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PERFORMANCE SPECIFICATION

FILTER-SEPARATORS, FLUID, PRESSURE, AVIATION AND DISTILLATE FUEL, NAVAL SHIPBOARD

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

1. SCOPE

1.1 Scope. This specification covers filter-separator assemblies for use in shipboard fuel systems. The filter-separator assembly described in this specification is intended for use onboard Naval ships to remove solids and water from fuel systems. These filter-separator assemblies are used with JP-5 fuel for aircraft, Naval Distillate or JP-5 for propulsion and auxiliary power gas turbines, Naval Distillate or JP-5 for diesel engines, and other miscellaneous internal combustion engines.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are called out in sections 3 and 4 of this specification. Documents recommended for additional information, or documents used as examples, are not included in this section. Users of this performance specification are cautioned that they must meet all specified requirements of documents called out in sections 3 and 4, whether or not they are listed in this section.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, ATTN:SEA 05Q, 1333 Isaac Hull Avenue SE Stop 5160, Washington Navy Yard, DC 20376-5160 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A FSC 4330

2.2 Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

SPECIFICATIONS

MIL-S-901	Shockproof Equipment, Class HI (High-Impact), Shipboard Application, Tests for
MIL-DTL-5624	Turbine Fuel, Aviation, Grades JP-4, JP-5, and JP-5/JP-8 ST
MIL-F-16884	Fuel, Naval Distillate
MIL-F-20042	Flanges, Pipe and Bulkhead, Bronze (Silver Brazing)

STANDARDS

MIL-STD-167-1	Mechanical Vibrations of Shipboard Equipment (Type I - Environmental and Type II - Internally excited)

QPL

QPL-15618	Filter-Separators, Fluid, Pressure, Aviation and Distillate Fuel, Naval Shipboard

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Documents Order Desk, 700 Robbins Avenue, Bldg 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI B16.5	-	Pipe Flanges and Flanged Fittings.

(Application for copies should be addressed to the American National Standards Institute, 11 West 42nd Street, New York, NY 10036.)

AMERICAN PETROLEUM INSTITUTE (API)

API 1581	-	Specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators.

(Application for copies should be addressed to the American Petroleum Institute, 1220 L Street, Northwest, Washington, DC 20005.)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

Boiler Construction Code for Unfired Pressure Vessels

(Application for copies should be addressed to the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated specifications, specification sheets or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 General. The filter-separator assembly shall conform to API 1581 4th edition unless otherwise indicated by this specification. The filter-separator shall utilize elements qualified to API 1581 4th edition and listed on QPL 15618.

3.2 First article. When specified (see 6.2), the filter-separator assembly shall be subjected to first article inspection in accordance with 4.1.1.

3.3 Materials. Materials used in the fabrication of the filter-separator assembly shall be in accordance with API 1581 4th edition except that copper-nickel alloys are allowed for replacement of existing units in copper-nickel piping systems. Purchaser shall specify material required in ordering data (see 6.2).

3.3.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided the material meets or exceeds all specified requirements and promotes economically advantageous life cycle costs.

3.3.2 Gaskets. Gasket material shall be compatible with the fuel types listed in 3.6.2. Gasket material for pressure boundary joints shall be as fire resistant as possible.

3.4 Performance requirements.

3.4.1 Working pressure and flow rate. The filter-separator assembly maximum allowable working pressure and flow rate shall be specified by purchaser (see 6.2).

3.4.2 Hydrostatic test. The filter-separator assembly shall meet the hydrostatic test requirements of API 1581 4th edition.

3.4.3 Effluent fuel. The filter-separator assembly shall meet the effluent fuel requirements specified in API 1581 4th edition.

3.4.4 Solids holding capacity. The filter-separator assembly shall meet the solids holding capacity requirements for Type S two stage filter-separators specified in API 1581 4th edition.

3.5 Physical requirements.

3.5.1 Size and weight. Unless otherwise specified (see 6.2), The size and weight of the filter-separator assembly shall be the minimum consistent with good design to meet the specified flow capacity and all other requirements of this specification.

3.5.2 Air eliminator. When specified (see 6.2), An air eliminator meeting the requirements of API 1581 4th edition shall be provided. The air eliminator shall be removable for maintenance.

