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 8 November 1978
 SUPERSEDING
 MIL-B-17896B(SHIPS)
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 (See 6.5)

MILITARY SPECIFICATION

BAROMETER, ANEROID

This specification is approved for use by the Naval Sea Systems Command and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers aneroid barometers for Marine use to measure atmospheric air pressure by means of an evacuated metal cell or cells. Design and construction shall be determined by the contractor, subject to the structural requirements specified herein.

1.2 Classification. Barometers shall be of the following types, as specified (see 6.2.1).

Type I - Normal range.	} (see 3.4.5.4)
Type II - High range.	

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

SPECIFICATIONS

FEDERAL

QQ-A-596 - Aluminum Alloy Permanent and Semipermanent Mold Castings.
 PPP-B-636 - Boxes, Shipping, Fiberboard.
 PPP-B-640 - Boxes, Fiberboard Corrugated, Triple-Wall.
 PPP-C-795 - Cushioning Material, Flexible, Cellular, Plastic Film For Packaging Application.
 PPP-C-843 - Cushioning Material, Cellulosic.

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MIL-P-116 - Preservation-Packaging, Methods of.
 MIL-S-901 - Shock Tests, HI (High-Impact), Shipboard Machinery, Equipment and Systems; Requirements for.
 MIL-G-3787 - Glass, Laminated Flat, (Except Aircraft).
 MIL-E-15090 - Enamel, Equipment, Light-Gray (Formula No. 111).
 MIL-E-16400 - Electronic, Interior Communication and Navigation Equipment, Naval Ship and Shore: General Specification for.

STANDARDS

MILITARY

MIL-STD-105 - Sampling Procedure and Tables for Inspections by Attributes.
 MIL-STD-129 - Marking for Shipment and Storage.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Ship Engineering Center, SEC 6124, Department of the Navy, Washington, DC 20362 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

NATIONAL BUREAU OF STANDARDS

Handbook H28 - Screw-Thread Standards for Federal Services.

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

UNIFORM CLASSIFICATION COMMITTEE

Uniform Freight Classification Rules and Regulations.

(Application for copies should be addressed to the Uniform Classification Committee, Agent, G.F. Earl, Tariff Publication Officer, Room 1106, 222 South Riverside Plaza, Chicago, Illinois 60606.)

NATIONAL CLASSIFICATION BOARD

National Motor Freight Classification Classes and Rules.

(Application for copies should be addressed to the ATA Tariff Section, 1616 P Street, N.W., Washington, DC 20036.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Sample for first article inspection. Prior to beginning production a sample shall be subjected to the examination of 4.5 and tested as specified in 4.3 (see 6.4).

3.2 General. The barometer shall consist essentially of a case, crystal, dial, set hand, index hand, and movement; a bezel ring and reflector or spacer ring may be used. The barometer shall be furnished complete, tested, calibrated, and ready for service.

3.3 Material. Metal parts used in the barometer shall be of a suitable corrosive-resisting materials or other materials treated in a manner to render them adequately resistant to corrosion when tested in accordance with 4.6.6. Dissimilar metals shall not be used in direct contact when corrosion which may cause electrolytic action will result. Aluminum alloy parts shall be anodized.

3.3.1 Case. The case shall be made of a commercial spun, drawn, or cast brass or bronze, or shall be an aluminum-alloy die casting in accordance with QQ-A-596, alloy numbers 43, 356, or 613.

3.3.2 Bezel ring. The bezel ring, if used, shall be of the same material as the case.

3.3.3 Dial. The dial shall be of metal.

3.3.4 Reflector or spacer ring. The reflector or spacer ring, if used, shall be of formed, drawn, or spun metal with white enamel finish or with the same finish as the dial.

