.4 | 852.4 | 852.5 | 852.6 | 852.6 | 25.62 | 867.6 | 867.7 | 867.7 | 867.8 | 867.9 |
| 25.18 | 852.7 | 852.8 | 852.8 | 852.9 | 853.0 | 25.63 | 867.9 | 868.0 | 868.1 | 868.1 | 868.2 |
| 25.19 | 853.0 | 853.1 | 853.2 | 853.2 | 853.3 | 25.64 | 868.3 | 868.3 | 868.4 | 868.5 | 868.5 |
| 25.20 | 853.4 | 853.4 | 853.5 | 853.6 | 853.6 | 25.65 | 868.6 | 868.7 | 868.7 | 868.8 | 868.9 |
| 25.21 | 853.7 | 853.8 | 853.8 | 853.9 | 854.0 | 25.66 | 868.9 | 869.0 | 869.1 | 869.2 | 869.2 |
| 25.22 | 854.0 | 854.1 | 854.2 | 854.3 | 854.3 | 25.67 | 869.3 | 869.4 | 869.4 | 869.5 | 869.6 |
| 25.23 | 854.4 | 854.5 | 854.5 | 854.6 | 854.7 | 25.68 | 869.6 | 869.7 | 869.8 | 869.8 | 869.9 |
| 25.24 | 854.7 | 854.8 | 854.9 | 854.9 | 855.0 | 25.69 | 870.0 | 870.0 | 870.1 | 870.2 | 870.2 |
| 25.25 | 855.1 | 855.1 | 855.2 | 855.3 | 855.3 | 25.70 | 870.3 | 870.4 | 870.4 | 870.5 | 870.6 |
| 25.26 | 855.4 | 855.5 | 855.5 | 855.6 | 855.7 | 25.71 | 870.6 | 870.7 | 870.8 | 870.8 | 870.9 |
| 25.27 | 855.7 | 855.8 | 855.9 | 855.9 | 856.0 | 25.72 | 871.0 | 871.0 | 871.1 | 871.2 | 871.3 |
| 25.28 | 856.1 | 856.1 | 856.2 | 856.3 | 856.4 | 25.73 | 871.3 | 871.4 | 871.5 | 871.5 | 871.6 |
| 25.29 | 856.4 | 856.5 | 856.6 | 856.6 | 856.7 | 25.74 | 871.7 | 871.7 | 871.8 | 871.9 | 871.9 |
| 25.30 | 856.8 | 856.8 | 856.9 | 857.0 | 857.0 | 25.75 | 872.0 | 872.1 | 872.1 | 872.2 | 872.3 |
| 25.31 | 857.1 | 857.2 | 857.2 | 857.3 | 857.4 | 25.76 | 872.3 | 872.4 | 872.5 | 872.5 | 872.6 |
| 25.32 | 857.4 | 857.5 | 857.6 | 857.6 | 857.7 | 25.77 | 872.7 | 872.7 | 872.8 | 872.9 | 872.9 |
| 25.33 | 857.8 | 857.8 | 857.9 | 858.0 | 858.0 | 25.78 | 873.0 | 873.1 | 873.1 | 873.2 | 873.3 |
| 25.34 | 858.1 | 858.2 | 858.2 | 858.3 | 858.4 | 25.79 | 873.4 | 873.4 | 873.5 | 873.6 | 873.6 |
| 25.35 | 858.5 | 858.5 | 858.6 | 858.7 | 858.7 | 25.80 | 873.7 | 873.8 | 873.8 | 873.9 | 874.0 |
| 25.36 | 858.8 | 858.9 | 858.9 | 859.0 | 859.1 | 25.81 | 874.0 | 874.1 | 874.2 | 874.2 | 874.3 |
| 25.37 | 859.1 | 859.2 | 859.3 | 859.3 | 859.4 | 25.82 | 874.4 | 874.4 | 874.5 | 874.6 | 874.6 |
| 25.38 | 859.5 | 859.5 | 859.6 | 859.7 | 859.7 | 25.83 | 874.7 | 874.8 | 874.8 | 874.9 | 875.0 |
| 25.39 | 859.8 | 859.9 | 859.9 | 860.0 | 860.1 | 25.84 | 875.0 | 875.1 | 875.2 | 875.2 | 875.3 |
| 25.40 | 860.1 | 860.2 | 860.3 | 860.3 | 860.4 | 25.85 | 875.4 | 875.5 | 875.5 | 875.6 | 875.7 |
| 25.41 | 860.5 | 860.6 | 860.6 | 860.7 | 860.8 | 25.86 | 875.7 | 875.8 | 875.9 | 875.9 | 876.0 |
| 25.42 | 860.8 | 860.9 | 861.0 | 861.0 | 861.1 | 25.87 | 876.1 | 876.1 | 876.2 | 876.3 | 876.3 |
| 25.43 | 861.2 | 861.2 | 861.3 | 861.4 | 861.4 | 25.88 | 876.4 | 876.5 | 876.5 | 876.6 | 876.7 |
| 25.44 | 861.5 | 861.6 | 861.6 | 861.7 | 861.8 | 25.89 | 876.7 | 876.8 | 876.9 | 876.9 | 877.0 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25.90 | 877.1 | 877.1 | 877.2 | 877.3 | 877.3 | 26.35 | 892.3 | 892.4 | 892.5 | 892.5 | 892.6 |
| 25.91 | 877.4 | 877.5 | 877.6 | 877.6 | 877.7 | 26.36 | 892.7 | 892.7 | 892.8 | 892.9 | 892.9 |
| 25.92 | 877.8 | 877.8 | 877.9 | 878.0 | 878.0 | 26.37 | 893.0 | 893.1 | 893.1 | 893.2 | 893.3 |
| 25.93 | 878.1 | 878.2 | 878.2 | 878.3 | 878.4 | 26.38 | 893.3 | 893.4 | 893.5 | 893.5 | 893.6 |
| 25.94 | 878.4 | 878.5 | 878.6 | 878.6 | 878.7 | 26.39 | 893.7 | 893.7 | 893.8 | 893.9 | 893.9 |
| 25.95 | 878.8 | 878.8 | 878.9 | 879.0 | 879.0 | 26.40 | 894.0 | 894.1 | 894.1 | 894.2 | 894.3 |
| 25.96 | 879.1 | 879.2 | 879.2 | 879.3 | 879.4 | 26.41 | 894.3 | 894.4 | 894.5 | 894.6 | 894.6 |
| 25.97 | 879.4 | 879.5 | 879.6 | 879.6 | 879.7 | 26.42 | 894.7 | 894.8 | 894.8 | 894.9 | 895.0 |
| 25.98 | 879.8 | 879.9 | 879.9 | 880.0 | 880.1 | 26.43 | 895.0 | 895.1 | 895.2 | 895.2 | 895.3 |
| 25.99 | 880.1 | 880.2 | 880.3 | 880.3 | 880.4 | 26.44 | 895.4 | 895.4 | 895.5 | 895.6 | 895.6 |
| 26.00 | 880.5 | 880.5 | 880.6 | 880.7 | 880.7 | 26.45 | 895.7 | 895.8 | 895.8 | 895.9 | 896.0 |
| 26.01 | 880.8 | 880.9 | 880.9 | 881.0 | 881.1 | 26.46 | 896.0 | 896.1 | 896.2 | 896.2 | 896.3 |
| 26.02 | 881.1 | 881.2 | 881.3 | 881.3 | 881.4 | 26.47 | 896.4 | 896.4 | 896.5 | 896.6 | 896.6 |
| 26.03 | 881.5 | 881.5 | 881.6 | 881.7 | 881.7 | 26.48 | 896.7 | 896.8 | 896.9 | 896.9 | 897.0 |
| 26.04 | 881.8 | 881.9 | 882.0 | 882.0 | 882.1 | 26.49 | 897.1 | 897.1 | 897.2 | 897.3 | 897.3 |
| 26.05 | 882.2 | 882.2 | 882.3 | 882.4 | 882.4 | 26.50 | 987.4 | 897.5 | 897.5 | 897.6 | 897.7 |
| 26.06 | 882.5 | 882.6 | 882.6 | 882.7 | 882.8 | 26.51 | 897.7 | 897.8 | 897.9 | 897.9 | 898.0 |
| 26.07 | 882.8 | 882.9 | 883.0 | 883.0 | 883.1 | 26.52 | 898.1 | 898.1 | 898.2 | 898.3 | 898.3 |
| 26.08 | 883.2 | 883.2 | 883.3 | 883.4 | 883.4 | 26.53 | 898.4 | 898.5 | 898.5 | 898.6 | 898.7 |
| 26.09 | 883.5 | 883.6 | 883.6 | 883.7 | 883.8 | 26.54 | 898.7 | 898.8 | 898.9 | 899.0 | 899.0 |
| 26.10 | 883.8 | 883.9 | 884.0 | 884.1 | 884.1 | 26.55 | 899.1 | 899.2 | 899.2 | 899.3 | 899.4 |
| 26.11 | 884.2 | 884.3 | 884.3 | 884.4 | 884.5 | 26.56 | 099.4 | 899.5 | 899.6 | 899.6 | 899.7 |
| 26.12 | 884.5 | 884.6 | 884.7 | 884.7 | 884.8 | 26.57 | 899.8 | 899.8 | 899.9 | 900.0 | 900.0 |
| 26.13 | 884.9 | 884.9 | 885.0 | 885.1 | 885.1 | 26.58 | 900.1 | 900.2 | 900.2 | 900.3 | 900.4 |
| 26.14 | 885.2 | 885.3 | 885.3 | 885.4 | 885.5 | 26.59 | 900.4 | 900.5 | 900.6 | 900.6 | 900.7 |
| 26.15 | 885.5 | 885.6 | 885.7 | 885.7 | 885.8 | 26.60 | 900.8 | 900.8 | 900.9 | 901.0 | 901.1 |
| 26.16 | 885.9 | 885.9 | 886.0 | 886.1 | 886.2 | 26.61 | 901.1 | 901.2 | 901.3 | 901.3 | 901.4 |
| 26.17 | 886.2 | 886.3 | 886.4 | 886.4 | 886.5 | 26.62 | 901.5 | 901.5 | 901.6 | 901.7 | 901.7 |
| 26.18 | 886.6 | 886.6 | 886.7 | 886.8 | 886.8 | 26.63 | 901.8 | 901.9 | 901.9 | 902.0 | 902.1 |
| 26.19 | 886.9 | 887.0 | 887.0 | 887.1 | 887.2 | 26.64 | 902.1 | 902.2 | 902.3 | 902.3 | 902.4 |
| 26.20 | 887.2 | 887.3 | 887.4 | 887.4 | 887.5 | 26.65 | 902.5 | 902.5 | 902.6 | 902.7 | 902.7 |
| 26.21 | 887.6 | 887.6 | 887.7 | 887.8 | 887.8 | 26.66 | 902.8 | 902.9 | 902.9 | 903.0 | 903.1 |
| 26.22 | 887.9 | 888.0 | 888.0 | 888.1 | 888.2 | 26.67 | 903.2 | 903.2 | 903.3 | 903.4 | 903.4 |
| 26.23 | 888.3 | 888.3 | 888.4 | 888.5 | 888.5 | 26.68 | 903.5 | 903.6 | 903.6 | 903.7 | 903.8 |
| 26.24 | 888.6 | 888.7 | 888.7 | 888.8 | 888.9 | 26.69 | 903.8 | 903.9 | 904.0 | 904.0 | 904.1 |
| 26.25 | 888.9 | 839.0 | 889.1 | 889.1 | 889.2 | 26.70 | 904.2 | 904.2 | 904.3 | 904.4 | 904.4 |
| 26.26 | 889.3 | 889.3 | 889.4 | 889.5 | 889.5 | 26.71 | 904.5 | 904.6 | 904.6 | 904.7 | 904.8 |
| 26.27 | 889.6 | 889.7 | 889.7 | 889.8 | 889.9 | 26.72 | 904.8 | 904.9 | 905.0 | 905.0 | 905.1 |
| 26.28 | 889.9 | 890.0 | 890.1 | 890.1 | 890.2 | 26.73 | 905.2 | 905.3 | 905.3 | 905.4 | 905.5 |
| 26.29 | 890.3 | 890.4 | 890.4 | 890.5 | 890.6 | 26.74 | 905.5 | 905.6 | 905.7 | 905.7 | 905.8 |
| 26.30 | 890.6 | 890.7 | 890.8 | 890.8 | 890.9 | 26.75 | 905.9 | 905.9 | 906.0 | 906.1 | 906.1 |
| 26.31 | 891.0 | 891.0 | 891.1 | 891.2 | 891.2 | 26.76 | 906.2 | 906.3 | 906.3 | 906.4 | 906.5 |
| 26.32 | 891.3 | 891.4 | 891.4 | 891.5 | 891.6 | 26.77 | 906.5 | 906.6 | 906.7 | 906.7 | 906.8 |
| 26.33 | 891.6 | 891.7 | 891.8 | 891.8 | 891.9 | 26.78 | 906.9 | 906.9 | 907.0 | 907.1 | 907.1 |
| 26.34 | 892.0 | 892.0 | 892.1 | 892.2 | 892.2 | 26.79 | 907.2 | 907.3 | 907.4 | 907.4 | 907.5 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26.80 | 907.6 | 907.6 | 907.7 | 907.8 | 907.8 | 27.25 | 922.8 | 922.9 | 922.9 | 923.0 | 923.1 |
| 26.81 | 907.9 | 908.0 | 908.0 | 908.1 | 908.2 | 27.26 | 923.1 | 923.2 | 923.3 | 923.3 | 923.4 |
| 26.82 | 908.2 | 908.3 | 908.4 | 908.4 | 908.5 | 27.27 | 923.5 | 923.5 | 923.6 | 923.7 | 923.7 |
| 26.83 | 908.6 | 908.6 | 908.7 | 908.8 | 908.8 | 27.28 | 923.8 | 923.9 | 923.9 | 924.0 | 924.1 |
| 26.84 | 908.9 | 909.0 | 909.0 | 909.1 | 909.2 | 27.29 | 924.1 | 924.2 | 924.3 | 924.4 | 924.4 |
| 26.85 | 909.2 | 909.3 | 909.4 | 909.5 | 909.5 | 27.30 | 924.5 | 924.6 | 924.6 | 924.7 | 924.8 |
| 26.86 | 909.6 | 909.7 | 909.7 | 909.8 | 909.9 | 27.31 | 924.8 | 924.9 | 925.0 | 925.0 | 925.1 |
| 26.87 | 909.9 | 910.0 | 910.1 | 910.1 | 910.2 | 27.32 | 925.2 | 925.2 | 925.3 | 925.4 | 925.4 |
| 26.88 | 910.3 | 910.3 | 910.4 | 910.5 | 910.5 | 27.33 | 925.5 | 925.6 | 925.6 | 925.7 | 925.8 |
| 26.89 | 910.6 | 910.7 | 910.7 | 910.8 | 910.9 | 27.34 | 925.8 | 925.9 | 926.0 | 926.0 | 926.1 |
| 26.90 | 910.9 | 911.0 | 911.1 | 911.1 | 911.2 | 27.35 | 926.2 | 926.2 | 926.3 | 926.4 | 926.4 |
| 26.91 | 911.3 | 911.3 | 911.4 | 911.5 | 911.5 | 27.36 | 926.5 | 926.6 | 926.7 | 926.7 | 926.8 |
| 26.92 | 911.6 | 911.7 | 911.8 | 911.8 | 911.9 | 27.37 | 926.9 | 926.9 | 927.0 | 927.1 | 927.1 |
| 26.93 | 912.0 | 912.0 | 912.1 | 912.2 | 912.2 | 27.38 | 927.2 | 927.3 | 927.3 | 927.4 | 927.5 |
| 26.94 | 912.3 | 912.4 | 912.4 | 912.5 | 912.6 | 27.39 | 927.5 | 927.6 | 927.7 | 927.7 | 927.8 |
| 26.95 | 912.6 | 912.7 | 912.8 | 912.8 | 912.9 | 27.40 | 927.9 | 927.9 | 928.0 | 928.1 | 928.1 |
| 26.96 | 913.0 | 913.0 | 913.1 | 913.2 | 913.2 | 27.41 | 928.2 | 928.3 | 928.3 | 928.4 | 928.5 |
| 26.97 | 913.3 | 913.4 | 913.4 | 913.5 | 913.6 | 27.42 | 928.5 | 928.6 | 928.7 | 928.8 | 928.8 |
| 26.98 | 913.6 | 913.7 | 913.8 | 913.9 | 913.9 | 27.43 | 928.9 | 929.0 | 929.0 | 929.1 | 929.2 |
| 26.99 | 914.0 | 914.1 | 914.1 | 914.2 | 914.3 | 27.44 | 929.2 | 929.3 | 929.4 | 929.4 | 929.5 |
| 27.00 | 914.3 | 914.4 | 914.5 | 914.5 | 914.6 | 27.45 | 929.6 | 929.6 | 929.7 | 929.8 | 929.8 |
| 27.01 | 914.7 | 914.7 | 914.8 | 914.9 | 914.9 | 27.46 | 929.9 | 930.0 | 930.0 | 930.1 | 930.2 |
| 27.02 | 915.0 | 915.1 | 915.1 | 915.2 | 915.3 | 27.47 | 930.2 | 930.3 | 930.4 | 930.4 | 930.5 |
| 27.03 | 915.3 | 915.4 | 915.5 | 915.5 | 915.6 | 27.48 | 930.6 | 930.6 | 930.7 | 930.8 | 930.9 |
| 27.04 | 915.7 | 915.7 | 915.8 | 915.9 | 916.0 | 27.49 | 930.9 | 931.0 | 931.1 | 931.1 | 931.2 |
| 27.05 | 916.0 | 916.1 | 916.2 | 916.2 | 916.3 | 27.50 | 931.3 | 931.3 | 931.4 | 931.5 | 931.5 |
| 27.06 | 916.4 | 916.4 | 916.5 | 916.6 | 916.6 | 27.51 | 931.6 | 931.7 | 931.7 | 931.8 | 931.9 |
| 27.07 | 916.7 | 916.8 | 916.8 | 916.9 | 917.0 | 27.52 | 931.9 | 932.0 | 932.1 | 932.1 | 932.2 |
| 27.08 | 917.0 | 917.1 | 917.2 | 917.2 | 917.3 | 27.53 | 932.3 | 932.3 | 932.4 | 932.5 | 932.5 |
| 27.09 | 917.4 | 917.4 | 917.5 | 917.6 | 917.6 | 27.54 | 932.6 | 932.7 | 932.7 | 932.8 | 932.9 |
| 27.10 | 917.7 | 917.8 | 917.8 | 917.9 | 918.0 | 27.55 | 933.0 | 933.0 | 933.1 | 933.2 | 933.2 |
| 27.11 | 918.1 | 918.1 | 918.2 | 918.3 | 918.3 | 27.56 | 933.3 | 933.4 | 933.4 | 933.5 | 933.6 |
| 27.12 | 918.4 | 918.5 | 918.5 | 918.6 | 918.7 | 27.57 | 933.6 | 933.7 | 933.8 | 933.8 | 933.9 |
| 27.13 | 918.7 | 918.8 | 918.9 | 918.9 | 919.0 | 27.58 | 934.0 | 934.0 | 934.1 | 934.2 | 934.2 |
| 27.14 | 919.1 | 919.1 | 919.2 | 919.3 | 919.3 | 27.59 | 934.3 | 934.4 | 934.5 | 934.5 | 934.6 |
| 27.15 | 919.4 | 919.5 | 919.5 | 919.6 | 919.7 | 27.60 | 934.6 | 934.7 | 934.8 | 934.8 | 934.9 |
| 27.16 | 919.7 | 919.8 | 919.9 | 919.9 | 920.0 | 27.61 | 935.0 | 935.1 | 935.1 | 935.2 | 935.3 |
| 27.17 | 920.1 | 920.2 | 920.2 | 920.3 | 920.4 | 27.62 | 935.3 | 935.4 | 935.5 | 935.5 | 935.6 |
| 27.18 | 920.4 | 920.5 | 920.6 | 920.6 | 920.7 | 27.63 | 935.7 | 935.7 | 935.8 | 935.9 | 935.9 |
| 27.19 | 920.8 | 920.8 | 920.9 | 921.0 | 921.0 | 27.64 | 936.0 | 936.1 | 936.1 | 936.2 | 936.3 |
| 27.20 | 921.1 | 921.2 | 921.2 | 921.3 | 921.4 | 27.65 | 936.3 | 936.4 | 936.5 | 936.5 | 936.6 |
| 27.21 | 921.4 | 921.5 | 921.6 | 921.6 | 821.7 | 27.66 | 936.7 | 936.7 | 936.8 | 936.9 | 936.9 |
| 27.22 | 921.8 | 921.8 | 921.9 | 922.0 | 922.0 | 27.67 | 937.0 | 937.1 | 937.2 | 937.2 | 937.3 |
| 27.23 | 922.1 | 922.2 | 922.3 | 922.3 | 922.4 | 27.68 | 937.4 | 937.4 | 937.5 | 937.6 | 937.6 |
| 27.24 | 922.5 | 922.5 | 922.6 | 922.7 | 922.7 | 27.69 | 937.7 | 937.8 | 937.8 | 937.9 | 938.0 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 27.70 | 938.0 | 938.1 | 938.2 | 938.2 | 938.3 | 28.15 | 953.3 | 953.3 | 953.4 | 953.5 | 953.5 |
| 27.71 | 938.4 | 938.4 | 938.5 | 938.6 | 938.6 | 28.16 | 953.6 | 953.7 | 953.7 | 953.8 | 953.9 |
| 27.72 | 938.7 | 938.8 | 938.8 | 938.9 | 939.0 | 28.17 | 953.9 | 954.0 | 954.1 | 954.2 | 954.2 |
| 27.73 | 939.0 | 939.1 | 939.2 | 939.3 | 939.3 | 28.18 | 954.3 | 954.4 | 954.4 | 954.5 | 954.6 |
| 27.74 | 939.4 | 939.5 | 939.5 | 939.6 | 939.7 | 28.19 | 954.6 | 954.7 | 954.8 | 954.8 | 954.9 |
| 27.75 | 939.7 | 939.8 | 939.9 | 939.9 | 940.0 | 28.20 | 955.0 | 955.0 | 955.1 | 955.2 | 955.2 |
| 27.76 | 940.1 | 940.1 | 940.2 | 940.3 | 940.3 | 28.21 | 955.3 | 955.4 | 955.4 | 955.5 | 955.6 |
| 27.77 | 940.4 | 940.5 | 940.5 | 940.6 | 940.7 | 28.22 | 955.6 | 955.7 | 955.8 | 955.8 | 955.9 |
| 27.78 | 940.7 | 940.8 | 940.9 | 940.9 | 941.0 | 28.23 | 956.0 | 956.0 | 956.1 | 956.2 | 956.3 |
| 27.79 | 941.1 | 941.1 | 941.2 | 941.3 | 941.4 | 28.24 | 956.3 | 956.4 | 956.5 | 956.5 | 956.6 |
| 27.80 | 941.4 | 941.5 | 941.6 | 941.6 | 941.7 | 28.25 | 956.7 | 956.7 | 956.8 | 956.9 | 956.9 |