3.5.3 Water-slug shutoff. The filter-separator assembly shall be provided with a means of automatically stopping fuel discharge from the vessel when water in the sump exceeds the capacity of the drain system. The device shall automatically revert to normal operation of the filter-separator during release of and after water is drained. The water-slug shutoff shall be designed to secure filter-separator effluent upon failure of the automatic device. A means of periodically testing the water-slug shutoff feature (without adding water) shall be provided. Testing shall not require removal or disassembly of any pressure boundary components.

3.5.4 Manual sump drain. A manually operated drain shall be installed at the low point of the filter-separator sump. The sump shall be fitted with an anti-vortex device to inhibit discharge of fuel with the water.

3.5.5 Automatic sump drain (optional). When specified (see 6.2), an automatic drain shall be installed in the sump drain line to automatically drain water during normal filter-separator operation. The automatic sump drain shall be designed to secure drain line flow upon failure of the automatic device. A means of isolation shall be provided upstream of the automatic drain device to permit maintenance. A visual flow indicator shall be provided downstream of the automatic drain device and shall be removable for maintenance.

3.5.6 Sampling connections. Sample connections shall be provided at the filter-separator inlet, outlet, and sump to permit taking of fuel samples under flow conditions.

3.5.7 Level indication. A level indicating device shall be provided for observing water accumulation in the sump. The range of indication shall extend as close as possible to or below the bottom of the sump and shall provide indication of the cleavage line between the fuel and water. A means of isolation and draining shall be provided.

3.5.8 Pressure indication. Pressure indicating devices shall be provided for observing the filter-separator inlet and outlet pressures. A differential pressure gage shall be installed with an audible alarm to alert operator when pressure has reached prescribed limits across each stage of filtration, and display the pressure drop across each stage. A means of isolation shall be provided for maintenance of gages.

3.5.9 Accessibility and location. All components requiring manual operation or periodic maintenance shall be easily accessible. Indicators shall be located within view of components requiring operation.

3.5.10 Fabrication. The filter-separator assembly shall be fabricated in accordance with ASME Boiler Construction Code for Unfired Pressure Vessels. Pipe thread connections shall not be used. Silver braze and solder joints shall not be used. Permanent joints shall be welded. Mechanical joints required for disassembly shall be flanged (2 in. NPS and larger) or union (below 2 in. NPS).

3.6 Interface requirements.

3.6.1 Inlet and outlet connections. Filter-separator assemblies shall have horizontal, flanged inlet and outlet connections in accordance with table I. Inlet and outlet connections shall be permanently marked. End connection size shall be specified by the purchaser (see 6.2).

TABLE I. Inlet and outlet connections.

Material	Applicable document for dimensional details
Nonferrous	MIL-F-20042
Carbon or stainless steel	ASME/ANSI B16.5

3.6.2 Fuel types. The filter-separator assembly shall meet the requirements of this specification when operated with the following fuels:

Type	NATO code no.	Specification
JP-5	F-44	MIL-DTL-5624
Naval Distillate	F-76	MIL-F-16884

3.6.3 Element spacing. Element spacing shall meet the requirements of API 1581 4th edition.

3.6.4 Element mounting. Element mounts shall be installed such that removal and installation of elements does not cause mount to rotate or loosen and a tight seal to mounting plate is maintained. Element mounts shall have a blunted V-type knife edge for sealing to a flat gasket on the filter-coalescer or separator. The height of the V section shall be 0.125□ (3 mm) ±10 percent. Torque requirements for installation of elements shall be provided by the manufacturer. Element mounts shall be designed to withstand 150% of recommended assembly torque without permanent distortion, cracking, or failure.

3.7 Maintainability.

3.7.1 Access. Components that require regular maintenance or servicing shall be readily accessible and not require personnel to enter the filter-separator vessel. For very large filter-separator assemblies, this may unavoidable. If personnel entry is required, at least two equally spaced access openings shall be provided for safe personnel access and temporary ventilation. Filter-separators with access covers heavier than 50 pounds shall have an integral lifting device for removal.

3.7.2 Special tools. Special tools, if required for maintenance and servicing, shall be provided with the filter-separator assembly.

3.7.3 Case drainage. The filter design shall permit the casing to be completely drained of all fluids before servicing and maintenance.

3.8 Environmental requirements.

3.8.1 Shock. When first article inspection is required, the filter-separator assembly shall withstand shock testing (see 4.1.1).