3.3.5 Crystal. The crystal shall be glass in accordance with MIL-G-3787, class I, type 1.

3.3.6 Index hand. The index hand shall be of rigid metal construction with black lacquer finish.

3.3.7 Set hand. The set hand shall be of brass, clear lacquered.

3.4 Construction.

3.4.1 General. The barometer shall be so constructed that no parts are likely to work loose in service. The strains, impacts, shocks, vibrations, and such other conditions incident to usual shipping, storage, installation, and service at sea shall not affect its serviceability or accuracy. The construction shall be such as to withstand the service conditions specified in 3.5.

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3.4.2 Screws. All screws, nuts, and threaded parts shall conform to Handbook H28, except where a definite need for a special thread can be demonstrated to exist. Fasteners shall be adequately secured with lock washers, elastic stop nuts, or similar devices to prevent loosening when subjected to vibrations.

3.4.3 Case.

3.4.3.1 The case shall be circular in shape and shall have an inside depth of not less than 2 inches nor more than 4 inches. It shall have a diameter (as measured across the free aperture of the crystal) of 4-3/4 inches + 3/8 inch. A circular mounting flange shall be a part of the case. The flange shall be secured to the case by brazing or silver soldering. The flange shall be sturdily made and shall not exceed 7 inches in diameter. Three mounting holes with rubber bushing inserts having 3/16 inch inside diameter shall be spaced at uniform distances around the flange. They shall be so located that the barometer can be readily mounted on a wall or similar support without the use of special tools. Special tools are defined as those tools not listed in the National Supply Catalog (copies of this catalog may be consulted in the office of the Defense Contract Administration Service Management Area (DCASMA)). The top hole shall be on the vertical centerline in line with the 30.0 inch mark. A zero adjusting screw shall be provided for setting the index hand. The adjusting screw shall be accessible through an opening in the case; the opening shall be labeled "Regulator". The opening shall provide for the passage of air to the movement and shall be protected by a fine-mesh screen insert which shall be readily removable for access to the zero adjusting screw.

3.4.3.2 Movement assembly shall be removed easily for purposes of adjustment and calibration.

3.4.3.3 The exterior of the brass or bronze case shall be brush finished and protected by a transparent lacquer or plastic coating. Aluminum die cast cases shall be anodized and finish painted in accordance with class 2 of MIL-E-15090.

3.4.4 Bezel ring. The bezel ring, if used, shall have a polished or brush finish and a protective coating or the same finish and protective coating, as the case. It shall be sufficiently thick to be rigid. The bezel ring shall be attached to the case by threads or other means adequate to insure a tight fit. The bezel ring shall hold the crystal snugly in the case. The bezel ring shall allow removal of the crystal and barometer mechanism.

3.4.5 Dial.

3.4.5.1 The dial shall have a dull white or silver white matte finish. Lettering, numerals, and graduations, shall be engraved, deep-etched or stamped into the surface and shall be filled with a durable black enamel.

3.4.5.2 Means shall be provided to prevent the dial from shifting its position with respect to the index hand or case. The dial shall be removed without the use of special tools.

3.4.5.3 During ordinary use the dial shall not discolor, warp, or otherwise change so as to interfere with the operation, calibration or reading of the instrument.

3.4.5.4 Graduations.

3.4.5.4.1 For type I barometer, two sets of graduations shall be provided on two concentric scales, an outer scale graduated in inches of mercury and an inner scale graduated in millibars. The graduations of the inch scale shall extend 360 degrees on the dial ranging from 26.5 to 31.5 inches. The graduations shall be divided in two hundredths with tenths and inches accentuated and identified. The millibar scale shall range from 900 to 1060 millibars and shall be graduated in millibars with fives and tens accentuated and tens identified (990, 1000, 1010). The indications of the millibar scale shall be equivalent to the corresponding values of the inch scale throughout the range of the millibar scale.

3.4.5.4.2 For type II barometer, the graduations on a scale shall be in inches of mercury extending 360 degrees on the dial ranging from 28 to 38 inches. The graduations shall be divided into tenths with tenths and inches accentuated and identified.

