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INCH-POUND

MIL-PRF-17331H(SH)

AMENDMENT 3

20 March 1995

SUPERSEDING

AMENDMENT 2

31 December 1992

PERFORMANCE SPECIFICATION

LUBRICATING OIL, STEAM TURBINE AND GEAR, MODERATE SERVICE

This amendment forms a part of MIL-L-17331H(SH), dated 23 January 1984, and is approved 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.

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Add new paragraph 1.2:

"1.2 This specification specifically prohibits the addition of 2, 6-Di-*t*-butylphenol in any lubricating oil produced under the military symbol 2190 and NATO symbol 0-250, and applies to both surface ships and submarine use."

2.1.1: Delete and substitute:

"2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2)."

AMSC N/A

FSC 9150

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2.1.1, "STANDARDS, FEDERAL": Add the following:

"FED-STD-313 - Material Safety Data Sheets Preparation
and the Submission of"

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2.2 ASTM: Add the following:

"D-4057 - Manual Sampling of Petroleum and Petroleum
Products, Practice for.

D-4177 - Automatic Sampling of Petroleum and . .
Petroleum Product, Method for.

Delete the following:

* " D-270 - Sampling Petroleum and Petroleum Products.
(DoD Adopted)."

2.3: Delete and substitute:

"2.3 Order of precedence. In the event of a conflict
between the text of this document and the references cited herein
(except for related associated detail specifications,
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."

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* 3.1: Add as new paragraph:

"3.1 The use of any ozone depleting substance (ODS) in
the composition of the lubricating oil under this specification
directly or referenced in any federal test method is hereto
prohibited. Environmentally safe and non-ODS alternative
solvents may be substituted for any previously specified ODSs
such as 1,1,1-trichloroethane, trichlorofluoroethane, perchloro-
ethane or other chlorofluorocarbons (CFCs) (see 6.2)."

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3.2 Add: "If Tricresyl phosphate (TCP) is used as an antiwear additive, not be more than 1.0 percent of the additive shall be the ortho isomer. The antioxidant 2,6-Di-t-butylphenol (DTBP) shall not be intentionally added to the oil and the level of DTBP, if detected shall not exceed 10 ppm (see 4.3.1)."

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Table I, under "Foam characteristics": Delete "Tendency/Stability" and substitute "After blowing/after 10 minutes".

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3.8: Add as new paragraph:

"3.8 Toxicity. The lubricating oil shall have no adverse effect on the health of personnel when used for its intended purpose. The fluid shall contain no components which produce noxious vapors in such concentrations as to be an annoyance to personnel during formulation or normal use under the conditions of adequate ventilation while exercising caution to avoid prolonged contact with the skin and while observing Occupational Safety and Health Administration (OSHA) guidelines. Questions pertaining to the toxic effects shall be referred by the contracting activity to the Naval Medical Command (NAVMEDCOM), contracting activity."

3.8.1: Add as new paragraph:

"3.8.1 Materials safety data sheets. A material safety data sheet (MSDS) shall be furnished to the Naval Sea Systems Command, SEA 03R42, the activity responsible for the Qualified Products List, and to the contracting activity for each qualified product or each product submitted for qualification. The Naval Sea Systems Command and contracting activity shall also be provided a submission or contract award in accordance with FED-STD-313 for each solicitation or award."

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* 4.1: Add as new paragraph:

"4.1 In any of the test methods either the ASTM or the Federal methods, the use of any ozone depleting substance (ODS) is prohibited. A dehydrated mixture of primary alcohol such as ethanol or iso-propyl alcohol and non-aromatic hydrocarbon solvent resulting in a minimum flash point of 140°F plus adequate solvent action shall be used as an alternative for any ODS (see 6.2).

4.3.1: Add as new paragraph:

"4.3.1 Qualification test reports. A qualification test report and a MSDS shall be prepared and submitted to the qualifying activity in accordance with FED-STD-313 (see 6.3). Analytical data from a NAVSEA approved and certified laboratory shall be submitted to prove relative absence of 2,6-Di-*t*-butylphenol(DTBP), and if detected, DTBP shall not exceed 10 ppm."