3.8.2 Vibration. When first article inspection is required, the filter-separator assembly shall withstand vibration testing (see 4.1.1).

3.8.3 Temperature variation. The filter-separator assembly shall meet the temperature variation requirements of API 1581 4th edition.

3.8.4 Materials. Filter-separator materials shall meet the environmental requirements of API 1581 4th edition.

3.9 Identification plate. Identification plates shall be provided and comply with the requirements of API 1581 4th edition. Identification plates shall be visible from the location where gages are normally viewed. The permanent identification plate shall also include the following information: MIL-PRF-15618, revision, amendment, and date.

4.0 VERIFICATION

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

4.1.1 First article inspection. When first article inspection is required (see 6.2), the filter-separator assembly shall undergo the tests and inspections outlined in table II.

4.1.2 Conformance inspection. Each filter-separator assembly shall be inspected for conformance according to the requirements specified in table II.

TABLE II. Inspection and test requirements.

Attribute	Requirement	Verification	First article	Conformance
INSPECTIONS				
Elements	3.1	4.2.1	X	X
Materials	3.3	4.2.1	X	X
Gaskets	3.3.2	4.2.1	X	X
Air eliminator	3.5.2	4.2.1	X	X
Water-slug shutoff	3.5.3	4.2.1	X	X
Manual sump drain	3.5.4	4.2.1	X	X
Automatic sump drain (if installed)	3.5.5	4.2.1	X	X
Sampling connection	3.5.6	4.2.1	X	X
Level indication	3.5.7	4.2.1	X	X
Pressure indication	3.5.8	4.2.1	X	X
Accessibility & location	3.5.9	4.2.1	X	X
Fabrication	3.5.10	4.2.1	X	X
Inlet and outlet connections	3.6.1	4.2.1	X	X
Element spacing	3.6.3	4.2.1	X	X
Element mounting	3.6.4	4.2.1	X	X
Access	3.7.1	4.2.1	X	X
Identification plate	3.9	4.2.1	X	X
TESTS				
Hydrostatic	3.4.2	4.2.2.1	X	X
Full scale	3.4.3 & 3.4.4	4.2.2.2	X	
Water defense system	3.5.3 & 3.5.5	4.2.2.3	X	
Shock	3.8.1	4.2.2.4	X	
Vibration	3.8.2	4.2.2.5	X	
Temperature variation	3.8.3	4.2.2.6	X	
Materials	3.8.4	4.2.2.7	X	

4.2 Inspections and tests.

4.2.1 Inspections. The filter-separator assembly, containing elements qualified to API 1581 4th edition and listed on QPL 15618, shall be examined

visually and checked dimensionally for conformance to drawings and the applicable requirements of section 3 of this specification.

4.2.2 Tests. The filter-separator assembly shall be subjected to the full-scale test method in accordance with API 1581 4th edition. The test facility shall be in accordance with API 1581 4th edition. The test fluid shall be in accordance with API 1581 4th edition, Category M fuel. The filter-separator assembly shall meet the requirements specified in API 1581 4th edition for type S, two stage filter-separators.

4.2.2.1 Hydrostatic. The filter-separator assembly shall be hydrostatically tested in accordance with API 1581 4th edition.

4.2.2.2 Full-scale test series. The full-scale test series consists of a media migration test, a 0.01% water coalescence test, a solids addition test, and a water addition-solids contaminated system test. The filter-separator assembly shall be tested in accordance with the procedures specified in API 1581 4th edition. The filter-separator shall meet the requirements for API 1581 4th edition Category M, Type S, two stage units.

4.2.2.3 Water defense system test. Verify proper operation of the water defense system consisting of the water-slug shutoff device and automatic sump drain (when equipped). Test shall be conducted by injecting water into the test fluid until the water-slug shutoff device and automatic sump drain (when equipped) demonstrate proper actuation.

4.2.2.4 Shock. The filter-separator assembly shall be shock tested while filled with fresh water or test fluid and with all elements and appurtenances installed. Where the filter-separator unit weight exceeds the capacity of the medium weight shock machine, critical components (such as elements and mounts) shall be tested utilizing the light weight shock machine. A cluster of at least four elements and mounts and a typical section of a mounting plate shall be used. Test of the filter shall be type A and test of the element and mount cluster shall be type B in accordance with MIL-S-901. After shock testing, filter-separator shall be inspected for damage and then hydrostatically tested per 4.2.2.1.