3.4.5.5 Dial lettering shall be as specified in 3.8.1.

3.4.5.6 Dial markings shall be clear and legible and designed for ease and accuracy of reading.

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3.4.6 Reflector or spacer ring. The reflector or spacer ring, if used, shall fit or be held snugly.

3.4.7 Crystal. The crystal shall show no defects which will interfere with the assembly or operation of the barometer. A hole shall be provided in the center of the crystal for the reception of the set hand knob assembly. The crystal shall be held snugly.

3.4.8 Hands.

3.4.8.1 Index hand. The index hand shall be straight, balanced and centered with relation to the dial and dial graduations. The method of attachment shall be such that the index hand can be easily removed yet will not be accidentally loosened or shifted in position by vibration or jarring. The end of the pointer shall extend more than half way over the smallest graduation on the outer scale but not beyond the longest graduation on the outer scale. The breadth of the hand at the end near the graduations shall be such as to facilitate accurate readings.

3.4.8.2 Set hand. The set hand shall be of the same general width as the index hand and shall be mounted on the inner side of the crystal concentric with the index hand. The assembly shall be moisture and dust resistant and shall eliminate movement of the hand by vibration under service conditions specified in 3.5 and when tested in accordance with 4.6.10.

3.4.9 Movement.

3.4.9.1 The aneroid movement shall consist of an evacuated metal cell or cells which are sensitive to variations in atmospheric pressure. The cell or cells shall be connected with the index hand by the necessary series of levers, sector racks, pinions, pivots or linkage chains in such a manner that variations in atmospheric pressure shall be transmitted to the index hand from the cells.

3.4.9.2 The entire movement shall be balanced to withstand the test of 4.6.8.1.

3.4.9.3 Mechanical stops shall be provided to keep the cell or cells from damage when subjected to a half inch of mercury pressure over the upper range and a half inch of mercury pressure below the lowest range of the barometer.

3.4.10 The aneroid movement shall be mounted on a frame or base plate which can be attached to the case and removed in accordance with 3.4.3.

3.5 Service conditions. The barometer shall operate under any of the following service conditions, when tested in accordance with 4.6.2 through 4.6.7.

- (a) Temperature compensation.
- (b) Shock.
- (c) Vibration.
- (d) Salt spray.

3.6 Accuracy and calibration. The accuracy and calibration of the barometers shall be such as to withstand the examination and tests specified in 4.6.9 through 4.6.12.

3.7 Drift. The barometer shall be guaranteed to withstand ageing effects for a period of one year; and recalibration at the end of the first 6 months shall agree with the original calibration within 0.05 inch at any point on the scales. The change in calibration for the second 6 months period shall not exceed 0.03 inch due to the ageing process.

3.8 Marking.

3.8.1 Dial. The following shall be imbedded above the center of the dial, so located as to identify the scale to which it applies:

INCHES OF MERCURY
MILLIBARS

The following shall be imbedded below the center of the dial:

U.S. GOVERNMENT

3.8.1.1 The letters shall be of such size as to be easily readable and neat in appearance.

3.8.2 Case. The following information, in clear legible gothic characters shall be molded or embedded on the case or placed on an identification plate which shall be attached to the case:

BAROMETER, ANEROID, TYPE
NAVY DEPT.. NAVSEASYSKOM
MANUFACTURER
MANUFACTURER TYPE NO.
(optional)
CONTRACT NO.
NATIONAL STOCK NUMBER
YEAR OF MANUFACTURER
U.S.A.

3.8.2.1 The identification plate shall be of such material and construction as to identify the barometer through its useful service life and shall be marked as follows:

CAUTION

THE INTENDED USE OF BAROMETERS MAKE IT MANDATORY THAT MATERIAL FURNISHED SHALL CONTAIN NO METALLIC MERCURY AND SHALL BE FREE FROM MERCURY CONTAMINATION.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements, as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

- (a) First article inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).