| 27.81 | 941.8 | 941.8 | 941.9 | 942.0 | 942.0 | 28.26 | 957.0 | 957.1 | 957.1 | 957.2 | 957.3 |
| 27.82 | 942.1 | 942.2 | 942.2 | 942.3 | 942.4 | 28.27 | 957.3 | 957.4 | 957.5 | 957.5 | 957.6 |
| 27.83 | 942.4 | 942.5 | 942.6 | 942.6 | 942.7 | 28.28 | 957.7 | 957.7 | 957.8 | 957.9 | 957.9 |
| 27.84 | 942.8 | 942.8 | 942.9 | 943.0 | 943.0 | 28.29 | 958.0 | 958.1 | 958.1 | 958.2 | 958.3 |
| 27.85 | 943.1 | 943.2 | 943.2 | 943.3 | 943.4 | 28.30 | 958.3 | 958.4 | 958.5 | 958.6 | 958.6 |
| 27.86 | 943.4 | 943.5 | 943.6 | 943.7 | 943.7 | 28.31 | 958.7 | 958.8 | 958.8 | 958.9 | 959.0 |
| 27.87 | 943.8 | 943.9 | 943.9 | 944.0 | 944.1 | 28.32 | 959.0 | 959.1 | 959.2 | 959.2 | 959.3 |
| 27.88 | 944.1 | 944.2 | 944.3 | 944.3 | 944.4 | 28.33 | 959.4 | 959.4 | 959.5 | 959.6 | 959.6 |
| 27.89 | 944.5 | 944.5 | 944.6 | 944.7 | 944.7 | 28.34 | 959.7 | 959.8 | 959.8 | 959.9 | 960.0 |
| 27.90 | 944.8 | 944.9 | 944.9 | 945.0 | 945.1 | 28.35 | 960.0 | 960.1 | 960.2 | 960.2 | 960.3 |
| 27.91 | 945.1 | 945.2 | 945.3 | 945.3 | 945.4 | 28.36 | 960.4 | 960.4 | 960.5 | 960.6 | 960.7 |
| 27.92 | 945.5 | 945.5 | 945.6 | 945.7 | 945.8 | 28.37 | 960.7 | 960.8 | 960.9 | 960.9 | 961.0 |
| 27.93 | 945.8 | 945.9 | 946.0 | 946.0 | 946.1 | 28.38 | 961.1 | 961.1 | 961.2 | 961.3 | 961.3 |
| 27.94 | 946.2 | 946.2 | 946.3 | 946.4 | 946.4 | 28.39 | 961.4 | 961.5 | 961.5 | 961.6 | 961.7 |
| 27.95 | 946.5 | 946.6 | 946.6 | 946.7 | 946.8 | 28.40 | 961.7 | 961.8 | 961.9 | 961.9 | 962.0 |
| 27.96 | 946.8 | 946.9 | 947.0 | 947.0 | 947.1 | 28.41 | 962.1 | 962.1 | 962.2 | 962.3 | 962.3 |
| 27.97 | 947.2 | 947.2 | 947.3 | 947.4 | 947.4 | 28.42 | 962.4 | 962.5 | 962.5 | 962.6 | 962.7 |
| 27.98 | 947.5 | 947.6 | 947.6 | 947.7 | 947.8 | 28.43 | 962.8 | 962.8 | 962.9 | 963.0 | 963.0 |
| 27.99 | 947.9 | 947.9 | 948.0 | 948.1 | 948.1 | 28.44 | 963.1 | 963.2 | 963.2 | 963.3 | 963.4 |
| 28.00 | 948.2 | 948.3 | 948.3 | 948.4 | 948.5 | 28.45 | 963.4 | 963.5 | 963.6 | 963.6 | 963.7 |
| 28.01 | 948.5 | 948.6 | 948.7 | 948.7 | 948.8 | 28.46 | 963.8 | 963.8 | 963.9 | 964.0 | 964.0 |
| 28.02 | 948.9 | 948.9 | 949.0 | 949.1 | 949.1 | 28.47 | 964.1 | 964.2 | 964.2 | 964.3 | 964.4 |
| 28.03 | 949.2 | 949.3 | 949.3 | 949.4 | 949.5 | 28.48 | 964.4 | 964.5 | 964.6 | 964.6 | 964.7 |
| 28.04 | 949.5 | 949.6 | 949.7 | 949.7 | 949.8 | 28.49 | 964.8 | 964.9 | 964.9 | 965.0 | 965.1 |
| 28.05 | 949.9 | 950.0 | 950.0 | 950.1 | 950.2 | 28.50 | 965.1 | 965.2 | 965.3 | 965.3 | 965.4 |
| 28.06 | 950.2 | 950.3 | 950.4 | 950.4 | 950.5 | 28.51 | 965.5 | 965.5 | 965.6 | 965.7 | 965.7 |
| 28.07 | 950.6 | 950.6 | 950.7 | 950.8 | 950.8 | 28.52 | 965.8 | 965.9 | 965.9 | 966.0 | 966.1 |
| 28.08 | 950.9 | 951.0 | 951.0 | 951.1 | 951.2 | 28.53 | 966.1 | 966.2 | 966.3 | 966.3 | 966.4 |
| 28.09 | 951.2 | 951.3 | 951.4 | 951.4 | 951.5 | 28.54 | 966.5 | 966.5 | 966.6 | 966.7 | 966.7 |
| 28.10 | 951.6 | 951.6 | 951.7 | 951.8 | 951 8 | 28.55 | 966.8 | 966.9 | 967.0 | 967.0 | 967.1 |
| 28.11 | 951.9 | 952.0 | 952.1 | 952.1 | 952.2 | 28.56 | 967.2 | 867.2 | 967.3 | 967.4 | 967.4 |
| 28.12 | 952.3 | 952.3 | 952.4 | 952.5 | 952.5 | 28.57 | 967.5 | 967.6 | 967.6 | 967.7 | 967.8 |
| 28.13 | 952.6 | 952.7 | 952.7 | 952.8 | 952.9 | 28.58 | 967.8 | 967.9 | 968.0 | 968.0 | 968.1 |
| 28.14 | 952.9 | 953.0 | 958.1 | 953.1 | 953.2 | 28.59 | 968.2 | 968.2 | 968.3 | 968.4 | 968.4 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 28.60 | 968.5 | 968.6 | 968.6 | 968.7 | 968.8 | 29.05 | 983.7 | 983.8 | 983.9 | 984.0 | 984.0 |
| 28.61 | 968.8 | 968.9 | 969.0 | 969.1 | 969.1 | 29.06 | 984.1 | 984.2 | 984.2 | 984.3 | 984.4 |
| 28.62 | 969.2 | 969.3 | 969.3 | 969.4 | 969.5 | 29.07 | 984.4 | 984.5 | 984.6 | 984.6 | 984.7 |
| 28.63 | 969.5 | 969.6 | 969.7 | 969.7 | 969.8 | 29.08 | 984.8 | 984.8 | 984.9 | 985.0 | 985.0 |
| 28.64 | 969.9 | 969.9 | 970.0 | 970.1 | 970.1 | 29.09 | 985.1 | 985.2 | 985.2 | 985.3 | 985.4 |
| 28.65 | 970.2 | 970.3 | 970.3 | 970.4 | 970.5 | 29.10 | 985.4 | 985.5 | 985.6 | 985.6 | 985.7 |
| 28.66 | 970.5 | 970.6 | 970.7 | 970.7 | 970.8 | 29.11 | 985.8 | 985.8 | 985.9 | 986.0 | 986.1 |
| 28.67 | 970.9 | 970.9 | 971.0 | 971.1 | 971.2 | 29.12 | 986.1 | 986.2 | 986.3 | 986.3 | 986.4 |
| 28.68 | 971.2 | 971.3 | 971.4 | 971.4 | 971.5 | 29.13 | 986.5 | 986.5 | 986.6 | 986.7 | 986.7 |
| 28.69 | 971.6 | 971.6 | 971.7 | 971.8 | 971.8 | 29.14 | 986.8 | 986.9 | 986.9 | 987.0 | 987.1 |
| 28.70 | 971.9 | 972.0 | 972.0 | 972.1 | 972.2 | 29.14 | 987.1 | 987.2 | 987.3 | 987.3 | 987.4 |
| 27.71 | 972.2 | 972.3 | 972.4 | 972.4 | 972.5 | 29.16 | 987.5 | 987.5 | 987.6 | 987.7 | 987.7 |
| 28.72 | 972.6 | 972.6 | 972.7 | 972.8 | 972.8 | 29.17 | 987.8 | 987.9 | 987.9 | 988.0 | 988.1 |
| 28.73 | 972.9 | 973.0 | 973.0 | 973.1 | 973.2 | 29.18 | 988.2 | 988.2 | 988.3 | 988.4 | 988.4 |
| 28.74 | 973.2 | 973.3 | 973.4 | 973.5 | 973.5 | 29.19 | 988.5 | 988.6 | 988.6 | 988.7 | 988.8 |
| 28.75 | 973.6 | 973.7 | 973.7 | 973.8 | 973.9 | 29.20 | 988.8 | 988.9 | 989.0 | 989.0 | 989.1 |
| 28.76 | 973.9 | 974.0 | 974.1 | 974.1 | 974.2 | 29.21 | 989.2 | 989.2 | 989.3 | 989.4 | 989.4 |
| 28.77 | 974.3 | 974.3 | 974.4 | 974.5 | 974.5 | 29.22 | 989.5 | 989.6 | 989.6 | 989.7 | 989.8 |
| 28.78 | 874.6 | 974.7 | 974.7 | 974.8 | 974.9 | 29.23 | 989.8 | 989.9 | 990.0 | 990.0 | 990.1 |
| 28.79 | 974.9 | 975.0 | 975.1 | 975.1 | 975.2 | 29.24 | 990.2 | 990.2 | 990.3 | 990.4 | 990.5 |
| 28.80 | 975.3 | 975.3 | 975.4 | 975.5 | 975.6 | 29.25 | 990.5 | 990.6 | 990.7 | 990.7 | 990.8 |
| 28.81 | 975.6 | 975.7 | 975.8 | 975.8 | 975.9 | 29.26 | 990.9 | 990.9 | 991.0 | 991.1 | 991.1 |
| 28.82 | 976.0 | 976.0 | 976.1 | 976.2 | 976.2 | 29.27 | 991.2 | 991.3 | 991.3 | 991.4 | 991.5 |
| 28.83 | 976.3 | 976.4 | 976.4 | 976.5 | 976.6 | 29.28 | 991.5 | 991.6 | 991.7 | 991.7 | 991.8 |
| 28.84 | 976.6 | 976.7 | 976.8 | 976.8 | 976.9 | 29.29 | 991.9 | 991.9 | 992.0 | 992.1 | 992.1 |
| 28.85 | 977.0 | 977.0 | 977.1 | 977.2 | 977.2 | 29.30 | 992.2 | 992.3 | 992.3 | 992.4 | 992.5 |
| 28.86 | 977.3 | 977 4 | 977.4 | 977.5 | 977.6 | 29.31 | 992.6 | 992.6 | 992.7 | 992.8 | 992.8 |
| 28.87 | 977.7 | 977.7 | 977.8 | 977.9 | 977.9 | 29.32 | 992.9 | 993.0 | 993.0 | 993.1 | 993.2 |
| 28.88 | 978.0 | 978.1 | 978.1 | 978.2 | 978.3 | 29.33 | 993.2 | 993.3 | 993.4 | 993.4 | 993.5 |
| 28.89 | 978.3 | 978.4 | 978.5 | 978.5 | 978.6 | 29.34 | 993.6 | 993.6 | 993.7 | 993.8 | 993.8 |
| 28.90 | 978.7 | 978.7 | 978.8 | 978.9 | 978.9 | 29.35 | 993.9 | 994.0 | 994.0 | 994.1 | 994.2 |
| 28.91 | 979.0 | 979.1 | 979.1 | 979.2 | 979.3 | 29.36 | 994.2 | 994.3 | 994.4 | 994.4 | 994.5 |
| 28.92 | 979.3 | 979.4 | 979.5 | 979.5 | 979.6 | 29.37 | 994.6 | 994.7 | 994.7 | 994.8 | 994.9 |
| 28.83 | 979.7 | 979.8 | 979.8 | 979.9 | 980.0 | 29.38 | 994.9 | 995.0 | 995.1 | 995.1 | 995.2 |
| 28.94 | 980.0 | 980.1 | 980.2 | 980.2 | 980.3 | 29.39 | 995.3 | 995.3 | 995.4 | 995.5 | 995.5 |
| 28.95 | 980.4 | 980.4 | 980.5 | 980.6 | 980.6 | 29.40 | 995.6 | 995.7 | 995.7 | 995.8 | 995.9 |
| 28.96 | 980.7 | 980.8 | 980.8 | 980.9 | 981.0 | 29.41 | 995.9 | 996.0 | 996.1 | 996.1 | 996.2 |
| 28.97 | 981.0 | 981.1 | 981.2 | 981.2 | 981.3 | 29.42 | 996.3 | 996.3 | 996.4 | 996.5 | 996.5 |
| 28.98 | 981.4 | 981.4 | 981.5 | 981.6 | 981.6 | 29.43 | 996.6 | 996.7 | 996.8 | 996.8 | 996.9 |
| 28.99 | 981.7 | 981.8 | 981.9 | 981.9 | 982.0 | 29.44 | 997.0 | 997.0 | 997.1 | 997.2 | 997.2 |
| 29.00 | 982.1 | 982.1 | 982.2 | 982.3 | 982.3 | 29.45 | 997.3 | 997.4 | 997.4 | 997.5 | 997.6 |
| 29.01 | 982.4 | 982.5 | 982.5 | 982.6 | 982.7 | 29.46 | 997.6 | 997.7 | 997.8 | 997.8 | 997.9 |
| 29.02 | 982.7 | 982.8 | 982.9 | 982.9 | 983.0 | 29.47 | 998.0 | 998.0 | 998.1 | 998.2 | 998.2 |
| 29.03 | 983.1 | 983.1 | 983.2 | 983.3 | 983.3 | 29.48 | 998.3 | 998.4 | 998.4 | 998.5 | 998.6 |
| 29.04 | 983.4 | 983.5 | 983.5 | 983.6 | 983.7 | 29.48 | 998.6 | 998.7 | 998.8 | 998.9 | 998.9 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 | Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 29.50 | 999.0 | 999.1 | 999.1 | 999.2 | 999.3 | 29.95 | 1014.2 | 1014.3 | 1014.4 | 1014.4 | 1014.5 |
| 29.51 | 999.3 | 999.4 | 999.5 | 999.5 | 999.6 | 29.96 | 1014.6 | 1014.6 | 1014.7 | 1014.8 | 1014.8 |
| 29.52 | 999.7 | 999.7 | 999.8 | 999.9 | 999.9 | 29.97 | 1014.9 | 1015.0 | 1015.0 | 1015.1 | 1015.2 |
| 29.53 | 1000.0 | 1000.1 | 1000.1 | 1000.2 | 1000.3 | 29.98 | 1015.2 | 1015.3 | 1015.4 | 1015.4 | 1015.5 |
| 29.54 | 1000.3 | 1000.4 | 1000.5 | 1000.5 | 1000.6 | 29.99 | 1015.6 | 1015.6 | 1015.7 | 1015.8 | 1015.9 |
| 29.55 | 1000.7 | 1000.7 | 1000.8 | 1000.9 | 1001.0 | 30.00 | 1015.9 | 1016.0 | 1016.1 | 1016.1 | 1016.2 |
| 29.56 | 1001.0 | 1001.1 | 1001.2 | 1001.2 | 1001.3 | 30.01 | 1016.3 | 1016.3 | 1016.4 | 1016.5 | 1016.5 |
| 29.57 | 1001.4 | 1001.4 | 1001.5 | 1001.6 | 1001.6 | 30.02 | 1016.6 | 1016.7 | 1016.7 | 1016.8 | 1016.9 |
| 29.58 | 1001.7 | 1001.8 | 1001.8 | 1001.9 | 1002.0 | 30.03 | 1016.9 | 1017.0 | 1017.1 | 1017.1 | 1017.2 |
| 29.59 | 1002.0 | 1002.1 | 1002.2 | 1002.2 | 1002.3 | 30.04 | 1017.3 | 1017.3 | 1017.4 | 1017.5 | 1017.5 |
| 29.60 | 1002.4 | 1002.4 | 1002.5 | 1002.6 | 1002.6 | 30.05 | 1017.6 | 1017.7 | 1017.7 | 1017.8 | 1017.9 |
| 29.61 | 1002.7 | 1002.8 | 1002.8 | 1002.9 | 1003.0 | 30.06 | 1018.0 | 1018.0 | 1018.1 | 1018.2 | 1018.2 |
| 29.62 | 1003.1 | 1003.1 | 1003.2 | 1003.3 | 1003.3 | 30.07 | 1018.3 | 1018.4 | 1018.4 | 1018.5 | 1018.6 |
| 29.63 | 1003.4 | 1003.5 | 1003.5 | 1003.6 | 1003.7 | 30.08 | 1018.6 | 1018.7 | 1018.8 | 1018.8 | 1018.9 |
| 29.64 | 1003.7 | 1003.8 | 1003.9 | 1003.9 | 1004.0 | 30.09 | 1019.0 | 1019.0 | 1019.1 | 1019.2 | 1019.2 |
| 29.65 | 1004.1 | 1004.1 | 1004.2 | 1004.3 | 1004.3 | 30.10 | 1019.3 | 1019.4 | 1019.4 | 1019.5 | 1019.6 |
| 29.66 | 1004.4 | 1004.5 | 1004.5 | 1004.6 | 1004.7 | 30.11 | 1019.6 | 1019.7 | 1019.8 | 1019.8 | 1019.9 |
| 29.67 | 1004.7 | 1004.8 | 1004.9 | 1004.9 | 1005.0 | 30.12 | 1020.0 | 1020.0 | 1020.1 | 1020.2 | 1020.3 |
| 29.68 | 1005.1 | 1005.1 | 1005.2 | 1005.3 | 1005.4 | 30.13 | 1020.3 | 1020.4 | 1020.5 | 1020.5 | 1020.6 |
| 29.69 | 1005.4 | 1005.5 | 1005.6 | 1005.6 | 1005.7 | 30.14 | 1020.7 | 1020.7 | 1020.8 | 1020.9 | 1020.9 |
| 29.70 | 1005.8 | 1005.8 | 1005.9 | 1006.0 | 1006.0 | 30.15 | 1021.0 | 1021.1 | 1021.1 | 1021.2 | 1021.3 |
| 29.71 | 1006.1 | 1006.2 | 1006.2 | 1006.3 | 1006.4 | 30.16 | 1021.3 | 1021.4 | 1021.5 | 1021.5 | 1021.6 |
| 29.72 | 1006.4 | 1006.5 | 1006.6 | 1006.6 | 1006.7 | 30.17 | 1021.7 | 1021.7 | 1021.8 | 1021.9 | 1021.9 |
| 29.73 | 1006.8 | 1006.8 | 1006.9 | 1007.0 | 1007.0 | 30.18 | 1022.0 | 1022.1 | 1022.1 | 1022.2 | 1022.3 |
| 29.74 | 1007.1 | 1007.2 | 1007.2 | 1007.3 | 1007.4 | 30.19 | 1022.4 | 1022.4 | 1022.5 | 1022.6 | 1022.6 |
| 29.75 | 1007.5 | 1007.5 | 1007.6 | 1007.7 | 1007.7 | 30.20 | 1022.7 | 1022.8 | 1022.8 | 1022.9 | 1023.0 |
| 29.76 | 1007.8 | 1007.9 | 1007.9 | 1008.0 | 1008.1 | 30.21 | 1023.0 | 1023.1 | 1023.2 | 1023.2 | 1023.3 |
| 29.77 | 1008.1 | 1008.2 | 1008.3 | 1008.3 | 1008.4 | 30.22 | 1023.4 | 1023.4 | 1023.5 | 1023.6 | 1023.6 |
| 29.78 | 1008.5 | 1008.5 | 1008.6 | 1008.7 | 1008.7 | 30.23 | 1023.7 | 1023.8 | 1023.8 | 1023.9 | 1024.0 |
| 29.79 | 1008.8 | 1008.9 | 1008.9 | 1009.0 | 1009.1 | 30.24 | 1024.0 | 1024.1 | 1024.2 | 1024.2 | 1024.3 |
| 29.80 | 1009.1 | 1009.2 | 1009.3 | 1009.3 | 1009.4 | 30.25 | 1024.4 | 1024.5 | 1024.5 | 1024.6 | 10.24.7 |
| 29.81 | 1009.5 | 1009.6 | 1009.6 | 1009.7 | 1009.8 | 30.26 | 1024.7 | 1024.8 | 1024.9 | 1024.9 | 1025.0 |
| 29.82 | 1009.8 | 1009.9 | 1010.0 | 1010.0 | 1010.1 | 30.27 | 1025.1 | 1025.1 | 1025.2 | 1025.3 | 1025.3 |
| 29.83 | 1010.2 | 1010.2 | 1010.3 | 1010.4 | 1010.4 | 30.28 | 1025.4 | 1025.5 | 1025.5 | 1025.6 | 1025.7 |
| 29.84 | 1010.5 | 1010.6 | 1010.6 | 1010.7 | 1010.8 | 30.29 | 1025.7 | 1025.8 | 1025.9 | 1025.9 | 1026.0 |
| 29.85 | 1010.8 | 1010.9 | 1011.0 | 1011.0 | 1011.1 | 30.30 | 1026.1 | 1026.1 | 1026.2 | 1026.3 | 1026.3 |
| 29.86 | 1011.2 | 1011.2 | 1011.3 | 1011.4 | 1011.4 | 30.31 | 1026.4 | 1026.5 | 1026.6 | 1026.6 | 1026.7 |
| 29.87 | 1011.5 | 1011.6 | 1011.7 | 1011.7 | 1011.8 | 30.32 | 1026.8 | 1026.8 | 1026.9 | 1027.0 | 1027.0 |
| 29.88 | 1011.9 | 1011.9 | 1012.0 | 1012.1 | 1012.1 | 30.33 | 1027.1 | 1027.2 | 1027.2 | 1027.3 | 1027.4 |
| 29.89 | 1012.2 | 1012.3 | 1012.3 | 1012.4 | 1012.5 | 30.34 | 1027.4 | 1027.5 | 1027.6 | 1027.6 | 1027.7 |
| 29.90 | 1012.5 | 1012.6 | 1012.7 | 1012.7 | 1012.8 | 30.35 | 1027.8 | 1027.8 | 1027.9 | 1028.0 | 1028.0 |
| 29.91 | 1012.9 | 1012.9 | 1013.0 | 1013.1 | 1013.1 | 30.36 | 1028.1 | 1028.2 | 1028.2 | 1028.3 | 1028.4 |
| 29.92 | 1013.2 | 1013.3 | 1013.3 | 1013.4 | 1013.5 | 30.37 | 1028.4 | 1028.5 | 1028.6 | 1028.7 | 1028.7 |
| 29.93 | 1013.5 | 1013.6 | 1013.7 | 1013.8 | 1013.8 | 30.38 | 1028.8 | 1028.9 | 1028.9 | 1029.0 | 1029.1 |
| 29.94 | 1013.9 | 1014.0 | 1014.0 | 1014.1 | 1014.2 | 30.39 | 1029.1 | 1029.2 | 1029.3 | 1029.3 | 1029.4 |