4.2.2.5 Vibration. The filter-separator assembly shall be vibration tested in accordance with MIL-STD-167-1 while filled with fresh water or test fluid and with all elements and appurtenances installed. After vibration testing, filter-separator shall be inspected for damage and then hydrostatically tested per 4.2.2.1.

4.2.2.6 Temperature variation. The filter-separator shall be certified by the manufacturer to meet the requirements of 3.8.3.

4.2.2.7 Materials. The filter-separator shall be certified by the manufacturer to meet the requirements of 3.8.4.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense

Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. The filter-separator assembly described in this specification is intended for use onboard Naval ships to remove solids and water from fuel systems. These filter-separator assemblies are used in JP-5 and Naval Distillate fuel systems for aircraft, propulsion and auxiliary power gas turbines, diesel engines, and other miscellaneous internal combustion engines. New ships being designed with stainless steel fuel systems will utilize stainless steel filter-separators. This specification is also applicable to existing ships with copper-nickel fuel systems. Therefore, the purchaser must ensure the filter-separator assembly ordered to this specification is compatible with system materials and requirements.

6.2 Acquisition requirements.

6.2.1 Acquisition documents for the filter-separator assembly must specify the following:

a. Title, number and date of this specification.
b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2 and 2.3).
c. Material (see 3.3).
d. Flow rate (see 3.4.1).
e. Maximum allowable working pressure (see 3.4.1).
f. Size and/or weight requirements (see 3.5.1).
g. Air eliminator required (see 3.5.2).
h. Automatic drain required (see 3.5.5).
i. End connections size (see 3.6.1).
j. First article inspection required (see 4.1.1).
k. Packaging (see 5.1).
l. Technical manuals and drawings (see 6.5).

6.3 Conformance inspection. Affordable conformance inspection with confidence varies depending upon a number of procurement risk factors. Some of these factors include contractor past performance, government schedule and budget, product material and design maturity, manufacturing capital investment and processes applied, the controlled uniformity of those processes, labor skill and training, and the uniformity of measuring processes and techniques. During the solicitation, contracting documents should indicate those tests desired from table II and their designated frequency based on risk assessment for the procurement.

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL-15618 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have products that they propose to offer the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Naval Sea Systems Command, SEA 05Q, 1333 Isaac Hull Avenue SE Stop 5160, Washington Navy Yard DC 20376-5160.

6.5 Technical manuals and drawings. The requirement for technical manuals and drawings should be considered when this specification is applied on a contract. If technical manuals and drawings are required, specifications and standards that have been cleared and listed in DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be listed on a separate Contract Data Requirements List (DD Form 1423), which is included as an exhibit to the contract. The technical manuals and drawings must be acquired under separate contract line item in the contract.

6.6 Definitions.

6.6.1 Filter-separator. A filter-separator is a vessel containing elements designed to continuously remove dirt and water from fuel to an acceptable level during fuel transfer or end user servicing.

6.6.2 Coalescer element. Coalescer elements form the first stage of filtration in a filter-separator and are designed to remove solids and to coalesce free or emulsified water in the fuel.

6.6.3 Separator element. Separator elements form the second stage in a filter-separator and are designed to repel or prevent coalesced water from being discharged with the fuel.

6.7 Subject term (key word) listing.

Separator
Coalescer
Filter
Fuel component
Water removal

6.8 Changes from previous issue. Marginal annotations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

APPENDIX A

FILTER-COALESCER AND SEPARATOR ELEMENTS

A.1 Scope. This appendix details the requirements for standardized filter-coalescer and separator elements and **is a mandatory part** of this specification.

A.2 Applicable documents. None.

A.3 REQUIREMENTS.