4.3 First article inspection and tests. First article inspection shall be conducted on three barometers and shall consists of the tests shown in table I. Shock, and vibration tests shall be conducted after completion of all other tests.

4.3.1 First article inspection report. Unless otherwise specified (see 6.2.1), a first article inspection report shall be furnished in accordance with the data ordering document included in the contract or order (see 6.2.2).

TABLE I. First article inspection.

Inspection	Requirement paragraph	Inspection paragraph
Examination, Material	3.3	4.6.7
Examination, Visual and Mechanical	----	4.5
Protection, Over/Under Pressure	3.4.9.3	4.6.1
Temperature Compensation		
Ambient	3.5	4.6.2
Low and High	3.5	4.6.3
Shock	3.5	4.6.4
Vibration	3.5	4.6.5
Salt Spray	3.5	4.6.6
Test Conditions	----	4.6.8
Accuracy-Ambient Temperature Error	3.6	4.6.9
Accuracy-Test Point Error	3.6	4.6.10
Hysteresis	3.6	4.6.11
Friction	3.6	4.6.12

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4.4 Quality conformance inspection. Quality conformance inspection shall consist of a visual and mechanical examination of 4.5 and tests specified in 4.6.1, 4.6.9, and 4.6.10.

4.4.1 Sampling for quality conformance inspection.

4.4.1.1 Lot. For purposes of examination and tests, a lot shall consist of all barometers of the same type offered for delivery at one time.

4.4.1.2 Sampling for visual and mechanical examination. A random sample of barometers shall be selected from each lot in accordance with inspection level II of MIL-STD-105 for the examination specified in 4.5. The AQL (Acceptable Quality Level) shall be 1.5 percent defective.

4.4.1.3 Sampling for tests. A random sample of barometers shall be selected from each lot in accordance with inspection level S2 of MIL-STD-105 for the tests specified in 4.4. The AQL shall be 1.5 percent defective.

4.5 Visual and mechanical examination. Each of the barometers selected in accordance with 4.4.1.2 shall be visually and dimensionally examined to verify compliance with the requirements of this specification not involving tests.

4.6 Tests.

4.6.1 Protection against over pressure and under pressure. At room temperature the test pressure shall be applied in the sequence shown in table II. Each pressure indicated in table II shall be compared with a calibrated precision type aneroid barometer or mercurial barometer accurate within 0.005 inch. The test points at which data is taken shall have the same pressure valve for increasing and decreasing pressure within 0.04 inch of the calibrated barometer during any one test cycle. The rate of pressure change between test points shall be not greater than one inch per minute. This test shall not be interpolated in the test specified in 4.6.9.

TABLE II. Test procedure.

	Under pressure test (one hour)	Increase pressure and hold for 5 to 15 minutes at approximately pressure shown	Over pressure test (one hour)	Decrease pressure and hold for 5 to 15 minutes at approximately pressure shown
Type I	$24 \begin{smallmatrix} + 0 \\ - 1/2 \end{smallmatrix}$	27, 29, 31	$34 \begin{smallmatrix} + 1/2 \\ - 0 \end{smallmatrix}$	31, 29, 27
Type II	$28 \begin{smallmatrix} + 0 \\ - 1/2 \end{smallmatrix}$	31, 33, 35	$38 \begin{smallmatrix} + 1/2 \\ - 0 \end{smallmatrix}$	35, 33, 31

4.6.2 Temperature compensation. At any constant pressure within the range of the dial, a change in temperature from $80^{\circ}\text{F} \pm 2^{\circ}\text{F}$ to $40^{\circ}\text{F} \pm 2^{\circ}\text{F}$ or vice versa shall not cause a change in indication greater than 0.04 inch. In making this test the barometer shall be held at each temperature for at least one hour before reading is taken.