## Table III (cont'd)

## INCHES OF MERCURY INTO MILLIBARS

1 inch = 33.86395 mb.

| Inches | 0.000 | 0.002 | 0.004 | 0.006 | 0.008 |
|---|---|---|---|---|---|
| 30.40 | 1029.5 | 1029.5 | 1029.6 | 1029.7 | 1029.7 |
| 30.41 | 1029.8 | 1029.9 | 1029.9 | 1030.0 | 1030.1 |
| 30.42 | 1030.1 | 1030.2 | 1030.3 | 1030.3 | 1030.4 |
| 30.43 | 1030.5 | 1030.5 | 1030.6 | 1030.7 | 1030.8 |
| 30.44 | 1030.8 | 1030.9 | 1031.0 | 1031.0 | 1031.1 |
| 30.45 | 1031.2 | 1031.2 | 1031.3 | 1031.4 | 1031.4 |
| 30.46 | 1031.5 | 1031.6 | 1031.6 | 1031.7 | 1031.8 |
| 30.47 | 1031.8 | 1031.9 | 1032.0 | 1032.0 | 1032.1 |
| 30.48 | 1032.2 | 1032.2 | 1032.3 | 1032.4 | 1032.4 |
| 30.49 | 1032.5 | 1032.6 | 1032.6 | 1032.7 | 1032.8 |
| 30.50 | 1032.9 | 1032.9 | 1033.0 | 1033.1 | 1033.1 |
| 30.51 | 1033.2 | 1033.3 | 1033.3 | 1033.4 | 1033.5 |
| 30.52 | 1033.5 | 1033.6 | 1033.7 | 1033.7 | 1033.8 |
| 30.53 | 1033.9 | 1033.9 | 1034.0 | 1034.1 | 1034.1 |
| 30.54 | 1034.2 | 1034.3 | 1034.3 | 1034.4 | 1034.5 |
| 30.55 | 1034.5 | 1034.6 | 1034.7 | 1034.7 | 1034.8 |
| 30.56 | 1034.9 | 1035.0 | 1035.0 | 1035.1 | 1035.2 |
| 30.57 | 1035.2 | 1035.3 | 1035.4 | 1035.4 | 1035.5 |
| 30.58 | 1035.6 | 1035.6 | 1035.7 | 1035.8 | 1035.8 |
| 30.59 | 1035.9 | 1036.0 | 1036.0 | 1036.1 | 1036.2 |
| 30.60 | 1036.2 | 1036.3 | 1036.4 | 1036.4 | 1036.5 |
| 30.61 | 1036.6 | 1036.6 | 1036.7 | 1036.8 | 1036.8 |
| 30.62 | 1036.9 | 1037.0 | 1037.0 | 1037.1 | 1037.2 |
| 30.63 | 1037.3 | 1037.3 | 1037.4 | 1037.5 | 1037.5 |
| 30.64 | 1037.6 | 1037.7 | 1037.7 | 1037.8 | 1037.9 |
| 30.65 | 1037.9 | 1038.0 | 1038.1 | 1038.1 | 1038.2 |
| 30.66 | 1038.3 | 1038.3 | 1038.4 | 1038.5 | 1038.5 |
| 30.67 | 1038.6 | 1038.7 | 1038.7 | 1038.8 | 1038.9 |
| 30.68 | 1038.9 | 1039.0 | 1039.1 | 1039.1 | 1039.2 |
| 30.69 | 1039.3 | 1039.4 | 1039.4 | 1039.5 | 1039.6 |
| 30.70 | 1039.6 | 1039.7 | 1039.8 | 1039.8 | 1039.9 |
| 30.71 | 1040.0 | 1040.0 | 1040.1 | 1040.2 | 1040.2 |
| 30.72 | 1040.3 | 1040.4 | 1040.4 | 1040.5 | 1040.6 |
| 30.73 | 1040.6 | 1040.7 | 1040.8 | 1040.8 | 1040.9 |
| 30.74 | 1041.0 | 1041.0 | 1041.1 | 1041.2 | 1041.2 |
| 30.75 | 1041.3 | 1041.4 | 1041.5 | 1041.5 | 1041.6 |
| 30.76 | 1041.7 | 1041.7 | 1041.8 | 1041.9 | 1041.9 |
| 30.77 | 1042.0 | 1042.1 | 1042.1 | 1042.2 | 1042.3 |
| 30.78 | 1042.3 | 1042.4 | 1042.5 | 1042.5 | 1042.6 |
| 30.79 | 1042.7 | 1042.7 | 1042.8 | 1042.9 | 1042.9 |
| 30.80 | 1043.0 | 1043.1 | 1043.1 | 1043.2 | 1043.3 |
| 30.81 | 1043.3 | 1043.4 | 1043.5 | 1043.6 | 1043.6 |
| 30.82 | 1043.7 | 1043.8 | 1043.8 | 1043.9 | 1044.0 |
| 30.83 | 1044.0 | 1044.1 | 1044.2 | 1044.2 | 1044.3 |
| 30.84 | 1044.4 | 1044.4 | 1044.5 | 1044.6 | 1044.6 |
| 30.85 | 1044.7 | 1044.8 | 1044.8 | 1044.9 | 1045.0 |
| 30.86 | 1045.0 | 1045.1 | 1045.2 | 1045.2 | 1045.3 |
| 30.87 | 1045.4 | 1045.4 | 1045.5 | 1045.6 | 1045.7 |
| 30.88 | 1045.7 | 1045.8 | 1045.9 | 1045.9 | 1046.0 |
| 30.89 | 1046.1 | 1046.1 | 1046.2 | 1046.3 | 1046.3 |
| 30.90 | 1046.4 | 1046.5 | 1046.5 | 1046.6 | 1046.7 |
| 30.91 | 1046.7 | 1046.8 | 1046.9 | 1046.9 | 1047.0 |
| 30.92 | 1047.1 | 1047.1 | 1047.2 | 1047.3 | 1047.3 |
| 30.93 | 1047.4 | 1047.5 | 1047.5 | 1047.6 | 1047.7 |
| 30.94 | 1047.8 | 1047.8 | 1047.9 | 1048.0 | 1048.0 |
| 30.95 | 1048.1 | 1049.2 | 1048.2 | 1048.3 | 1048.4 |
| 30.96 | 1048.4 | 1048.5 | 1048.6 | 1048.6 | 1048.7 |
| 30.97 | 1048.8 | 1048.8 | 1048.9 | 1049.0 | 1049.0 |
| 30.98 | 1049.1 | 1049.2 | 1049.2 | 1049.3 | 1049.4 |
| 30.99 | 1049.4 | 1049.5 | 1049.6 | 1049.6 | 1049.7 |
| 31.00 | 1049.8 | 1049.9 | 1049.9 | 1050.0 | 1050.1 |