4.4.2: Delete "ASTM D 270" and substitute
"ASTM D 4057".

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4.4.4.2: Delete "ASTM D 270" and substitute
"ASTM D 4177".

* 4.5 Delete and substitute:

"4.5 Each sample selected as specified in 4.4 shall be tested as specified in Table I. Performance tests, such as bearing compatibility, load carrying capacity, wear test, oxidation test, compatibility with other hydraulic oils and valve sticking tests will be required for lot size of 10,000 gallons bulk supply. For drum lots of 10,000 gallons or less, if the representative performance tests as above have been previously completed, testing for each sample will not be required. The above tests are not required, if within three years prior to shipment, the lubricant has been tested for all date requirement specified in Table I and NAVSEA approval has been recorded for QPL.

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* 4.5.1: Delete and substitute:

" 4.5.1. Rejection of lots. When the sample of lubricating oil fails any of the tests required this shall be a cause for rejection of the lot represented by the sample. The following sampling plan in Table shall apply for sampling for the examination of filled container:

* Add the following as "Table II":

" Table II. Examination of filled containers/ sample size requirement for different lot size.*

<u>LOT SIZE</u>	<u>SAMPLE SIZE</u>
2 to 5	5
51 to 90	7
91 to 150	11
151 to 280	13
281 to 500	16
501 to 1200	19
1201 to 3200	23
3201 to 10,000	29
10,001 to 35,000	35
35,001 to over	40

* BASED ON DLAM 8200.5 / OASD 4 Mar 1991."

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* 6.2: Delete and substitute:

"6.2 Acquisition requirements. Acquisition documents must specify the following:

- (a) Date of ordering and date of supply.
- (b) Title, number and date of this specification.
- (c) Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1).

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- (d) Type of oil, Type I:2190 TEP of Type II:2190 TSP-S
- (e) Type and size of the container required (see 5.2)
- (f) Packaging, packing and marking requirements other than those specified in 5.2 and 5.2.1.
- (g) Quantity. The material should be purchased by volume, the unit being a U.S. gallon at 15.6 C(60F).
- (h) This lubricant shall not contain any intentionally added ozone depleting substance (ODS) derived from the base stock, the additive package or the finished blend.

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APPENDIX C, VALVE STICKING CHARACTERISTICS the following changes be made:

* 20.1.1, Delete the following:

"MILITARY " and " MIL-C-81302 - Cleaning Compound, Solvent Trichlorotrifluoroethane."

and substitute the following:

"FEDERAL

P-D-680 - Isopropyl Alcohol and Hexane(s) or Heptane or Non-aromatic

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* Sections 40.1, 40.1.1, 40.1.2, 40.2 and 40.2.1 shall be deleted and substituted with the following:

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- * 40.1 Test valve cleaning.
- * 40.1.1 The pipe loop shall be dismantled at all take-down joints and allow the fluid to drain. The test valves shall be disassembled and the spool, packings, o-rings, and sleeve assemblies be examined. After removal of the o-rings, and packings, the valve bodies, spools, sleeve assemblies and other dismantled parts shall be cleaned under a laboratory hood by rinsing first with hexane(s), heptane, or naphtha and then with isopropyl alcohol. Discard any o-rings or packings which appear damaged. Place o-rings or packagings back on parts after they have dried.
- * 40.1.2 Sump cleaning. The sump is drained of oil and rinsed four times with replacement solvent P-D-680 Type III, and air dried.
- * 40.2 System Cleaning.
- * 40.2.1 The valves V1 and V2 removed from their base plates and other valves open, P-D-680 type III solvent shall be pumped through the system lines until there is no evidence of previous test oil being present. Add test oil to the sump and pump the test oil through the system lines to valve V1 and V2.

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- * 50.1: Delete and substitute the following:

" A passing rating is given to a candidate oil when the initial actuation force after the 24-hour aging for each test valve (see 40.3.9) averages 20 lbf (89 N) or less with no individual initial actuation force exceeding 25 lbf (111 N). "

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