4.6.3 Temperature compensation at low and high temperature. At any constant pressure in the range 29.4 through 30.6 inches the sample barometer shall be subjected to a temperature of 0°F and the change of indication from the indication at room temperature noted. The temperature shall then be raised to 115°F and the change in indication from the indication at room temperature noted. The sample barometer shall be held at each temperature for at least one hour before readings are taken during this period the temperature shall not vary more than 5°F . The change of indication from the indication at room temperature shall not be greater than 0.04 inch.

4.6.4 High-impact shock test. Barometer shall be shock tested to meet the high-impact grade B shock test in accordance with MIL-S-901.

4.6.5 Vibration tests. The sample shall be subjected to the tests specified in 4.6.5.1 through 4.6.5.4. The barometer shall be clamped in a vertical or horizontal normal mounting position on a vibrating table that can be controlled within 10 percent of the specified frequencies and amplitudes. The vibration table shall be designed to provide approximately sinusoidal vibration at all specified frequencies and amplitudes.

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4.6.5.1 Direction of vibrations. The barometers shall be vibrated successively over the specified ranges of applied frequencies in three mutually perpendicular directions; two directions of vibration shall lie in the plane of the barometer.

4.6.5.2 Rate of change of vibration frequencies. The frequency of applied vibration shall be varied uniformly at a rate of approximately 1 Hertz (Hz) per minute.

4.6.5.3 Amplitude of applied vibration. The amplitude (1/2 total excursion) of the vibration table shall be in accordance with table III.

TABLE III. Amplitude-frequency conditions.

Frequency of vibration	Amplitude	
	Horizontal	Vertical
Hz	Inch	Inch
2 to 10	0.060	0.060
10 to 33	.030	.030

4.6.5.4 Ninety-minute test. The equipment shall be vibrated for at least 30 minutes in each of three directions specified in 4.6.5.1 (total of at least 90 minutes). The range of the applied frequencies shall be from 2 through 33 Hz. Shock mounts shall not be blocked or removed. After this test is completed the barometers shall again be subjected, without resetting, to the tests specified in 4.6.8 through 4.6.12.2.

4.6.6 Salt spray tests.

4.6.6.1 At least two sample aneroid barometers shall be subjected to the salt spray tests of MIL-E-16400.

4.6.6.2 The barometers, which have been tested in accordance with 4.6.6.1, shall be tested in accordance with 4.6.7, 4.6.8, and 4.6.10 through 4.6.12.2.

4.6.7 Examination of materials.

4.6.7.1 The external and internal structure of the barometers which have been tested in accordance with 4.6.6 shall be examined to determine evidence of corrosion.

4.6.7.2 The external and internal structure of the barometers which have been tested in accordance with 4.6.6 shall be examined for evidence of material which if attacked by fungi may lead to instrument failure under service conditions.

4.6.8 General conditions for tests. Except where otherwise specified in the contract or order, the instrument shall be tested in an upright vertical wall mounting position and shall be lightly tapped or vibrated before each test reading is taken. Vertical shall be considered as the position in which the instrument shall be mounted normally against a vertical plane with the 30.0 inch mark approximately at the highest point of the scales. Whenever atmospheric pressure or pressure variations is indicated in inches in this specification it shall be construed as pressure or variation in inches of mercury.

4.6.8.1 The indication of atmospheric pressure at time of test shall be read while the barometer is in a vertical position. The barometer shall be rotated successively into positions 45 degrees forward and 45 degrees backwards from vertical and 45 degrees left and 45 degrees right from vertical and the indication read in each position. The difference in indication in any of these positions shall be not greater than 0.04 inch from the indication when the instrument is vertical.

4.6.9 Calibration error at room temperature.

4.6.9.1 Room temperature may be considered to be any temperature between 65°F and 80°F. During this test, the temperature shall not change more than 5°F from the temperature at the start of the test. The barometer shall have been at room temperature for at least one hour before this test is begun and shall not have been subjected to pressure variation in excess of 1 inch for a period of at least 15 hours preceding the test. The sample barometer shall be compared with a calibrated mercurial barometer accurate within 0.005 inch or with a calibrated high precision type aneroid standard barometer accurate within 0.005 inch throughout the range over which tests are made. If the precision aneroid is used it shall be care-

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fully checked against an accurate calibrated mercurial standard throughout the range over which it is to be used before any tests are made. In comparing barometers, the indication of the sample shall be compared with the indication of the standard as corrected by any errors shown in calibration.