A.3.1 Qualification. Elements furnished under this specification shall be products that have met the qualification requirements of this specification and are authorized by the qualifying activity for listing on Qualified Products List (QPL)-15618 prior to contract award. Elements authorized for listing on QPL-15618 shall be qualified for a maximum period of five years from date of approval. When the 5 year qualification period has expired, manufacturer must requalify the element to the requirements of this specification or the element shall be deleted from QPL-15618. Manufacturer may request a waiver from QPL-15618 deletion by providing justification for requalification exemption. Requests shall be submitted to and reviewed by Naval Sea Systems Command. Element requalification is also required when any change or substitution is made to the materials or manufacture of the element. Elements shall be qualified at a government test facility similar to Naval Air Systems Command, NAS Patuxent River MD, Propulsion Systems Evaluation Facility, Fuels and Lubricants Division (AIR 4.4.5) or a commercial test facility acceptable to both the government and manufacturer. Manufacturer shall provide the government adequate notice to witness element qualification testing.

A.3.2 Performance requirements. Filter-coalescer and separator elements shall meet the performance requirements of API 1581 4th edition, Class M, for inclusion on QPL-15618.

A.3.3 Materials. Filter-coalescer and separator elements shall be manufactured from commercial type materials. Paper is prohibited for constructing separator elements.

A.3.4 Standardized elements. Filter-coalescer and separator elements shall be of the sizes and configurations defined in Table A-1.

A.3.5 Marking. Each element shall be permanently marked with the following information:

(a) Manufacturer name and part number.
(b) Contract or Order Number.
(c) Lot Number.
(d) Federal stock number.
(e) Date of manufacture.
(f) Direction of flow (inside/out, outside/in).

TABLE A-1 - Standardized Elements

Element type	Flow direction	Nominal length Inches (mm)	O. D. (maximum) Inches (mm)	I. D. (minimum) Inches (mm)	JP5 flow rating (minimum) GPM (LPM)	Distillate flow rating (minimum) GPM (LPM)
Filter-coalescer	In/out	24 (610)	3.75 (95)	1.33 (34)	21 (80)	7 (26)
Separator	Out/in	24 (610)	4.25 (108)	1.33 (34)	35 (133)	12 (45)
1/ Filter-coalescer	In/out	20 (508)	3.75 (95)	1.33 (34)	17.5 (66)	6 (23)
1/ Separator	Out/in	17.5 (445)	4.25 (108)	1.33 (34)	26 (99)	9 (34)
2/ Filter-coalescer	In/out	20 (508)	6.00 (152)	3.5 (8.9)	45.5 (172)	N/A
2/ Separator	Out/in	20 (508)	6.00 (152)	3.5 (8.9)	133 (503)	N/A

1/ For use in existing filter-separators only. Not to be used in procurements of complete filter-separators.
2/ Designed for use in CVN77 JP-5 system.

A.4 INSPECTIONS AND TESTS.

A.4.1 Single element testing and qualification. Elements qualified to this specification and eligible for listing on QPL-15618 shall meet the applicable requirements of API 1581 4th edition, Class M, Type S.

A.4.2 Conformance. Qualified elements procured to this specification shall meet the applicable conformance requirements of Table A-1.

A.4.3 Inspections. All elements shall be examined visually and checked dimensionally for conformance to drawings and the applicable requirements of Section A.2 of this specification. Additionally, the separator element screen shall be visually examined to assure that it is completely fused and uniform, free from mud-cracks, craters, pin holes, sags, runs, heavy edges, wrinkles, beads, tears, blisters, incomplete coverage, and other surface imperfections. Mud-cracks and pin holes which penetrate the coating thickness or any other discontinuity visible at 32X magnification shall be cause for rejection.

Custodian:
Navy - SH

Preparing Activity:
Navy - SH
Project No. 4330-0162

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7, and send to preparing activity.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-15618G	2. DOCUMENT DATE (YYYYMMDD) 20020107

3. DOCUMENT TITLE FILTER-SEPARATORS, FLUID, PRESSURE, AVIATION AND DISTILLATE FUEL, NAVAL SHIPBOARD

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON *(if applicable)*	**7.DATE SUBMITTED** (YYYYMMDD)

8. PREPARING ACTIVITY

a. NAME COMMANDER, NAVAL SEA SYSTEMS COMMAND	b. TELEPHONE *Include Area Code)* (1) Commercial (2) AUTOVON
c. ADDRESS *(Include Zip Code)* ATTN: SEA 05Q, 1333 ISAAC HULL AVE, STOP 5160 WASHINGTON NAVY YARD DC 20376-5160	**IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:** Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman road, Suite 2533 Ft. Belvoir, VA 22060-2533 Telephone (703) 767-6888 AUTOVON 427-6888