## Table IV

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 540 | 15.946 | 15.949 | 15.952 | 15.955 | 15.958 | 15.961 | 15.964 | 15.967 | 15.970 | 15.973 |
| 541 | 15.976 | 15.979 | 15.982 | 15.985 | 15.988 | 15.990 | 15.993 | 15.996 | 15.999 | 16.002 |
| 542 | 16.005 | 16.008 | 16.011 | 16.014 | 16.017 | 16.020 | 16.023 | 16.026 | 16.029 | 16.032 |
| 543 | 16.035 | 16.038 | 16.041 | 16.044 | 16.047 | 16.050 | 16.052 | 16.055 | 16.058 | 16.061 |
| 544 | 16.064 | 16.067 | 16.070 | 16.073 | 16.076 | 16.079 | 16.082 | 16.085 | 16.088 | 16.091 |
| 545 | 16.094 | 16.097 | 16.100 | 16.103 | 16.106 | 16.109 | 16.112 | 16.114 | 16.117 | 16.120 |
| 546 | 16.123 | 16.126 | 16.129 | 16.132 | 16.135 | 16.138 | 16.141 | 16.144 | 16.147 | 16.150 |
| 547 | 16.153 | 16.156 | 16.159 | 16.162 | 16.165 | 16.168 | 16.171 | 16.174 | 16.176 | 16.179 |
| 548 | 16.182 | 16.185 | 16.188 | 16.191 | 16.194 | 16.197 | 16.200 | 16.203 | 16.206 | 16.209 |
| 549 | 16.212 | 16.215 | 16.218 | 16.221 | 16.224 | 16.227 | 16.230 | 16.233 | 16.236 | 16.239 |
| 550 | 16.241 | 16.244 | 16.247 | 16.250 | 16.253 | 16.256 | 16.259 | 16.262 | 16.265 | 16.268 |
| 551 | 16.271 | 16.274 | 16.277 | 16.280 | 16.283 | 16.286 | 16.289 | 16.292 | 16.295 | 16.298 |
| 552 | 16.301 | 16.303 | 16.306 | 16.309 | 16.312 | 16.315 | 16.318 | 16.321 | 16.324 | 16.327 |
| 553 | 16.330 | 16.333 | 16.336 | 16.339 | 16.342 | 16.345 | 16.348 | 16.351 | 16.354 | 16.357 |
| 554 | 16.360 | 16.363 | 16.365 | 16.368 | 16.371 | 16.374 | 16.377 | 16.380 | 16.383 | 16.386 |
| 555 | 16.389 | 16.392 | 16.395 | 16.398 | 16.401 | 16.404 | 16.407 | 16.410 | 16.413 | 16.416 |
| 556 | 16.419 | 16.422 | 16.425 | 16.427 | 16.430 | 16.433 | 16.436 | 16.439 | 16.442 | 16.445 |
| 557 | 16.448 | 16.451 | 16.454 | 16.457 | 16.460 | 16.463 | 16.466 | 16.469 | 16.472 | 16.475 |
| 558 | 16.478 | 16.481 | 16.484 | 16.487 | 16.490 | 16.492 | 16.495 | 16.498 | 16.501 | 16.504 |
| 559 | 16.507 | 16.510 | 16.513 | 16.516 | 16.519 | 16.522 | 16.525 | 16.528 | 16.531 | 16.534 |
| 560 | 16.537 | 16.540 | 16.543 | 16.546 | 16.549 | 16.552 | 16.554 | 16.557 | 16.560 | 16.563 |
| 561 | 16.566 | 16.569 | 16.572 | 16.575 | 16.578 | 16.581 | 16.584 | 16.587 | 16.590 | 16.593 |
| 562 | 16.596 | 16.599 | 16.602 | 16.605 | 16.608 | 16.611 | 16.614 | 16.616 | 16.619 | 16.622 |
| 563 | 16.625 | 16.628 | 16.631 | 16.634 | 16.637 | 16.640 | 16.643 | 16.646 | 16.649 | 16.652 |
| 564 | 16.655 | 16.658 | 16.661 | 16.664 | 16.667 | 16.670 | 16.673 | 16.676 | 16.679 | 16.681 |
| 565 | 16.684 | 16.687 | 16.690 | 16.693 | 16.696 | 16.699 | 16.702 | 16.705 | 16.708 | 16.711 |
| 566 | 16.714 | 16.717 | 16.720 | 16.723 | 16.726 | 16.729 | 16.732 | 16.735 | 16.738 | 16.741 |
| 567 | 16.743 | 16.746 | 16.749 | 16.752 | 16.755 | 16.758 | 16.761 | 16.764 | 16.767 | 16.770 |
| 568 | 16.773 | 16.776 | 16.779 | 16.782 | 16.785 | 16.788 | 16.791 | 16.794 | 16.797 | 16.800 |
| 569 | 16.803 | 16.805 | 16.808 | 16.811 | 16.814 | 16.817 | 16.820 | 16.823 | 16.826 | 16.829 |
| 570 | 16.832 | 16.835 | 16.838 | 16.841 | 16.844 | 16.847 | 16.850 | 16.853 | 16.856 | 16.859 |
| 571 | 16.862 | 16.865 | 16.867 | 16.870 | 16.873 | 16.876 | 16.879 | 16.882 | 16.885 | 16.888 |
| 572 | 16.891 | 16.894 | 16.897 | 16.900 | 16.903 | 16.906 | 16.909 | 16.912 | 16.915 | 16.918 |
| 573 | 16.921 | 16.924 | 16.927 | 16.930 | 16.932 | 16.935 | 16.938 | 16.941 | 16.944 | 16.947 |
| 574 | 16.950 | 16.953 | 16.956 | 16.959 | 16.962 | 16.965 | 16.968 | 16.971 | 16.974 | 16.977 |

Table IV (cont'd)

MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 575 | 16.980 | 16.983 | 16.986 | 16.989 | 16.992 | 16.994 | 16.997 | 17.000 | 17.003 | 17.006 |
| 576 | 17.009 | 17.012 | 17.015 | 17.018 | 17.021 | 17.024 | 17.027 | 17.030 | 17.033 | 17.036 |
| 577 | 17.039 | 17.042 | 17.045 | 17.048 | 17.051 | 17.054 | 17.056 | 17.059 | 17.062 | 17.065 |
| 578 | 17.068 | 17.071 | 17.074 | 17.077 | 17.080 | 17.083 | 17.086 | 17.089 | 17.092 | 17.095 |
| 579 | 17.098 | 17.101 | 17.104 | 17.107 | 17.110 | 17.113 | 17.116 | 17.118 | 17.121 | 17.124 |
| 580 | 17.127 | 17.130 | 17.133 | 17.136 | 17.139 | 17.142 | 17.145 | 17.148 | 17.151 | 17.154 |
| 581 | 17.157 | 17.160 | 17.163 | 17.166 | 17.169 | 17.172 | 17.175 | 17.178 | 17.181 | 17.183 |
| 582 | 17.186 | 17.189 | 17.192 | 17.195 | 17.198 | 17.201 | 17.204 | 17.207 | 17.210 | 17.213 |
| 583 | 17.216 | 17.219 | 17.222 | 17.225 | 17.228 | 17.231 | 17.234 | 17.237 | 17.240 | 17.243 |
| 584 | 17.245 | 17.248 | 17.251 | 17.254 | 17.257 | 17.260 | 17.263 | 17.266 | 17.269 | 17.272 |
| 585 | 17.275 | 17.278 | 17.281 | 17.284 | 17.287 | 17.290 | 17.293 | 17.296 | 17.299 | 17.302 |
| 586 | 17.305 | 17.307 | 17.310 | 17.313 | 17.316 | 17.319 | 17.322 | 17.325 | 17.328 | 17.331 |
| 587 | 17.334 | 17.337 | 17.340 | 17.343 | 17.346 | 17.349 | 17.352 | 17.355 | 17.358 | 17.361 |
| 588 | 17.364 | 17.367 | 17.370 | 17.372 | 17.375 | 17.378 | 17.381 | 17.384 | 17.387 | 17.390 |
| 589 | 17.393 | 17.396 | 17.399 | 17.402 | 17.405 | 17.408 | 17.411 | 17.414 | 17.417 | 17.420 |
| 590 | 17.423 | 17.426 | 17.429 | 17.432 | 17.434 | 17.437 | 17.440 | 17.443 | 17.446 | 17449 |
| 591 | 17.452 | 17.455 | 17.458 | 17.461 | 17.464 | 17.467 | 17.470 | 17.473 | 17.476 | 17.479 |
| 592 | 17.482 | 17.485 | 17.488 | 17.491 | 17.494 | 17.496 | 17.499 | 17.502 | 17.505 | 17.508 |
| 593 | 17.511 | 17.514 | 17.517 | 17.520 | 17.523 | 17.526 | 17.529 | 17.532 | 17.535 | 17.538 |
| 594 | 17.541 | 17.544 | 17.547 | 17.550 | 17.553 | 17.556 | 17.558 | 17.561 | 17.564 | 17.567 |
| 595 | 17.570 | 17.573 | 17.576 | 17.579 | 17.582 | 17.585 | 17.588 | 17.591 | 17.594 | 17.597 |
| 596 | 17.600 | 17.603 | 17.606 | 17.609 | 17.612 | 17.615 | 17.618 | 17.621 | 17.623 | 17.626 |
| 597 | 17.629 | 17.632 | 17.635 | 17.638 | 17.641 | 17.644 | 17.647 | 17.650 | 17.653 | 17.656 |
| 598 | 17.659 | 17.662 | 17.665 | 17.668 | 17.671 | 17.674 | 17.677 | 17.680 | 17.683 | 17.685 |
| 599 | 17.688 | 17.691 | 17.694 | 17.697 | 17.700 | 17.703 | 17.706 | 17.709 | 17.712 | 17.715 |
| 600 | 17.718 | 17.721 | 17.724 | 17.727 | 17.730 | 17.733 | 17.736 | 17.739 | 17.742 | 17.745 |
| 601 | 17.747 | 17.750 | 17.753 | 17.756 | 17.759 | 17.762 | 17.765 | 17.768 | 17.771 | 17.774 |
| 602 | 17.777 | 17.780 | 17.783 | 17.786 | 17.789 | 17.792 | 17.795 | 17.798 | 17.801 | 17.804 |
| 603 | 17.807 | 17.809 | 17.812 | 17.815 | 17.818 | 17.821 | 17.824 | 17.827 | 17.830 | 17.833 |
| 604 | 17.836 | 17.839 | 17.842 | 17.845 | 17.848 | 17.851 | 17.854 | 17.857 | 17.860 | 17.863 |
| 605 | 17.866 | 17.869 | 17.872 | 17.874 | 17.877 | 17.880 | 17.883 | 17.886 | 17.889 | 17.892 |
| 606 | 17.895 | 17.898 | 17.901 | 17.904 | 17.907 | 17.910 | 17.913 | 17.916 | 17.919 | 17.922 |
| 607 | 17.925 | 17.928 | 17.931 | 17.934 | 17.936 | 17.939 | 17.942 | 17.945 | 17.948 | 17.951 |
| 608 | 17.954 | 17.957 | 17.960 | 17.963 | 17.966 | 17.969 | 17.972 | 17.975 | 17.978 | 17.981 |
| 609 | 17.984 | 17.987 | 17.990 | 17.993 | 17.996 | 17.998 | 18.001 | 18.004 | 18.007 | 18.010 |

Table IV (cont'd)

MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 610 | 18.013 | 18.016 | 18.019 | 18.022 | 18.025 | 18.028 | 18.031 | 18.034 | 18.037 | 18.040 |
| 611 | 18.043 | 18.046 | 18.049 | 18.052 | 18.055 | 18.058 | 18.061 | 18.063 | 18.066 | 18.069 |
| 612 | 18.072 | 18.075 | 18.078 | 18.081 | 18.084 | 18.087 | 18.090 | 18.093 | 18.096 | 18.099 |
| 613 | 18.102 | 18.105 | 18.108 | 18.111 | 18.114 | 18.117 | 18.120 | 18.123 | 18.125 | 18.128 |
| 614 | 18.131 | 18.134 | 18.137 | 18.140 | 18.143 | 18.146 | 18.149 | 18.152 | 18.155 | 18.158 |
| 615 | 18.161 | 18.164 | 18.167 | 18.170 | 18.173 | 18.176 | 18.179 | 18.182 | 18.185 | 18.187 |
| 616 | 18.190 | 18.193 | 18.196 | 18.199 | 18.202 | 18.205 | 18.208 | 18.211 | 18.214 | 18.217 |
| 617 | 18.220 | 18.223 | 18.226 | 18.229 | 18.232 | 18.235 | 18.238 | 18.241 | 18.244 | 18.247 |
| 618 | 18.249 | 18.252 | 18.255 | 18.258 | 18.261 | 18.264 | 18.267 | 18.270 | 18.273 | 18.276 |
| 619 | 18.279 | 18.282 | 18.285 | 18.288 | 18.291 | 18.294 | 18.297 | 18.300 | 18.303 | 18.306 |
| 620 | 18.309 | 18.312 | 18.314 | 18.317 | 18.320 | 18.323 | 18.326 | 18.329 | 18.332 | 18.335 |
| 621 | 18.338 | 18.341 | 18.344 | 18.347 | 18.350 | 18.353 | 18.356 | 18.359 | 18.362 | 18.365 |
| 622 | 18.368 | 18.371 | 18.374 | 18.376 | 18.379 | 18.382 | 18.385 | 18.388 | 18.391 | 18.394 |
| 623 | 18.397 | 18.400 | 18.403 | 18.406 | 18.409 | 18.412 | 18.415 | 18.418 | 18.421 | 18.424 |
| 624 | 18.427 | 18.430 | 18.433 | 18.436 | 18.438 | 18.441 | 18.444 | 18.447 | 18.450 | 18.453 |
| 625 | 18.456 | 18.459 | 18.462 | 18.465 | 18.468 | 18.471 | 18.474 | 18.477 | 18.480 | 18.483 |
| 626 | 18.486 | 18.489 | 18.492 | 18.495 | 18.498 | 18.500 | 18.503 | 18.406 | 18.509 | 18.512 |
| 627 | 18.515 | 18.518 | 18.521 | 18.524 | 18.527 | 18.530 | 18.533 | 18.536 | 18.539 | 18.542 |
| 628 | 18.545 | 18.548 | 18.551 | 18.554 | 18.557 | 18.560 | 18.563 | 18.565 | 18.568 | 18.571 |
| 629 | 18.574 | 18.577 | 18.580 | 18.583 | 18.586 | 18.589 | 18.592 | 18.595 | 18.598 | 18.601 |
| 630 | 18.604 | 18.607 | 18.610 | 18.613 | 18.616 | 18.619 | 18.622 | 18.625 | 18.627 | 18.630 |
| 631 | 18.633 | 18.636 | 18.639 | 18.642 | 18.645 | 18.648 | 18.651 | 18.654 | 18.657 | 18.660 |
| 632 | 18.663 | 18.666 | 18.669 | 18.672 | 18.675 | 18.678 | 18.681 | 18.684 | 18.687 | 18.689 |
| 633 | 18.692 | 18.695 | 18.698 | 18.701 | 18.704 | 18.707 | 18.710 | 18.713 | 18.716 | 18.719 |
| 634 | 18.722 | 18.725 | 18.728 | 18.731 | 18.734 | 18.737 | 18.740 | 18.743 | 18.746 | 18.749 |
| 635 | 18.752 | 18.754 | 18.757 | 18.760 | 18.763 | 18.766 | 18.769 | 18.772 | 18.775 | 18.778 |
| 636 | 18.781 | 18.784 | 18.787 | 18.790 | 18.793 | 18.796 | 18.799 | 18.802 | 18.805 | 18.808 |
| 637 | 18.811 | 18.814 | 18.816 | 18.819 | 18.822 | 18.825 | 18.828 | 18.831 | 18.834 | 18.837 |
| 638 | 18.840 | 18.843 | 18.846 | 18.849 | 18.852 | 18.855 | 18.858 | 18.861 | 18.864 | 18.867 |
| 639 | 18.870 | 18.873 | 18.876 | 18.878 | 18.881 | 18.884 | 18.887 | 18.890 | 18.893 | 18.896 |
| 640 | 18.899 | 18.902 | 18.905 | 18.908 | 18.911 | 18.914 | 18.917 | 18.920 | 18.923 | 18.926 |
| 641 | 18.929 | 18.932 | 18.935 | 18.938 | 18.940 | 18.943 | 18.946 | 18.949 | 18.952 | 18.955 |
| 642 | 18.958 | 18.961 | 18.964 | 18.967 | 18.970 | 18.973 | 18.976 | 18.979 | 18.982 | 18.985 |
| 643 | 18.988 | 18.991 | 18.994 | 18.997 | 19.000 | 19.003 | 19.005 | 19.008 | 19.011 | 19.014 |
| 644 | 19.017 | 19.020 | 19.023 | 19.026 | 19.029 | 19.032 | 19.035 | 19.038 | 19.041 | 19.044 |

## Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 645 | 19.047 | 19.050 | 19.053 | 19.056 | 19.059 | 19.062 | 19.065 | 19.067 | 19.070 | 19.073 |
| 646 | 19.076 | 19.079 | 19.082 | 19.085 | 19.088 | 19.091 | 19.094 | 19.097 | 19.100 | 19.103 |
| 647 | 19.106 | 19.109 | 19.112 | 19.115 | 19.118 | 18.121 | 19.124 | 19.127 | 19.129 | 19.132 |
| 648 | 19.135 | 19.138 | 19.141 | 19.144 | 19.147 | 19.150 | 19.153 | 19.156 | 19.159 | 19.162 |
| 649 | 19.165 | 19.168 | 19.171 | 19.174 | 19.177 | 19.180 | 19.183 | 19.186 | 19.189 | 19.192 |
| 650 | 19.194 | 19.197 | 19.200 | 19.203 | 19.206 | 19.209 | 19.212 | 19.215 | 19.218 | 19.221 |
| 651 | 19.224 | 19.227 | 19.230 | 19.233 | 19236 | 19.239 | 19.242 | 19.245 | 19.248 | 19.251 |
| 652 | 19.254 | 19.256 | 19.259 | 19.262 | 19.265 | 19.268 | 19.271 | 19.274 | 19.277 | 19.280 |
| 653 | 19.283 | 19.286 | 19.289 | 19.292 | 19.295 | 19.298 | 19.301 | 19.304 | 19.307 | 19.310 |
| 654 | 19.313 | 19.316 | 19.318 | 19.321 | 19.324 | 19.327 | 19.330 | 19.333 | 19.336 | 19.339 |
| 655 | 19.342 | 19.345 | 19.348 | 19.351 | 19.354 | 19.357 | 19.360 | 19.363 | 19.366 | 19.369 |
| 656 | 19.372 | 19.375 | 19.378 | 19.380 | 19.383 | 19.386 | 19,389 | 19.392 | 19.395 | 19.398 |
| 657 | 19.401 | 19.404 | 19.407 | 19.410 | 19.413 | 19.416 | 19.419 | 19.422 | 19.425 | 19.428 |
| 658 | 19.431 | 19.434 | 19.437 | 19.440 | 19.443 | 19.445 | 19.448 | 19.451 | 19.454 | 19.457 |
| 659 | 19.460 | 19.463 | 19.466 | 19.469 | 19.472 | 19.475 | 19.478 | 19.481 | 19.484 | 19.487 |
| 660 | 19.490 | 19.493 | 19.496 | 16.499 | 19.502 | 19.505 | 19.507 | 19.510 | 19.513 | 19.516 |
| 661 | 19.519 | 19.522 | 19.525 | 19.528 | 19.531 | 19.534 | 19.537 | 19.540 | 19.543 | 19.546 |
| 662 | 19.549 | 19.552 | 19.555 | 19.558 | 19.561 | 19.564 | 19.567 | 19.569 | 19.572 | 19.575 |
| 663 | 19.578 | 19.581 | 19.584 | 19.587 | 19.590 | 19.593 | 19.596 | 19.599 | 19.602 | 19.605 |
| 664 | 19.608 | 19.611 | 19.614 | 19.617 | 19.620 | 19.623 | 19.626 | 19 629 | 19.631 | 19.634 |
| 665 | 19.637 | 19.640 | 19.643 | 19.646 | 19.649 | 19.652 | 19.655 | 19.658 | 19.661 | 19.664 |
| 666 | 19.667 | 19.670 | 19.673 | 19.676 | 19.679 | 19.682 | 19.685 | 19.688 | 19.691 | 19.694 |
| 667 | 19.696 | 19.699 | 19.702 | 19.705 | 19.708 | 19.711 | 19.714 | 19.717 | 19.720 | 19.723 |
| 668 | 19.726 | 19.729 | 19.732 | 19.735 | 19.738 | 19.741 | 19.744 | 19.747 | 19.750 | 19.753 |
| 669 | 19.756 | 19.758 | 19.761 | 19.764 | 19.767 | 19.770 | 19.773 | 19.776 | 19.779 | 19.782 |
| 670 | 19.785 | 19.788 | 19.791 | 19.794 | 19.797 | 19.800 | 19.803 | 19.806 | 19.809 | 19.812 |
| 671 | 19.815 | 19.818 | 19.820 | 19.823 | 19.826 | 19.829 | 19.832 | 19.835 | 19.838 | 19.841 |
| 672 | 19.844 | 19.847 | 19.850 | 19.853 | 19.856 | 19.859 | 19.862 | 19.865 | 19.868 | 19.871 |
| 673 | 19.874 | 19.877 | 19.880 | 19.883 | 19.885 | 19.888 | 19.891 | 19.894 | 19.897 | 19.900 |
| 674 | 19.903 | 19.906 | 19.909 | 19.912 | 19.915 | 19.918 | 19.921 | 19.924 | 19.927 | 19.930 |
| 675 | 19.933 | 19.936 | 19.939 | 19.942 | 19.945 | 19.947 | 19.950 | 19.953 | 19.956 | 19.959 |
| 676 | 19.962 | 19.965 | 19.968 | 19.971 | 19.974 | 19.977 | 19.980 | 19.983 | 19.986 | 19.989 |
| 677 | 19.992 | 19.995 | 19.998 | 20.001 | 20.004 | 20.007 | 20.009 | 20.012 | 20.015 | 20.018 |
| 678 | 20.021 | 20.024 | 20.027 | 20.030 | 20.033 | 20.036 | 20.039 | 20.042 | 20.045 | 20.048 |
| 679 | 20.051 | 20.054 | 20.057 | 20.060 | 20.063 | 20.066 | 20.069 | 20.071 | 20.074 | 20.077 |

## Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 680 | 20.080 | 20.083 | 20.086 | 20.089 | 20.092 | 20.095 | 20.098 | 20.101 | 20.104 | 20.107 |
| 681 | 20.110 | 20.113 | 20.116 | 20.119 | 20.122 | 20.125 | 20.128 | 20.131 | 20.134 | 20.136 |
| 682 | 20.139 | 20.142 | 20.145 | 20.148 | 20.151 | 20.154 | 20.157 | 20.160 | 20.163 | 20.166 |
| 683 | 20.169 | 20.172 | 20.175 | 20.178 | 20.181 | 20.184 | 20.187 | 20.190 | 20.193 | 20.196 |
| 684 | 20.198 | 20.201 | 20.204 | 20.207 | 20.210 | 20.210 | 20.216 | 20.219 | 20.222 | 20.225 |
| 685 | 20.228 | 20.231 | 20.234 | 20.237 | 20.240 | 20.243 | 20.246 | 20.249 | 20.252 | 20.255 |
| 686 | 20.258 | 20.260 | 20.263 | 20.266 | 20.269 | 20.272 | 20.275 | 20.278 | 20.281 | 20.284 |
| 687 | 20.287 | 20.290 | 20.293 | 20.296 | 20.299 | 20.302 | 20.305 | 20.308 | 20.311 | 20.314 |
| 688 | 20.317 | 20.320 | 20.322 | 20.325 | 20.328 | 20.331 | 20.334 | 20.337 | 20.340 | 20.343 |
| 689 | 20.346 | 20.349 | 20.352 | 20.355 | 20.358 | 20.361 | 20.364 | 20.367 | 20.370 | 20.373 |
| 690 | 20.376 | 20.379 | 20.382 | 20.385 | 20.387 | 20.390 | 20.393 | 20.396 | 20.399 | 20.402 |
| 691 | 20.405 | 20.408 | 20.411 | 20.414 | 20.417 | 20.420 | 20.423 | 20.426 | 20.429 | 20.432 |
| 692 | 20.435 | 20.438 | 20.441 | 20.444 | 20.447 | 20.449 | 20.452 | 20.455 | 20.458 | 20.461 |
| 693 | 20.464 | 20.467 | 20.470 | 20.473 | 20.476 | 20.479 | 20.482 | 20.485 | 20.488 | 20.491 |
| 694 | 20.494 | 20.497 | 20.500 | 20.503 | 20.506 | 20.509 | 20.511 | 20.514 | 20.517 | 20.520 |
| 695 | 20.523 | 20.526 | 20.529 | 20.532 | 20.535 | 20.538 | 20.541 | 20.544 | 20.547 | 20.550 |
| 696 | 20.553 | 20.556 | 20.559 | 20.562 | 20.565 | 20.568 | 20.571 | 20.574 | 20.576 | 20.579 |
| 697 | 20.582 | 20.585 | 20.588 | 20.591 | 20.594 | 20.597 | 20.600 | 20.603 | 20.606 | 20.609 |
| 698 | 20.612 | 20.615 | 20.618 | 20.621 | 20.624 | 20.627 | 20.630 | 20.633 | 20.636 | 20.638 |
| 699 | 20.641 | 20.644 | 20.647 | 20.650 | 20.653 | 20.656 | 20.659 | 20.662 | 20.665 | 20.668 |
| 700 | 20.671 | 20.674 | 20.677 | 20.680 | 20.683 | 20.686 | 20.689 | 20.692 | 20.695 | 20.698 |
| 701 | 20.700 | 20.703 | 20.706 | 20.709 | 20.712 | 20.715 | 20.718 | 20.721 | 20.724 | 20.727 |
| 702 | 20.730 | 20.733 | 20.736 | 20.739 | 20.742 | 20.745 | 20.748 | 20.751 | 20.754 | 20.757 |
| 703 | 20.760 | 20.762 | 20.765 | 20.768 | 20.771 | 20.774 | 20.777 | 20.780 | 20.783 | 20.786 |
| 704 | 20.789 | 20.792 | 20.795 | 20.798 | 20.801 | 20.804 | 20.807 | 20.810 | 20.813 | 20.816 |
| 705 | 20.819 | 20.822 | 20.825 | 20.827 | 20.830 | 20.833 | 20.836 | 20.839 | 20.842 | 20.845 |
| 706 | 20.848 | 20.851 | 20.854 | 20.857 | 20.860 | 20.863 | 20.866 | 20.869 | 20.872 | 20.875 |
| 707 | 20.878 | 20.881 | 20.884 | 20.887 | 20.889 | 20.892 | 20.895 | 20.898 | 20.901 | 20.904 |
| 708 | 20.907 | 20.910 | 20.913 | 20.916 | 20.919 | 20.922 | 20.925 | 20.928 | 20.931 | 20.934 |
| 709 | 20.937 | 20.940 | 20.943 | 20.946 | 20.949 | 20.951 | 20.954 | 20.957 | 20.960 | 20.963 |
| 710 | 20.966 | 20.969 | 20.972 | 20.975 | 20.978 | 20.981 | 20.984 | 20.987 | 20.990 | 20.993 |
| 711 | 20.996 | 20.999 | 21.002 | 21.005 | 21.008 | 21.011 | 21.013 | 21.016 | 21.019 | 21.022 |
| 712 | 21.025 | 21.028 | 21.031 | 21.034 | 21.037 | 21.040 | 21.043 | 21.046 | 21.049 | 21.052 |
| 713 | 21.055 | 21.058 | 21.061 | 21.064 | 21.067 | 21.070 | 21.073 | 21.076 | 21.078 | 21.081 |
| 714 | 21.084 | 21.087 | 21.090 | 21.093 | 21.096 | 21.099 | 21.102 | 21.105 | 21.108 | 21.111 |

Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 715 | 21.114 | 21.117 | 21.120 | 21.123 | 21.126 | 21.129 | 21.132 | 21.135 | 21.138 | 21.140 |
| 716 | 21.143 | 21.146 | 21.149 | 21.152 | 21.155 | 21.158 | 21.161 | 21.164 | 21.167 | 21.170 |
| 717 | 21.173 | 21.176 | 21.179 | 21.182 | 21.185 | 21.188 | 21.191 | 21.194 | 21.197 | 21.200 |
| 718 | 21.202 | 21.205 | 21.208 | 21.211 | 21.214 | 21.217 | 21.220 | 21.223 | 21.226 | 21.229 |
| 719 | 21.232 | 21.235 | 21.238 | 21.241 | 21.244 | 21.247 | 21.250 | 21.253 | 21.256 | 21.259 |
| 720 | 21.262 | 21.265 | 21.267 | 21.270 | 21.273 | 21.276 | 21.279 | 21.282 | 21.285 | 21.288 |
| 721 | 21.291 | 21.294 | 21.297 | 21.300 | 21.303 | 21.306 | 21.309 | 21.312 | 21.315 | 21.318 |
| 722 | 21.321 | 21.324 | 21.327 | 21.329 | 21.332 | 21.335 | 21.338 | 21.341 | 21.344 | 21.347 |
| 723 | 21.350 | 21.353 | 21.356 | 21.359 | 21.362 | 21.365 | 21.368 | 21.371 | 21.374 | 21.377 |
| 724 | 21.380 | 21.383 | 21.386 | 21.389 | 21.391 | 21.394 | 21.397 | 21.400 | 21.403 | 21.406 |
| 725 | 21.409 | 21.412 | 21.415 | 21.418 | 21.421 | 21.424 | 21.427 | 21.430 | 21 433 | 21.436 |
| 726 | 21.439 | 21.442 | 21.445 | 21.448 | 21.451 | 21.453 | 21.456 | 21.459 | 21.462 | 21.465 |
| 727 | 21.468 | 21.471 | 21.474 | 21.477 | 21.480 | 21.483 | 21.486 | 21.489 | 21.492 | 21.495 |
| 728 | 21.498 | 21.501 | 21.504 | 21.507 | 21.510 | 21.513 | 21.516 | 21.518 | 21.521 | 21.524 |
| 729 | 21.527 | 21.530 | 21.533 | 21.536 | 21.539 | 21.542 | 21.545 | 21.548 | 21.551 | 21.554 |
| 730 | 21.557 | 21.560 | 21.563 | 21.566 | 21.569 | 21.572 | 21.575 | 21.578 | 21.580 | 21.583 |
| 731 | 21.586 | 21.589 | 21.592 | 21.595 | 21.598 | 21.601 | 21.604 | 21.607 | 21.610 | 21.613 |
| 732 | 21.616 | 21.619 | 21.622 | 21.625 | 21.628 | 21.631 | 21.634 | 21.637 | 21.640 | 21.642 |
| 733 | 21.645 | 21.648 | 21.651 | 21.654 | 21.657 | 21.660 | 21.663 | 21.666 | 21.669 | 21.672 |
| 734 | 21.675 | 21.678 | 21.681 | 21.684 | 21.687 | 21.690 | 21.693 | 21.696 | 21.699 | 21.702 |
| 735 | 21.704 | 21.707 | 21.710 | 21.713 | 21.716 | 21.719 | 21.722 | 21.725 | 21.728 | 21.731 |
| 736 | 21.734 | 21.737 | 21.740 | 21.743 | 21.746 | 21.749 | 21.752 | 21.755 | 21.758 | 21.761 |
| 737 | 21.764 | 21.767 | 21.769 | 21.772 | 21.775 | 21.778 | 21.781 | 21.784 | 21.787 | 21.790 |
| 738 | 21.793 | 21.796 | 21.799 | 21.802 | 21.805 | 21.808 | 21.811 | 21.814 | 21.817 | 21.820 |
| 739 | 21.823 | 21.826 | 21.829 | 21.831 | 21.834 | 21.837 | 21.840 | 21.843 | 21.846 | 21.849 |
| 740 | 21.852 | 21.855 | 21.858 | 21.861 | 21.864 | 21.867 | 21.870 | 21.873 | 21.876 | 21.879 |
| 741 | 21.882 | 21.885 | 21.888 | 21.891 | 21.893 | 21.896 | 21.899 | 21.902 | 21.905 | 21.908 |
| 742 | 21.911 | 21.914 | 21.917 | 21.920 | 21.923 | 21.926 | 21.929 | 21.932 | 21.935 | 21.938 |
| 743 | 21.941 | 21.944 | 21.947 | 21.950 | 21.953 | 21.956 | 21.958 | 21.961 | 21.964 | 21.967 |
| 744 | 21.970 | 21.973 | 21.976 | 21.979 | 21.982 | 21.985 | 21.988 | 21.991 | 21.994 | 21.997 |
| 745 | 22.000 | 22.003 | 22.006 | 22.009 | 22.012 | 22.015 | 22.018 | 22.020 | 22.023 | 22.026 |
| 746 | 22.029 | 22.032 | 22.035 | 22.038 | 22.041 | 22.044 | 22.047 | 22.050 | 22.053 | 22.056 |
| 747 | 22.059 | 22.062 | 22.065 | 22.068 | 22.071 | 22.074 | 22.077 | 22.080 | 22.082 | 22.085 |
| 748 | 22.088 | 22.091 | 22.094 | 22.097 | 22.100 | 22.103 | 22.106 | 22.109 | 22.112 | 22.115 |
| 749 | 22.118 | 22.121 | 22.124 | 22.127 | 22.130 | 22.133 | 22.136 | 22.139 | 22.142 | 22.144 |

## Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 750 | 22.147 | 22.150 | 22.153 | 22.156 | 22.159 | 22.162 | 22.165 | 22.168 | 22.171 | 22.174 |
| 751 | 22.177 | 22.180 | 22.183 | 22.186 | 22.189 | 22.192 | 22.195 | 22.198 | 22.201 | 22.204 |
| 752 | 22.207 | 22.209 | 22.212 | 22.215 | 22.218 | 22.221 | 22.224 | 22.227 | 22.230 | 22.233 |
| 753 | 22.236 | 22.239 | 22.242 | 22.245 | 22.248 | 22.251 | 22.254 | 22.257 | 22.260 | 22.263 |
| 754 | 22.266 | 22.269 | 22.271 | 22.274 | 22.277 | 22.280 | 22.283 | 22.286 | 22.289 | 22.292 |
| 755 | 22.295 | 22.298 | 22.301 | 22.304 | 22.307 | 22.310 | 22.313 | 22.316 | 22.319 | 22.322 |
| 756 | 22.325 | 22.328 | 22.331 | 22.333 | 22.336 | 22.339 | 22.342 | 22.345 | 22.348 | 22.351 |
| 757 | 22.354 | 22.357 | 22.360 | 22.363 | 22.366 | 22.369 | 22.372 | 22.375 | 22.378 | 22.381 |
| 758 | 22.384 | 22.387 | 22.390 | 22.393 | 22.395 | 22.398 | 22.401 | 22.404 | 22.407 | 22.410 |
| 759 | 22.413 | 22.416 | 22.419 | 22.422 | 22.425 | 22.428 | 22.431 | 22.434 | 22.437 | 22.440 |
| 760 | 22.443 | 22.446 | 22.449 | 22.452 | 22.455 | 22.458 | 22.460 | 22.463 | 22.466 | 22.469 |
| 761 | 22.472 | 22.475 | 22.478 | 22.481 | 22.484 | 22.487 | 22.490 | 22.493 | 22.496 | 22.499 |
| 762 | 22.502 | 22.505 | 22.508 | 22.511 | 22.514 | 22.517 | 22.520 | 22.522 | 22.525 | 22.528 |
| 763 | 22.531 | 22.534 | 22.537 | 22.540 | 22.543 | 22.546 | 22.549 | 22.552 | 22.555 | 22.558 |
| 764 | 22.561 | 22.564 | 22567 | 22.570 | 22.573 | 22.576 | 22.579 | 22.582 | 22.584 | 22.587 |
| 765 | 22.590 | 22.593 | 22.596 | 22.599 | 22.602 | 22.605 | 22.608 | 22.611 | 22.614 | 22.617 |
| 766 | 22.620 | 22.623 | 22.626 | 22.629 | 22.632 | 22.635 | 22.638 | 22.641 | 22.644 | 22.647 |
| 767 | 22.649 | 22.652 | 22.655 | 22.658 | 22.661 | 22.664 | 22.667 | 22.670 | 22.673 | 22.676 |
| 768 | 22.679 | 22.682 | 22.685 | 22.688 | 22.691 | 22.694 | 22.697 | 22.700 | 22.703 | 22.706 |
| 769 | 22.709 | 22.711 | 22.714 | 22.717 | 22.720 | 22.723 | 22.726 | 22.729 | 22.732 | 22.735 |
| 770 | 22.738 | 22.741 | 22.744 | 22.747 | 22.750 | 22.753 | 22.756 | 22.759 | 22.762 | 22.765 |
| 771 | 22.768 | 22.771 | 22.773 | 22.776 | 22.779 | 22.782 | 22.785 | 22.788 | 22.791 | 22.794 |
| 772 | 22.797 | 22.800 | 22.803 | 22.806 | 22.809 | 22.812 | 22.815 | 22.818 | 22.821 | 22.824 |
| 773 | 22.827 | 22.830 | 22.833 | 22.835 | 22.838 | 22.841 | 22.844 | 22.847 | 22.850 | 22.853 |
| 774 | 22.856 | 22.859 | 22.862 | 22.865 | 22.868 | 22.871 | 22.874 | 22.877 | 22.880 | 22.883 |
| 775 | 22.886 | 22.889 | 22.892 | 22.895 | 22.898 | 22.900 | 22.903 | 22.906 | 22.909 | 22.912 |
| 776 | 22.915 | 22.918 | 22.921 | 22.924 | 22.927 | 22.930 | 22.933 | 22.936 | 22.939 | 22.942 |
| 777 | 22.945 | 22.948 | 22.951 | 22.954 | 22.957 | 22.960 | 22.962 | 22.965 | 22.968 | 22.971 |
| 778 | 22.974 | 22.977 | 22.980 | 22.983 | 22.986 | 22.989 | 22.992 | 22.995 | 22.998 | 23.001 |
| 779 | 23.004 | 23.007 | 23.010 | 23.013 | 23.016 | 23.019 | 23.022 | 23.024 | 23.027 | 23.030 |
| 780 | 23.033 | 23.036 | 23.039 | 23.042 | 23.045 | 23.048 | 23.051 | 23.054 | 23.057 | 23.060 |
| 781 | 23.063 | 23.066 | 23.069 | 23.072 | 23.075 | 23.078 | 23.081 | 23.084 | 23.086 | 23.089 |
| 782 | 23.092 | 23.095 | 23.098 | 23.101 | 23.104 | 23.107 | 23.110 | 23.113 | 23.116 | 23.119 |
| 783 | 23.122 | 23.125 | 23.128 | 23.131 | 23.134 | 23.137 | 23.140 | 23.143 | 23.146 | 23.149 |
| 784 | 23.151 | 23.154 | 23.157 | 23.160 | 23.163 | 23.166 | 23.169 | 23.172 | 23.175 | 23.178 |

Table IV (cont'd)

MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 785 | 23.181 | 23.184 | 13.187 | 23.190 | 23.193 | 23.196 | 23.199 | 23.202 | 23.205 | 23.208 |
| 786 | 23.211 | 23.213 | 23.216 | 23.219 | 23.222 | 23.225 | 23.228 | 23.231 | 23.234 | 23.237 |
| 787 | 23.240 | 23.243 | 23.246 | 23.249 | 23.252 | 23.255 | 23.258 | 23.261 | 23.264 | 23.267 |
| 788 | 23.270 | 23.273 | 23.275 | 23.278 | 23.281 | 23.284 | 23.287 | 23.290 | 23.293 | 23.296 |
| 789 | 23.299 | 23.302 | 23.305 | 23.308 | 23.311 | 23.314 | 23.317 | 23.320 | 23.323 | 23.326 |
| 790 | 23.329 | 23.332 | 23.335 | 23.338 | 23.340 | 23.343 | 23.346 | 23.349 | 23.352 | 23.355 |
| 791 | 23.358 | 23.361 | 23.364 | 23.367 | 23.370 | 23.373 | 23.376 | 23.379 | 23.382 | 23.385 |
| 792 | 23.388 | 23.391 | 23.394 | 23.397 | 23.400 | 23.402 | 23.405 | 23.408 | 23.411 | 23.414 |
| 793 | 23.417 | 23.420 | 23.423 | 23.426 | 23.429 | 23.432 | 23.435 | 23.438 | 23.441 | 23.444 |
| 794 | 23.447 | 23.450 | 23.453 | 23.456 | 23.459 | 23.462 | 23.464 | 23.467 | 23.470 | 23.473 |
| 795 | 23.476 | 23.479 | 23.482 | 23.485 | 23.488 | 23.491 | 23.494 | 23.497 | 23.500 | 23.503 |
| 796 | 23.506 | 23.509 | 23.512 | 23.515 | 23.518 | 23.521 | 23.524 | 23.526 | 23.529 | 23.532 |
| 797 | 23.535 | 23.538 | 23.541 | 23.544 | 23.547 | 23.550 | 23.553 | 23.556 | 23.559 | 23.562 |
| 798 | 23.565 | 23.568 | 23.571 | 23.574 | 23.577 | 23.580 | 23.583 | 23.586 | 23.589 | 23.591 |
| 799 | 23.594 | 23.597 | 23.600 | 23.603 | 23.606 | 23.609 | 23.612 | 23.615 | 23.618 | 23.621 |
| 800 | 23.624 | 23.627 | 23.630 | 23.633 | 23.636 | 23.639 | 23.642 | 23.645 | 23.648 | 23.651 |
| 801 | 23.653 | 23.656 | 23.659 | 23.662 | 23.665 | 23.668 | 23.671 | 23.674 | 23.677 | 23.680 |
| 802 | 23.683 | 23.686 | 23.689 | 23.692 | 23.695 | 23.698 | 23.701 | 23.704 | 23.707 | 23.710 |
| 803 | 23.713 | 23.715 | 23.718 | 23.721 | 23.724 | 23.727 | 23.730 | 23.733 | 23.736 | 23.739 |
| 804 | 23.742 | 23.745 | 23.748 | 23.751 | 23.754 | 23.757 | 23.760 | 23.763 | 23.766 | 23.769 |
| 805 | 23.772 | 23.775 | 23.777 | 23.780 | 23.783 | 23.786 | 23.789 | 23.792 | 23.795 | 23.798 |
| 806 | 23.801 | 23.804 | 23.807 | 23.810 | 23.813 | 23.816 | 23.819 | 23.822 | 23.825 | 23.828 |
| 807 | 23.831 | 23.834 | 23.837 | 23.840 | 23.842 | 23.845 | 23.848 | 23.851 | 23.854 | 23.857 |
| 808 | 23.860 | 23.863 | 23.866 | 23.869 | 23.872 | 23.875 | 23.878 | 23.881 | 23.884 | 23.887 |
| 809 | 23.890 | 23.893 | 23.896 | 23.899 | 23.902 | 23.904 | 23.907 | 23.910 | 23.913 | 23.916 |
| 810 | 23.919 | 23.922 | 23.925 | 23.928 | 23.931 | 23.934 | 23.937 | 23.940 | 23.943 | 23.946 |
| 811 | 23.949 | 23.952 | 23.955 | 23.958 | 23.961 | 23.964 | 23.966 | 23.969 | 23.972 | 23.975 |
| 812 | 23.978 | 23.981 | 23.984 | 23.987 | 23.990 | 23.993 | 23.996 | 23.999 | 24.002 | 24.005 |
| 813 | 24.008 | 24.011 | 24.014 | 24.017 | 24.020 | 24.023 | 24.026 | 24.029 | 24.031 | 24.034 |
| 814 | 24.037 | 24.040 | 24.043 | 24.046 | 24.049 | 24.052 | 24.055 | 24.058 | 24.061 | 24.064 |
| 815 | 24.067 | 24.070 | 24.073 | 24.076 | 24.079 | 24.082 | 24.085 | 24.088 | 24.091 | 24.093 |
| 816 | 24.096 | 24.099 | 24.102 | 24.105 | 24.108 | 24.111 | 24.114 | 24.117 | 24.120 | 24.123 |
| 817 | 24.126 | 24.129 | 24.132 | 24.135 | 24.138 | 24.141 | 24.144 | 24.147 | 24.150 | 24.153 |
| 818 | 24.155 | 24.158 | 24.161 | 24.164 | 24.167 | 24.170 | 24.173 | 24.176 | 24.179 | 24.182 |
| 819 | 24.185 | 24.188 | 24.191 | 24.194 | 24.197 | 24.200 | 24.203 | 24.206 | 24.209 | 24.212 |
| 820 | 24.215 | 24.217 | 24.220 | 24.223 | 24.226 | 24.229 | 24.232 | 24.235 | 24.238 | 24.241 |

Table IV (cont'd)

MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 821 | 24.244 | 24.247 | 24.250 | 24.253 | 24.256 | 24.259 | 24.262 | 24.265 | 24.268 | 24.271 |
| 822 | 24.274 | 24.277 | 24.280 | 24.282 | 24.285 | 24.288 | 24.291 | 24.294 | 24.297 | 24.300 |
| 823 | 24.303 | 24.306 | 24.209 | 24.312 | 24.315 | 24.318 | 24.321 | 24.324 | 24.327 | 24.330 |
| 824 | 24.333 | 24.336 | 24.339 | 24.342 | 24.344 | 24.347 | 24.350 | 24.353 | 24.356 | 24.359 |
| 825 | 24.362 | 24.365 | 24.368 | 24.371 | 24.374 | 24.377 | 24.380 | 24.383 | 24.386 | 24.389 |
| 826 | 24.392 | 24.395 | 24.398 | 24.401 | 24.404 | 24.406 | 24.409 | 24.412 | 24.415 | 24.418 |
| 827 | 24.421 | 24.424 | 24.427 | 24.430 | 24.433 | 24.436 | 24.439 | 24.442 | 24.445 | 24.488 |
| 828 | 24.451 | 24.454 | 24.457 | 24.460 | 24.463 | 24.466 | 24.468 | 24.471 | 24.474 | 24.477 |
| 829 | 24.480 | 24.483 | 24.486 | 24.489 | 24.492 | 24.495 | 24.498 | 24.501 | 24.504 | 24.407 |
| 830 | 24.510 | 24.513 | 24.516 | 24.519 | 24.522 | 24.525 | 24.528 | 24.531 | 24.533 | 24.536 |
| 831 | 24.539 | 24.542 | 24.545 | 24.548 | 24.551 | 24.553 | 24.557 | 24.560 | 24.563 | 24.566 |
| 832 | 24.569 | 24.572 | 24.575 | 24.578 | 24.581 | 24.584 | 24.587 | 24.590 | 24.593 | 24.595 |
| 833 | 24.598 | 24.601 | 24.604 | 24.607 | 24.610 | 24.613 | 24.616 | 24.619 | 24.622 | 24.625 |
| 834 | 24.628 | 24.631 | 24.634 | 24.637 | 24.640 | 24.643 | 24.646 | 24.649 | 24.652 | 24.655 |
| 835 | 24.657 | 24.660 | 24.663 | 24.666 | 24.669 | 24.672 | 24.675 | 24.678 | 24.681 | 24.684 |
| 836 | 24.687 | 24.690 | 24.693 | 24.696 | 24.699 | 24.702 | 24.705 | 24.708 | 24.711 | 24.714 |
| 837 | 24.717 | 24.720 | 24.722 | 24.725 | 24.728 | 24.731 | 24.734 | 24.737 | 24.740 | 24.743 |
| 838 | 24.746 | 24.749 | 24.752 | 24.755 | 24.758 | 24.761 | 24.764 | 24.767 | 24.770 | 24.773 |
| 839 | 24.776 | 24.779 | 24.782 | 24.784 | 24.787 | 24.790 | 24.793 | 24.796 | 24.799 | 24.802 |
| 840 | 24.805 | 24.808 | 24.811 | 24.814 | 24.817 | 24.820 | 24.823 | 24.826 | 24.829 | 24.832 |
| 841 | 24.835 | 24.838 | 24.841 | 24.844 | 24.846 | 24.849 | 24.852 | 24.855 | 24.858 | 24.861 |
| 842 | 24.864 | 24.867 | 24.870 | 24.873 | 24.876 | 24.879 | 24.882 | 24.885 | 24.888 | 24.891 |
| 843 | 24.894 | 24.897 | 24.900 | 24.903 | 24.906 | 24.908 | 24.911 | 24.914 | 24.917 | 24.920 |
| 844 | 24.923 | 24.926 | 24.929 | 24.932 | 24.935 | 24.938 | 24.941 | 24.944 | 24.947 | 24.950 |
| 845 | 24.953 | 24.956 | 24.959 | 24.962 | 24.965 | 24.968 | 24.971 | 24.973 | 24.976 | 24.979 |
| 846 | 24.982 | 24.985 | 24.988 | 24.991 | 24.994 | 24.997 | 25.000 | 25.003 | 25.006 | 25.009 |
| 847 | 25.012 | 25.015 | 25.018 | 25.021 | 25.024 | 25.027 | 25.030 | 25.033 | 25.035 | 25.038 |
| 848 | 25.041 | 25.044 | 25.047 | 25.050 | 25.053 | 25.056 | 25.059 | 25.062 | 25.065 | 25.068 |
| 849 | 25.071 | 25.074 | 25.077 | 25.080 | 25.083 | 25.086 | 25.089 | 25.092 | 25.095 | 25.097 |
| 850 | 25.100 | 25.103 | 25.106 | 25.109 | 25.112 | 25.115 | 25.118 | 25.121 | 25.124 | 25.127 |
| 851 | 25.130 | 25.133 | 25.136 | 25.139 | 25.142 | 25.145 | 25.148 | 25.151 | 25.154 | 25.157 |
| 852 | 25.159 | 25.162 | 25.165 | 25.168 | 25.171 | 25.174 | 25.177 | 25.180 | 25.183 | 25.186 |
| 853 | 25.189 | 25.192 | 25.195 | 25.198 | 25.201 | 25.204 | 25.207 | 25.210 | 25.213 | 25.216 |
| 854 | 25.219 | 25.222 | 25.224 | 25.227 | 25.230 | 25.233 | 25.236 | 25.239 | 25.242 | 25.245 |
| 855 | 25.248 | 25.251 | 25.254 | 25.257 | 25.260 | 25.263 | 25.266 | 25.269 | 25.272 | 25.275 |