4.6.9.2 The pressure shall first be reduced from current atmospheric pressure to the lowest design pressure (26.5 inches for type I and 28 inches for type II), then increased to the highest design pressure (31.5 inches for the type I and 38 inches for the type II) and finally reduced to current atmospheric pressure. Test data of barometer readings shall be taken at both increasing and decreasing pressures. The rate of pressure change between test points shall be not greater than one inch per minute.

4.6.9.3 The pressure shall be held approximately constant for at least 5 minutes but not more than 15 minutes before test data are taken. At least five test points shall be taken. Test points shall be taken at approximately one inch intervals. Test points at which data is taken shall have the same pressure value for both increasing and decreasing pressure within 0.04 inch in any one test cycle. The indication of the test standard barometer shall be determined to the nearest 0.003 inch and corrected for errors shown in calibration. When tested in this manner, the calibration error shall not exceed values specified in table IV.

TABLE IV. Calibration error tolerances.

Indicated reading	Error in inches mercury (+)
26.5 - 26.9	0.040
26.9 - 27.4	.035
27.4 - 27.9	.035
27.9 - 28.4	.030
28.4 - 28.9	.030
28.9 - 29.4	.025
29.4 - 30.4	.025
30.4 - 30.9	.030
30.9 - 31.5	.035
31.5 - 34.0	.040
34.0 - 36.0	.040
36.0 - 38.0	.040

4.6.10 Change in scale or calibration error between test points. The scale or calibration errors shall not change in magnitude by more than 4 percent of the pressure change between any two test points as specified in 4.6.9.

4.6.11 Hysteresis. Differences in readings at the same pressure between data at decreasing and increasing pressures (see 4.6.9) shall not exceed 0.04 inch.

4.6.12 Friction.

4.6.12.1 If pressure is increased or decreased and is then brought to a constant value without reversing direction while the instrument under test is free from vibration, light tapping or vibration of the barometer shall not produce a change in indication greater than 0.03 inch. This test may be combined with that specified in 4.6.9.

4.6.12.2 Movement of the index hand shall be free of backlash, hanging, or irregular motion when the pressure is varied uniformly. This test may be combined with that of 4.6.9.

4.7 Inspection of preparation for delivery. Sample packages and packs and the inspection of the preservation-packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

5. PREPARATION FOR DELIVERY

(The preparation for delivery requirements specified herein apply only for direct Government acquisition. For the extent of applicability of the preparation for delivery requirements of referenced documents listed in section 2, see 6.4.)

5.1 Preservation and packaging. Preservation and packaging shall be level A or C, as specified (see 6.2.1).

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5.1.1 Level A. Barometers shall be individually protected and packaged to meet the requirements of MIL-P-116, method III, and the following:

- (a) Each barometer shall be wrapped with cushioning material conforming to type II of PPP-C-843 or PPP-C-795. The wrapped unit shall be placed in a RSC style fiberboard box conforming to PPP-B-636. The box shall have an inner fiberboard shell and fiberboard spring pads placed on the bottom and top of the barometer within the box. Box closure shall conform to method I of the appendix to the box specification utilizing pressure sensitive tapes. Box closure shall be in accordance with the appendix to the box specification.

5.1.2 Level C. Barometers shall be individually protected against deterioration and physical damage during shipment from the supply source to the first receiving activity for immediate use. The contractors normal packaging methods may be utilized when such meet the requirements of this level.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2.1).

