

NAVSEA
STANDARD ITEM

FY-20

ITEM NO: 009-63
DATE: 30 APR 2018
CATEGORY: II

1. SCOPE:

1.1 Title: Lubricating Oil and Hydraulic Fluid; analyze

2. REFERENCES:

2.1 S9086-H7-STM-010/CH-262, Lubricating Oils, Greases, Specialty Lubricants, and Lubrication Systems

2.2 S9086-S4-STM-010/CH-556, Hydraulic Equipment (Power Transmission and Control)

2.3 S9086-HB-STM-010/CH-233, Diesel Engines

3. REQUIREMENTS:

3.1 Provide samples (lubricant oil or hydraulic fluids) to a certified laboratory as listed in Table 262-4-2 of 2.1 or a certified commercial laboratory (minimum ISO 9000 or ISO 17025 registered). Minimum sample label requirements include ship name, hull number, equipment name, date sampled, hours since last oil change (if applicable) and hours since last overhaul (if applicable).

3.2 Accomplish tests of each sample in accordance with the specified test methods of Attachment A or Attachment B.

3.2.1 Test selections shall be based on the sample type and service.

3.3 Analyze each sample for metal content and water contamination by utilizing a spectrographic analysis in accordance with ASTM D-6595.

3.3.1 Determine if water contamination is fresh or salt water based on high sodium levels.

3.3.2 Record and report the concentration of the following elements in ppm with the indicated degree of accuracy:

| | | | | |
|------|--------|-----|-----------|------|
| IRON | COPPER | TIN | MAGNESIUM | LEAD |
|------|--------|-----|-----------|------|

ALUMINUM

SILVER

CHROMIUM

NICKEL

SILICON

SODIUM

3.3.2.1 The sensitivity and reliability of the equipment used for the test shall be in accordance with ASTM D-6595.

3.4 Accomplish specific gravity test for each MIL-H-19457 hydraulic fluid sample and determine hydrocarbon oil content in accordance with Table 556-8-1 of 2.2.

3.5 Submit one legible copy, in hard copy or approved transferrable media, of a report listing completed test results of 3.2 through 3.4 for each sample to the SUPERVISOR.

3.5.1 Reports shall be submitted within 2 days after the qualified chemical laboratory receives each sample.

3.5.2 Reports shall include recommendations for continued use, disposal, or re-sampling of each tested oil or fluid sample.

3.6 Use Table 262-4-1 of 2.1 and Table 556-8-1 of 2.2 for guidance for test accept and reject criteria for each in-service sample.

3.6.1 Use Table 233-8-2 of 2.3 for test accept and reject criteria for 9000 Series lube oil/MIL-PRF-2104 lube oil.

3.7 Submit one legible copy, in hard copy or approved transferrable media, of original manufacturer's certificate of compliance and material conformance test data in accordance with Military Specifications listed in Attachment A and Attachment B, 7 days prior to use of new fluids and oils.

4. NOTES:

4.1 None

ATTACHMENT A
LUBRICATING OILS

| ASTM TEST METHOD | MIL-PRF-17672 MS-2075-TH MS-2110-TH MS-2135-TH | MIL-PRF-17331 MS-2190-TEP | MIL-PRF-9000 9250 | MIL-PRF-2104 15W/40 | MIL-PRF-23699 | VV-L-825 |
|---|---|------------------------------|----------------------|------------------------|---------------|----------|
| FUEL DILUTION VIA FLASH POINT ASTM D93 | | | X | X | | |
| PERCENT WATER ASTM D6304 | X | X | | X | | X |
| VISCOSITY ASTM D445 | | X | X | X | X | |
| ACID NO. ASTM D974 | X | X | | X | X | X |
| TOTAL BASE NO. ASTM D2896 | | | X | X | | |
| SPECTROGRAPHIC ANALYSIS ASTM D6595 | X | X | X | X | X | X |

ATTACHMENT B
HYDRAULIC FLUIDS

| ASTM TEST METHOD | MIL-DTL-17111 | MIL-H-19457 | MIL-PRF-2104 MIL-PRF-17672 MS-2075-TH MS-2110-TH MS-2135-TH | MIL-PRF-17331 MS-2190-TEP | MIL-H-22072 |
|---|---------------|-------------|---|------------------------------|-------------|
| FLASH POINT ASTM D92 | X | | | | X |
| PERCENT WATER ASTM D95 | | | | | X |
| PERCENT WATER ASTM D6304 | X | X | X | X | |
| VISCOSITY ASTM D445 | X | | X | X | |
| ACID NO. ASTM D974 | X | X | X | X | |
| PARTICLE COUNT NAS/SAE 4059 (Automatic Particle Count Method) | X | X | X | X | X |