Table IV (cont'd)

MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 856 | 25.278 | 25.281 | 25.284 | 25.286 | 25.289 | 25.292 | 25.295 | 25.298 | 25.301 | 25.304 |
| 857 | 25.307 | 25.310 | 25.313 | 25.316 | 25.319 | 25.322 | 25.325 | 25.328 | 25.331 | 25.334 |
| 858 | 25.337 | 25.340 | 25.343 | 25.346 | 25.348 | 25.351 | 25.354 | 25.357 | 25.360 | 25.363 |
| 859 | 25.366 | 25.369 | 25.372 | 25.375 | 25.378 | 25.381 | 25.384 | 25.387 | 25.390 | 25.393 |
| 860 | 25.396 | 25.399 | 25.402 | 25.405 | 25.408 | 25.411 | 25.413 | 25.416 | 25.419 | 25.422 |
| 861 | 25.425 | 25.428 | 25.431 | 25.434 | 25.437 | 25.440 | 25.443 | 25.446 | 25.449 | 25.452 |
| 862 | 25.455 | 25.458 | 25.461 | 25.464 | 25.467 | 25.470 | 25.474 | 25.475 | 25.478 | 25.481 |
| 863 | 25.484 | 25.487 | 25.490 | 25.493 | 25.496 | 25.499 | 25.502 | 25.505 | 25.508 | 25.511 |
| 864 | 25.514 | 25.517 | 25.520 | 25.523 | 25.526 | 25.529 | 25.532 | 25.535 | 25.537 | 25.540 |
| 865 | 25.543 | 25.546 | 25.549 | 25.552 | 25.555 | 25.558 | 25.561 | 25.564 | 25.567 | 25.570 |
| 866 | 25.573 | 25.576 | 25.579 | 25.582 | 25.585 | 25.588 | 25.591 | 25.594 | 25.597 | 25.599 |
| 867 | 25.602 | 25.605 | 25.608 | 25.611 | 25.614 | 25.617 | 25.620 | 25.623 | 25.626 | 25.629 |
| 868 | 25.362 | 25.635 | 25.638 | 25.641 | 25.644 | 25.647 | 25.650 | 25.653 | 25.656 | 25.659 |
| 869 | 25.662 | 25.664 | 25.667 | 25.670 | 25.673 | 25.676 | 25.679 | 25.682 | 25.685 | 25.688 |
| 870 | 25.691 | 25.694 | 25.697 | 25.700 | 25.703 | 25.706 | 25.709 | 25.712 | 25.715 | 25.718 |
| 871 | 25.721 | 25.724 | 25.726 | 25.729 | 25.732 | 25.735 | 25.738 | 25.741 | 25.744 | 25.747 |
| 872 | 25.750 | 25.753 | 25.756 | 25.759 | 25.762 | 25.765 | 25.768 | 25.771 | 25.774 | 25.777 |
| 873 | 25.780 | 25.783 | 25.786 | 25.788 | 25.791 | 25.794 | 25.797 | 25.800 | 25.803 | 25.806 |
| 874 | 25.809 | 25.812 | 25.815 | 25.818 | 25.821 | 25.824 | 25.827 | 25.830 | 25.833 | 25.836 |
| 875 | 25.839 | 25.842 | 25.845 | 25.848 | 25.850 | 25.853 | 25.856 | 25.859 | 25.862 | 25.865 |
| 876 | 25.868 | 25.871 | 25.874 | 25.877 | 25.880 | 25.883 | 25.886 | 25.889 | 25.892 | 25.895 |
| 877 | 25.898 | 25.901 | 25.904 | 25.907 | 25.910 | 25.913 | 25.915 | 25.918 | 25.921 | 25.924 |
| 878 | 25.927 | 25.930 | 25.933 | 25.936 | 25.939 | 25.942 | 25.945 | 25.948 | 25.951 | 25.954 |
| 879 | 25.957 | 25.960 | 25.963 | 25.966 | 25.969 | 25.972 | 25.975 | 25.977 | 25.980 | 25.983 |
| 880 | 25.986 | 25.989 | 25.992 | 25.995 | 25.998 | 26.001 | 26.004 | 26.007 | 26.010 | 26.013 |
| 881 | 26.016 | 26.019 | 26.022 | 26.025 | 26.028 | 26.031 | 26.034 | 26.037 | 26.039 | 26.042 |
| 882 | 26.045 | 26.048 | 26.051 | 26.054 | 26.057 | 26.060 | 26.063 | 26.066 | 26.069 | 26.072 |
| 883 | 26.075 | 26.078 | 26.081 | 26.084 | 26.087 | 26.090 | 26.093 | 26.096 | 26.099 | 26.102 |
| 884 | 26.104 | 26.107 | 26.110 | 26.113 | 26.116 | 26.119 | 26.122 | 26.125 | 26.128 | 26.131 |
| 885 | 26.134 | 26.137 | 26.140 | 26.143 | 26.146 | 26.149 | 26.152 | 26.155 | 26.158 | 26.161 |
| 886 | 26.164 | 26.166 | 26.169 | 26.172 | 26.175 | 26.178 | 26.181 | 26.184 | 26.187 | 26.190 |
| 887 | 26.193 | 26.196 | 26.199 | 26.202 | 26.205 | 26.208 | 26.211 | 26.214 | 26.217 | 26.220 |
| 888 | 26.223 | 26.226 | 26.228 | 26.231 | 26.234 | 26.237 | 26.240 | 26.243 | 26.246 | 26.249 |
| 889 | 26.252 | 26.255 | 26.258 | 26.261 | 26.264 | 26.267 | 26.270 | 26.273 | 26.276 | 26.279 |
| 890 | 26.282 | 26.285 | 26.288 | 26.290 | 26.293 | 26.296 | 26.299 | 26.302 | 26.305 | 26.308 |

## Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 891 | 26.311 | 26.314 | 26.317 | 26.320 | 26.323 | 26.326 | 26.329 | 26.332 | 26.335 | 26.338 |
| 892 | 26.341 | 26.344 | 26.347 | 26.350 | 26.353 | 26.355 | 26.358 | 26.361 | 26.364 | 26.367 |
| 893 | 26.370 | 26.373 | 26.376 | 26.379 | 26.382 | 26.385 | 26.388 | 26.391 | 26.394 | 26.397 |
| 894 | 26.400 | 26.403 | 26.406 | 26.409 | 26.412 | 26.415 | 26.417 | 26.420 | 26.423 | 26.426 |
| 895 | 26.429 | 26.432 | 26.435 | 26.438 | 26.441 | 26.444 | 26.447 | 26.450 | 26.453 | 26.456 |
| 896 | 26.459 | 26.462 | 26.465 | 26.468 | 26.471 | 26.474 | 26.477 | 26.479 | 26.482 | 26.485 |
| 897 | 26.488 | 26.491 | 26.494 | 26.497 | 26.500 | 26.503 | 26.506 | 26.509 | 26.512 | 26.515 |
| 898 | 26.518 | 26.521 | 26.524 | 26.527 | 26.530 | 26.533 | 26.536 | 26.539 | 26.541 | 26.544 |
| 899 | 26.547 | 26.550 | 26.553 | 26.556 | 26.559 | 26.562 | 26.565 | 26.568 | 26.571 | 26.574 |
| 900 | 26.577 | 26.580 | 26.583 | 26.586 | 26.589 | 26.592 | 26.595 | 26.598 | 26.601 | 26.604 |
| 901 | 26.606 | 26.609 | 26.612 | 26.615 | 26.618 | 26.621 | 26.624 | 26.627 | 26.630 | 26.633 |
| 902 | 26.636 | 26.639 | 26.642 | 26.645 | 26.648 | 26.651 | 26.654 | 26.657 | 26.660 | 26.663 |
| 903 | 26.666 | 26.668 | 26.671 | 26.674 | 26.677 | 26.680 | 26.683 | 26.686 | 26.689 | 26.692 |
| 904 | 26.695 | 26.698 | 26.701 | 26.704 | 26.707 | 26.710 | 26.713 | 26.716 | 26.719 | 26.722 |
| 905 | 26.725 | 26.728 | 26.730 | 26.733 | 26.736 | 26.739 | 26.742 | 26.745 | 26.748 | 26.751 |
| 906 | 26.754 | 26.757 | 26.760 | 26.763 | 26.766 | 26.769 | 26.772 | 26.775 | 26.778 | 26.781 |
| 907 | 26.784 | 26.787 | 26.790 | 26.793 | 26.795 | 26.798 | 26.801 | 26.804 | 26.807 | 26.810 |
| 908 | 26.813 | 26.816 | 26.819 | 26.822 | 26.825 | 26.828 | 26.831 | 26.834 | 26.837 | 26.840 |
| 909 | 26.843 | 26.846 | 26.849 | 26.852 | 26.855 | 26.857 | 26.860 | 26.863 | 26.866 | 26.869 |
| 910 | 26.872 | 26.875 | 26.878 | 26.881 | 26.884 | 26.887 | 26.890 | 26.893 | 26.896 | 26.899 |
| 911 | 26.902 | 26.905 | 26.908 | 26.911 | 26.914 | 26.917 | 26.919 | 26.922 | 26.925 | 26.928 |
| 912 | 26.931 | 26.934 | 26.937 | 26.940 | 26.943 | 26.946 | 26.949 | 26.952 | 26.955 | 26.958 |
| 913 | 26.961 | 26.964 | 26.967 | 26.970 | 26.973 | 26.976 | 26.979 | 26.981 | 26.984 | 26.987 |
| 914 | 26.990 | 26.993 | 26.996 | 26.999 | 27.002 | 27.005 | 27.008 | 27.011 | 27.014 | 27.017 |
| 915 | 27.020 | 27.023 | 27.026 | 27.029 | 27.032 | 27.035 | 27.038 | 27.041 | 27.044 | 27.046 |
| 916 | 27.049 | 27.052 | 27.055 | 27.058 | 27.061 | 27.064 | 27.067 | 27.070 | 27.073 | 27.076 |
| 917 | 27.079 | 27.082 | 27.085 | 27.088 | 27.091 | 27.094 | 27.097 | 27.100 | 27.103 | 27.106 |
| 918 | 27.108 | 27.111 | 27.114 | 27.117 | 27.120 | 27.123 | 27.126 | 27.129 | 27.132 | 27.135 |
| 919 | 27.138 | 27.141 | 27.144 | 27.147 | 27.150 | 27.153 | 27.156 | 27.159 | 27.162 | 27.165 |
| 920 | 27.168 | 27.170 | 27.173 | 27.176 | 27.179 | 27.182 | 27.185 | 27.188 | 27.191 | 27.194 |
| 921 | 27.197 | 27.200 | 27.203 | 27.206 | 27.209 | 27.212 | 27.215 | 27.218 | 27.221 | 27.224 |
| 922 | 27.227 | 27.230 | 27.232 | 27.235 | 27.238 | 27.241 | 27.244 | 27.247 | 27.250 | 27.253 |
| 923 | 27.256 | 27.259 | 27.262 | 27.265 | 27.268 | 27.271 | 27.274 | 27.277 | 27.280 | 27.283 |
| 924 | 27.286 | 27.289 | 27.292 | 27.295 | 27.297 | 27.300 | 27.303 | 27.306 | 27.309 | 27.312 |
| 925 | 27.315 | 27.318 | 27.321 | 27.324 | 27.327 | 27.330 | 27.333 | 27.336 | 27.339 | 27.342 |

Table IV (cont'd)

MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 926 | 27.345 | 27.348 | 27.351 | 27.354 | 27.357 | 27.359 | 27.362 | 27.365 | 27.368 | 27.371 |
| 927 | 27.374 | 27.377 | 27.380 | 27.383 | 27.386 | 27.389 | 27.392 | 27.395 | 27.398 | 27.401 |
| 928 | 27.404 | 27.407 | 27.410 | 27.413 | 27.416 | 27.419 | 27.421 | 27.424 | 27.427 | 27.430 |
| 929 | 27.433 | 27.436 | 27.439 | 27.442 | 27.445 | 27.448 | 27.451 | 27.454 | 27.457 | 27.460 |
| 930 | 27.463 | 27.466 | 27.469 | 27.472 | 27.475 | 27.478 | 27.481 | 27.484 | 27.486 | 27.489 |
| 931 | 27.492 | 27.495 | 27.498 | 27.501 | 27.504 | 27.507 | 27.510 | 27.513 | 27.516 | 27.519 |
| 932 | 27.522 | 27.525 | 27.528 | 27.531 | 27.534 | 27.537 | 27.540 | 27.543 | 27.546 | 27.548 |
| 933 | 27.551 | 27.554 | 27.557 | 27.560 | 27.563 | 27.566 | 27.569 | 27.572 | 27.575 | 27.578 |
| 934 | 27.581 | 27.584 | 27.587 | 27.590 | 27.593 | 27.596 | 27.599 | 27.602 | 27.605 | 27.608 |
| 935 | 27.610 | 27.613 | 27.616 | 27.619 | 27.622 | 27.625 | 27.628 | 27.631 | 27.634 | 27.637 |
| 936 | 2.640 | 27.643 | 27.646 | 27.649 | 27.652 | 27.655 | 27.658 | 27.661 | 27.664 | 27.667 |
| 937 | 27.670 | 27.672 | 27.675 | 27.678 | 27.681 | 27.684 | 27.687 | 27.690 | 27.693 | 27.696 |
| 938 | 27.699 | 27.702 | 27.705 | 27.708 | 27.711 | 27.714 | 27.717 | 27.720 | 27.723 | 27.726 |
| 939 | 27.729 | 27.732 | 27.735 | 27.737 | 27.740 | 27.743 | 27.746 | 27.749 | 27.752 | 27.755 |
| 940 | 27.758 | 27.761 | 27.764 | 27.767 | 27.770 | 27.773 | 27.776 | 27.779 | 27.782 | 27.785 |
| 941 | 27.788 | 27.791 | 27.794 | 27.797 | 27.799 | 27.802 | 27.805 | 27.808 | 27.811 | 27.814 |
| 942 | 27.817 | 27.820 | 27.823 | 27.826 | 27.829 | 27.832 | 27.835 | 27.838 | 27.841 | 27.844 |
| 943 | 27.847 | 27.850 | 27.853 | 27.856 | 27.859 | 27.861 | 27.864 | 27.867 | 27.870 | 27.873 |
| 944 | 27.876 | 27.879 | 27.882 | 27.885 | 27.888 | 27.891 | 27.894 | 27.897 | 27.900 | 27.903 |
| 945 | 27.906 | 27.909 | 27.912 | 27.915 | 27.918 | 27.921 | 27.923 | 27.926 | 27.929 | 27.932 |
| 946 | 27.935 | 27.938 | 27.941 | 27.944 | 27.947 | 27.950 | 27.953 | 27.956 | 27.959 | 27.962 |
| 947 | 27.965 | 27.968 | 27.971 | 27.974 | 27.977 | 27.980 | 27.983 | 27.986 | 27.988 | 27.991 |
| 948 | 27.994 | 27.997 | 28.000 | 28.003 | 28.006 | 28.009 | 28.012 | 28.015 | 28.018 | 28.021 |
| 949 | 28.024 | 28.027 | 28.030 | 28.033 | 28.036 | 28.039 | 28.042 | 28.045 | 28.048 | 28.050 |
| 950 | 28.053 | 28.056 | 28.059 | 28.062 | 28.065 | 28.068 | 28.071 | 28.074 | 28.077 | 28.080 |
| 951 | 28.083 | 28.086 | 28.089 | 28.092 | 28.095 | 28.098 | 28.101 | 28.104 | 28.107 | 18.110 |
| 952 | 28.112 | 28.115 | 28.118 | 28.121 | 28.124 | 28.127 | 28.130 | 28.133 | 28.136 | 28.139 |
| 953 | 28.142 | 28.145 | 28.148 | 28.151 | 28.154 | 28.157 | 28.160 | 28.163 | 28.166 | 28.169 |
| 954 | 27.172 | 28.175 | 28.177 | 28.180 | 28.183 | 28.186 | 28.189 | 28.192 | 28.195 | 28.198 |
| 955 | 28.201 | 28.204 | 28.207 | 28.210 | 28.213 | 28.216 | 28.219 | 28.222 | 28.225 | 28.228 |
| 956 | 28.231 | 28.234 | 28.237 | 28.239 | 28.242 | 28.245 | 28.248 | 28.251 | 28.254 | 28.257 |
| 957 | 28.260 | 28.263 | 28.266 | 28.269 | 28.272 | 28.275 | 28.278 | 28.281 | 28.284 | 28.287 |
| 958 | 28.290 | 28.293 | 28.296 | 28.299 | 28.301 | 28.304 | 28.307 | 28.310 | 28.313 | 28.316 |
| 959 | 28.319 | 28.322 | 28.325 | 28.328 | 28.331 | 28.334 | 28.337 | 28.340 | 28.343 | 28.346 |
| 960 | 28.349 | 28.352 | 28.355 | 28.358 | 28.361 | 28.363 | 28.366 | 28.369 | 28.372 | 28.375 |
| 961 | 28.378 | 28.381 | 28.384 | 28.387 | 28.390 | 28.393 | 28.396 | 28.399 | 28.402 | 28.405 |

Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 962 | 28.408 | 28.411 | 28.414 | 28.417 | 28.420 | 28.423 | 28.426 | 28.428 | 28.431 | 28.434 |
| 963 | 28.437 | 28.440 | 28.443 | 28.446 | 28.449 | 28.452 | 28.455 | 28.458 | 28.461 | 28.464 |
| 964 | 28.467 | 28.470 | 28.473 | 28.476 | 28.479 | 28.482 | 28.485 | 28.488 | 28.490 | 28.493 |
| 965 | 28.496 | 28.499 | 28.502 | 28.505 | 28.508 | 28.511 | 28.514 | 28.517 | 28.520 | 28.523 |
| 966 | 28.526 | 28.529 | 28.532 | 28.535 | 28.538 | 28.541 | 28.544 | 28.547 | 28.550 | 28.553 |
| 967 | 28.555 | 28.558 | 28.561 | 28.564 | 28.567 | 28.570 | 28.573 | 28.576 | 28.579 | 28.582 |
| 968 | 28.585 | 28.588 | 28.591 | 28.594 | 28.597 | 28.600 | 28.603 | 28.606 | 28.609 | 28.612 |
| 969 | 28.615 | 28.617 | 28.620 | 28.623 | 28.626 | 28.629 | 28.632 | 28.635 | 28.638 | 28.641 |
| 970 | 28.644 | 28.647 | 28.650 | 28.653 | 28.656 | 28.659 | 28.662 | 28.665 | 28.668 | 28.671 |
| 971 | 28.674 | 28.677 | 28.679 | 28.682 | 28.685 | 28.688 | 28.691 | 28.694 | 28.697 | 28.700 |
| 972 | 28.703 | 28.706 | 28.709 | 28.712 | 28.715 | 28.718 | 28.721 | 28.724 | 28.727 | 28.730 |
| 973 | 28.733 | 28.736 | 28.739 | 28.741 | 28.744 | 28.747 | 28.750 | 28.753 | 28.756 | 28.759 |
| 974 | 28.762 | 28.765 | 28.768 | 28.771 | 28.774 | 28.777 | 28.780 | 28.783 | 28.786 | 28.789 |
| 975 | 28.792 | 28.795 | 28.798 | 28.801 | 28.803 | 28.806 | 28.809 | 28.812 | 28.815 | 28.818 |
| 976 | 28.821 | 28.824 | 28.827 | 28.830 | 28.833 | 28.836 | 28.839 | 28.842 | 28.845 | 28.848 |
| 977 | 28.851 | 28.854 | 28.857 | 28.860 | 28.863 | 28.866 | 28.868 | 28.871 | 28.874 | 28.877 |
| 978 | 28.880 | 28.883 | 28.886 | 28.889 | 28.892 | 28.895 | 28.898 | 28.901 | 28.904 | 28.907 |
| 979 | 28.910 | 28.913 | 28.916 | 28.919 | 28.922 | 28.825 | 28.928 | 28.930 | 28.933 | 28.936 |
| 980 | 28.939 | 28.942 | 28.945 | 28.948 | 28.951 | 28.954 | 28.957 | 28.960 | 28.963 | 28.966 |
| 981 | 28.969 | 28.972 | 28.975 | 28.978 | 28.981 | 28.984 | 28.987 | 28.990 | 28.992 | 28.995 |
| 982 | 28.998 | 29.001 | 29.004 | 29.007 | 29.010 | 29.013 | 29.016 | 29.019 | 29.022 | 29.025 |
| 983 | 29.028 | 29.031 | 29.034 | 29.037 | 29.040 | 29.043 | 29.046 | 29.049 | 29.052 | 29.054 |
| 984 | 29.057 | 29.060 | 29.063 | 29.066 | 29.069 | 29.072 | 29.075 | 29.078 | 29.081 | 29.084 |
| 985 | 29.087 | 29.090 | 29.093 | 29.096 | 29.099 | 29.102 | 29.105 | 29.108 | 29.111 | 29.114 |
| 986 | 29.117 | 29.119 | 29.122 | 29.125 | 29.128 | 29.131 | 29.134 | 29.137 | 29.140 | 29.143 |
| 987 | 29.146 | 29.149 | 29.152 | 29.155 | 29.158 | 29.161 | 29.164 | 29.167 | 29.170 | 29.173 |
| 988 | 29.176 | 29.179 | 29.181 | 29.184 | 29.187 | 29.190 | 29.193 | 29.196 | 29.199 | 29.202 |
| 989 | 29.205 | 29.208 | 29.211 | 29.214 | 29.217 | 29.220 | 29.223 | 29.226 | 29.229 | 29.232 |
| 990 | 29.235 | 29.238 | 29.241 | 29.243 | 29.246 | 29.249 | 29.252 | 29.255 | 29.258 | 29.261 |
| 991 | 29.264 | 29.267 | 29.270 | 29.273 | 29.276 | 29.279 | 29.282 | 29.285 | 29.288 | 29.291 |
| 992 | 29.294 | 29.297 | 29.300 | 29.303 | 29.306 | 29.308 | 29.311 | 29.314 | 29.317 | 29.320 |
| 993 | 29.323 | 29.326 | 29.329 | 29.332 | 29.335 | 29.338 | 29.341 | 29.344 | 29.347 | 29.350 |
| 994 | 29.353 | 29.356 | 29.359 | 29.362 | 29.365 | 29.368 | 29.370 | 29.373 | 29.376 | 29.379 |
| 995 | 29.382 | 29.385 | 29.388 | 29.391 | 29.394 | 29.397 | 29.400 | 29.403 | 29.406 | 29.409 |
| 996 | 29.412 | 29.415 | 29.418 | 29.421 | 29.424 | 29.427 | 29.430 | 29.432 | 29.435 | 29.438 |

Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 997 | 29.441 | 29.444 | 29.447 | 29.450 | 29.453 | 29.456 | 29.459 | 29.462 | 29.465 | 29.468 |
| 998 | 29.471 | 29.474 | 29.477 | 29.480 | 29.483 | 29.486 | 29.489 | 29.492 | 29.494 | 29.497 |
| 999 | 29.500 | 29.503 | 29.506 | 29.509 | 29.512 | 29.515 | 29.518 | 29.521 | 29.524 | 29.527 |
| 1000 | 29.530 | 29.533 | 29.536 | 29.539 | 29.542 | 29.545 | 29.548 | 29.551 | 29.554 | 29.557 |
| 1001 | 29.559 | 29.562 | 29.565 | 29.568 | 29.571 | 29.574 | 29.577 | 29.580 | 29.583 | 29.586 |
| 1002 | 29.589 | 29.592 | 29.595 | 29.598 | 29.601 | 29.604 | 29.607 | 29.610 | 29.613 | 29.616 |
| 1003 | 29.619 | 29.621 | 29.624 | 29.627 | 29.630 | 29.633 | 29.636 | 29.639 | 29.642 | 29.645 |
| 1004 | 29.648 | 29.651 | 29.654 | 29.657 | 29.660 | 29.663 | 29.666 | 29.669 | 29.672 | 29.675 |
| 1005 | 29.678 | 29.681 | 29.683 | 29.686 | 29.689 | 29.692 | 29.695 | 29.698 | 29.701 | 29.704 |
| 1006 | 29.707 | 29.710 | 29.713 | 29.716 | 29.719 | 29.722 | 29.725 | 29.728 | 29.731 | 29.734 |
| 1007 | 29.737 | 29.740 | 29.743 | 29.745 | 29.748 | 29.751 | 29.754 | 29.757 | 29.760 | 29.763 |
| 1008 | 29.766 | 29.769 | 29.772 | 29.775 | 29.778 | 29.781 | 29.784 | 29.787 | 29.790 | 29.793 |
| 1009 | 29.796 | 29.799 | 29.802 | 29.805 | 29.808 | 29.810 | 29.813 | 29.816 | 29.819 | 29.822 |
| 1010 | 29.825 | 29.828 | 29.831 | 29.834 | 29.837 | 29.840 | 29.843 | 29.846 | 29.849 | 29.852 |
| 1011 | 29.855 | 29.858 | 29.861 | 29.864 | 29.867 | 29.870 | 29.872 | 29.875 | 29.878 | 29.881 |
| 1012 | 29.884 | 29.887 | 29.890 | 29.893 | 29.896 | 29.899 | 29.902 | 29.905 | 29.908 | 29.911 |
| 1013 | 29.914 | 29.917 | 29.920 | 29.923 | 29.926 | 29.929 | 29.932 | 29.934 | 29.937 | 29.940 |
| 1014 | 29.943 | 29.946 | 29.949 | 29.952 | 29.955 | 29.958 | 29.961 | 29.964 | 29.967 | 29.970 |
| 1015 | 29.973 | 29.976 | 29.979 | 29.982 | 29.985 | 29.988 | 29.991 | 29.994 | 29.997 | 29.999 |
| 1016 | 30.002 | 30.005 | 30.008 | 30.011 | 30.014 | 30.017 | 30.020 | 30.023 | 30.026 | 30.029 |
| 1017 | 30.032 | 30.035 | 30.038 | 30.041 | 30.044 | 30.047 | 30.050 | 30.052 | 30.056 | 30.059 |
| 1018 | 30.061 | 30.064 | 30.067 | 30.070 | 30.073 | 30.076 | 30.079 | 30.083 | 30.085 | 30.088 |
| 1019 | 30.091 | 30.094 | 30.097 | 30.100 | 30.103 | 30.106 | 30.109 | 30.112 | 30.115 | 30.118 |
| 1020 | 30.121 | 30.123 | 30.126 | 30.129 | 30.132 | 30.135 | 30.138 | 30.141 | 30.144 | 30.147 |
| 1021 | 30.150 | 30.153 | 30.156 | 30.159 | 30.162 | 30.165 | 30.168 | 30.171 | 30.174 | 30.177 |
| 1022 | 30.180 | 30.183 | 30.185 | 30.188 | 30.191 | 30.194 | 30.197 | 30.200 | 30.203 | 30.206 |
| 1023 | 30.209 | 30.212 | 30.215 | 30.218 | 30.221 | 30.224 | 30.227 | 30.230 | 30.233 | 30.236 |
| 1024 | 30.239 | 30.242 | 30.245 | 30.248 | 30.250 | 30.253 | 30.256 | 30.259 | 30.262 | 30.265 |
| 1025 | 30.268 | 30.271 | 30.274 | 30.277 | 30.280 | 30.283 | 30.286 | 30.289 | 30.292 | 30.295 |
| 1026 | 30.298 | 30.301 | 30.304 | 30.307 | 30.310 | 30.312 | 30.315 | 30.318 | 30.321 | 30.324 |
| 1027 | 30.327 | 30.330 | 30.333 | 30.336 | 30.339 | 30.342 | 30.345 | 30.348 | 30.351 | 30.354 |
| 1028 | 30.357 | 30.360 | 30.365 | 30.366 | 30.369 | 30.372 | 30.374 | 30.377 | 30.380 | 30.383 |
| 1029 | 30.386 | 30.389 | 30.392 | 30.395 | 30.398 | 30.401 | 30.404 | 30.407 | 30.410 | 30.413 |
| 1030 | 30.416 | 30.419 | 30.422 | 30.425 | 30.428 | 30.431 | 30.434 | 30.436 | 30.439 | 30.442 |
| 1031 | 30.445 | 30.448 | 30.451 | 30.454 | 30.457 | 30.460 | 30.463 | 30.466 | 30.469 | 30.472 |

Table IV (cont'd)

## MILLIBARS INTO INCHES OF MERCURY

1 mb = .029529928 inch

| Mb. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1032 | 30.475 | 30.478 | 40.481 | 30.484 | 30.487 | 30.490 | 30.493 | 30.496 | 30.499 | 30.501 |
| 1033 | 30.504 | 30.507 | 30.510 | 30.513 | 30.516 | 30.519 | 30.522 | 30.525 | 30.528 | 30.531 |
| 1034 | 30.534 | 30.537 | 30.540 | 30.543 | 30.546 | 30.549 | 30.552 | 30.555 | 30.558 | 30.561 |
| 1035 | 30.563 | 30.566 | 30.569 | 30.572 | 30.575 | 30.578 | 30.581 | 30.584 | 30.587 | 30.590 |
| 1036 | 30.593 | 30.596 | 30.599 | 30.602 | 30.605 | 30.608 | 30.611 | 30.614 | 30.617 | 30.620 |
| 1037 | 30.623 | 30.625 | 30.628 | 30.631 | 30.634 | 30.637 | 30.640 | 30.643 | 30.646 | 30.649 |
| 1038 | 30.652 | 30.655 | 30.658 | 30.661 | 30.664 | 30.667 | 30.670 | 30.673 | 30.676 | 30.679 |
| 1039 | 30.682 | 30.685 | 30.688 | 30.690 | 30.693 | 30.696 | 30.699 | 30.702 | 30.705 | 30.708 |
| 1040 | 30.711 | 30.714 | 30.717 | 30.720 | 30.723 | 30.726 | 30.729 | 30.732 | 30.735 | 30.738 |
| 1041 | 30.741 | 30.744 | 30.747 | 30.750 | 30.752 | 30.755 | 30.758 | 30.761 | 30.764 | 30.767 |
| 1042 | 30.770 | 30.773 | 30.776 | 30.779 | 30.782 | 30.785 | 30.788 | 30.791 | 30.794 | 30.797 |
| 1043 | 30.800 | 30.803 | 30.806 | 30.809 | 30.812 | 30.814 | 30.817 | 30.820 | 30.823 | 30.826 |
| 1044 | 30.829 | 30.832 | 30.835 | 30.838 | 30.841 | 30.844 | 30.847 | 30.850 | 30.853 | 30.856 |
| 1045 | 30.859 | 30.862 | 30.865 | 30.868 | 30.871 | 30.874 | 30.876 | 30.879 | 30.882 | 30.885 |
| 1046 | 30.888 | 30.891 | 30.894 | 30.897 | 30.900 | 30.903 | 30.906 | 30.909 | 30.912 | 30.915 |
| 1047 | 30.918 | 30.921 | 30.924 | 30.927 | 30.930 | 30.933 | 30.936 | 30.939 | 30.941 | 30.944 |
| 1048 | 30.947 | 30.950 | 30.953 | 30.956 | 30.959 | 30.962 | 30.965 | 30.968 | 30.971 | 30.974 |
| 1049 | 30.977 | 30.980 | 30.983 | 30.986 | 30.989 | 30.992 | 30.995 | 30.998 | 31.001 | 31.003 |
| 1050 | 31.006 | 31.009 | 31.012 | 31.015 | 31.018 | 31.021 | 31.024 | 31.027 | 31.030 | 31.033 |
| 1051 | 31.036 | 31.039 | 31.042 | 31.045 | 31.048 | 31.051 | 31.054 | 31.057 | 31.060 | 31.063 |
| 1052 | 31.065 | 31.068 | 31.071 | 31.074 | 31.077 | 31.080 | 31.083 | 31.086 | 31.089 | 31.092 |
| 1053 | 31.095 | 31.098 | 31.101 | 31.104 | 31.107 | 31.110 | 31.113 | 31.116 | 31.119 | 31.122 |
| 1054 | 31.125 | 31.127 | 31.130 | 31.133 | 31.136 | 31.139 | 31.142 | 31.145 | 31.148 | 31.151 |
| 1055 | 31.154 | 31.157 | 31.160 | 31.163 | 31.166 | 31.169 | 31.172 | 31.175 | 31.178 | 31.181 |
| 1056 | 31.184 | 31.187 | 31.190 | 31.192 | 31.195 | 31.198 | 31.201 | 31.204 | 31.207 | 31.210 |
| 1057 | 31.213 | 31.216 | 31.219 | 31.222 | 31.225 | 31.228 | 31.231 | 31.234 | 31.237 | 31.240 |
| 1058 | 31.243 | 31.246 | 31.249 | 31.252 | 31.254 | 31.257 | 31.260 | 31.263 | 31.266 | 31.269 |
| 1059 | 31.272 | 31.275 | 31.278 | 31.281 | 31.284 | 31.287 | 31.290 | 31.293 | 31.296 | 31.299 |
| 1060 | 31.302 | 31.305 | 31.308 | 31.311 | 31.314 | 31.316 | 31.319 | 31.322 | 31.325 | 31.328 |



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