5.2.1 Level A. Barometers packaged as specified, shall be packed in a fiberboard box conforming to PPP-B-636, class-weather resistant, grade V or PPP-B-640, class 2 with variety and style at the contractors option. Boxes shall be closed, waterproofed and reinforced with tape or non-metallic banding as specified in the appendix to the applicable specification with method V closure applicable to PPP-B-636 boxes. Box reinforcement shall be by use of nonmetallic or tape banding. All box seams, corners and the manufacturer's joint shall be waterproofed in accordance with the appendix to the box specification.

5.2.2 Level B. Barometers, packaged as specified, shall be packed in a fiberboard box conforming to PPP-B-636, class domestic minimum 350 grade or PPP-B-640, class 1 with variety and style at the contractors option. Box closure shall be as specified in the appendix to the box specification with method I closure applicable to PPP-B-636 boxes using pressure sensitive tape.

5.2.3 Level C. Barometers, packaged as specified, shall be packed in containers acceptable to the common carrier which will insure safe delivery at destination in a satisfactory condition at the lowest applicable rate. Containers, packing or method of shipment shall comply with Uniform Freight or National Motor Freight Classification Rules or Regulations or other carrier rules as applicable to the mode of transportation.

5.3 Marking. In addition to any special marking requirements, interior and exterior shipping containers shall be marked in accordance with MIL-STD-129, and shipping containers shall be marked "Delicate Instruments - Handle With Great Care" and with the "Fragile" label.)

5.4 Cushioning, dunnage and wrapping materials.

5.4.1 Level A preservation-packaging and levels A and B packing. Use of all types of loose-fill materials for packaging and packing applications such as cushioning, filler or dunnage is prohibited for materials destined for shipboard installation/stowage.

5.4.2 Level C preservation-packaging and packing. When loose-fill type materials are used for packaging and packing applications such as cushioning, filler and dunnage, all containers (unit, intermediate and shipping) shall be marked or labelled with the following information.

"CAUTION

Contents cushioned etc. with loose-fill material.

Not to be taken aboard ship.

Remove and discard loose-fill material before shipboard storage.

If required, recushion with cellulosic material bound fiber, fiberboard or transparent flexible cellular material."

5.4.3 Cushioning, filler, dunnage and wrapping materials selected, whenever available, shall exhibit improved performance for resistance to fire.

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6. NOTES

6.1 Intended use. The intended use for aneroid barometers of this specification are as follows:

- Type I - To measure atmospheric air pressure.
- Type II - To measure the atmosphere in pressure controlled areas such as submarines or boiler rooms.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Types required (see 1.2).
- (c) When first article report is required (see 4.3.1).
- (d) Levels of preservation, packaging and packing (see 5.1 and 5.2).

6.2.2 Data requirements. When this specification is used in a contract which invokes the provision of the "Requirements for Data" of the Defense Acquisition Regulation (DAR), the data identified below, which are required to be developed by the contractor, as specified on an approved Data Item Description (DD Form 1664), and which are required to be delivered to the Government, should be selected and specified on the approved Contract Data Requirement List (DD Form 1423) and incorporated in the contract. When the provisions of the "Requirements for Data" of the DAR are not invoked in a contract, the data required to be developed by the contractor and required to be delivered to the Government should be selected from the list below and specified in the contract.

<u>Paragraph</u>	<u>Data requirements</u>	<u>Applicable DID</u>	<u>Option</u>
4.3.1	Report, First Article Inspection	UDI-T-23450	--

(Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.)

6.2.2.1 The data requirements of 6.2.2 and any task in section 3, 4, or 5 of the specification required to be performed to meet a data requirement may be waived by the contract/acquisition activity upon certification by the offeror that identical data were submitted by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.3 First article inspection. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection as to those bidders offering a product which has been previously procured or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.4 Sub-contracted material and parts. The preparation for delivery requirements of referenced documents listed in section 2 do not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.5 Changes from previous issue. The symbol "#" is not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Preparing activity:
Navy - SH
(Project 6685-N618)