

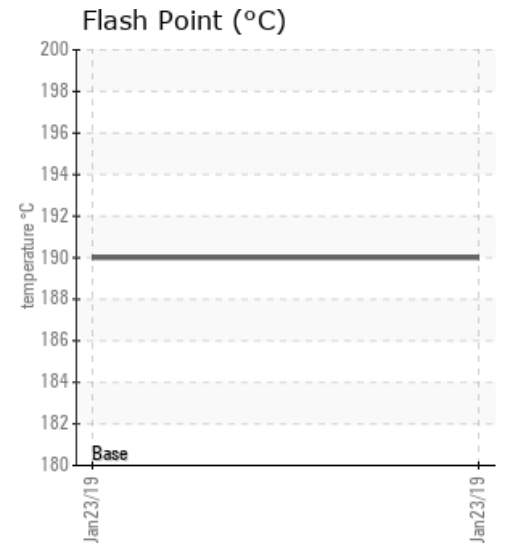
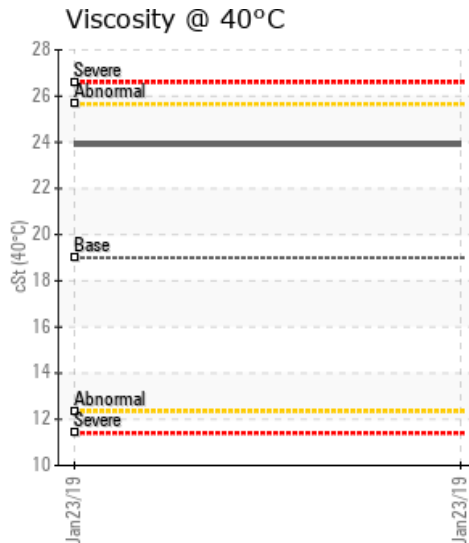
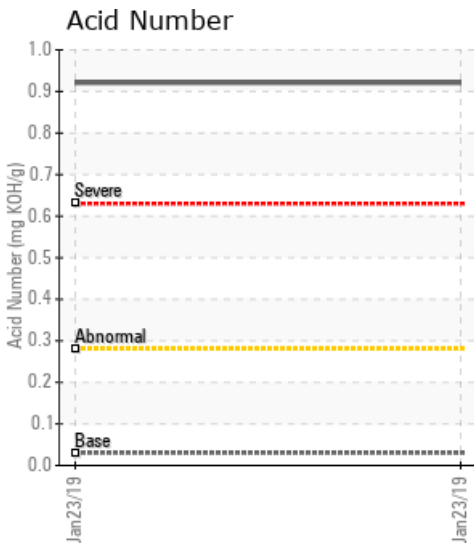
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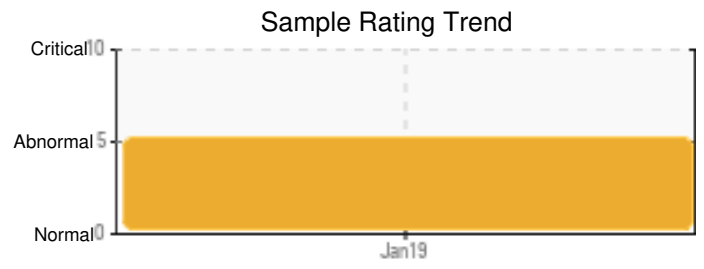
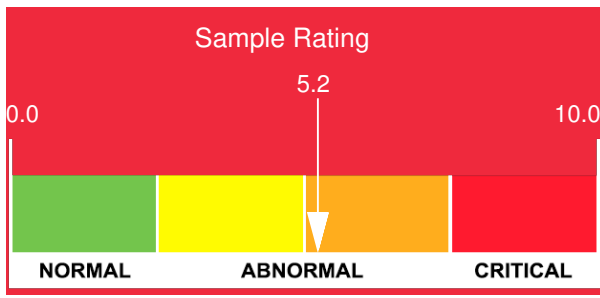
| Customer: PTRHTF60010 | System Information | Sample Information |
|--|--|--|
| SYNLUBE INTERNATIONAL CO LTD 76/1 MOO.7 THACHIN MUANG SAMUTSAKHON, 74000 THAILAND Attn: CHERNPORN CHOBKUI Tel: 034421290 E-Mail: chernporn@synlube.co.th | System Volume: 12000 ltr Bulk Operating Temp: 482F / 250C Heating Source: Blanket: Fluid: MONSANTO THERMINOL 55 Make: | Lab No: 02270299 Analyst: Yutong Gao Sample Date: 01/23/19 Received Date: 02/27/19 Completed: 03/06/19 |

Recommendation: The current fluid has OK viscosity and flash point. The particle or water contamination are all quite low. However, acid number has been increased substantially from the new fluid base line, indicating the oil has severe oxidation over the 9 years operation at 250C bulk temperature conditions. The oil oxidation by-product typically causes the metal corrosion and form soft and hard carbon deposits inside the boiler and piping, so that the system heat transfer efficiency is reduced. Please plan a fluid change and continue to monitor the fluid conditions in the future.

Comments: Acid Number (AN) is high. (GCD) 90% Distillation Point is high.

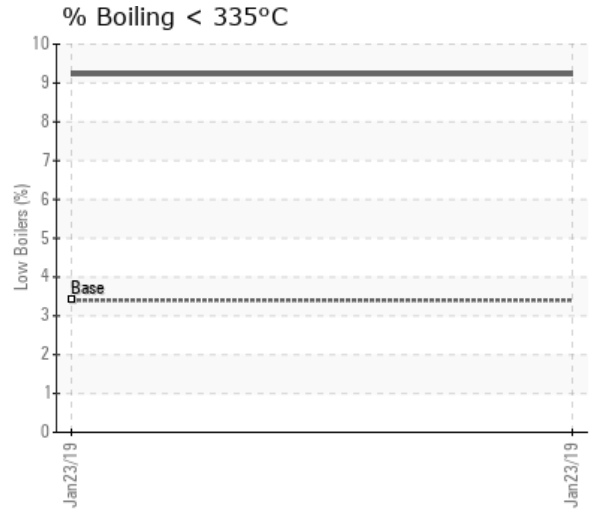
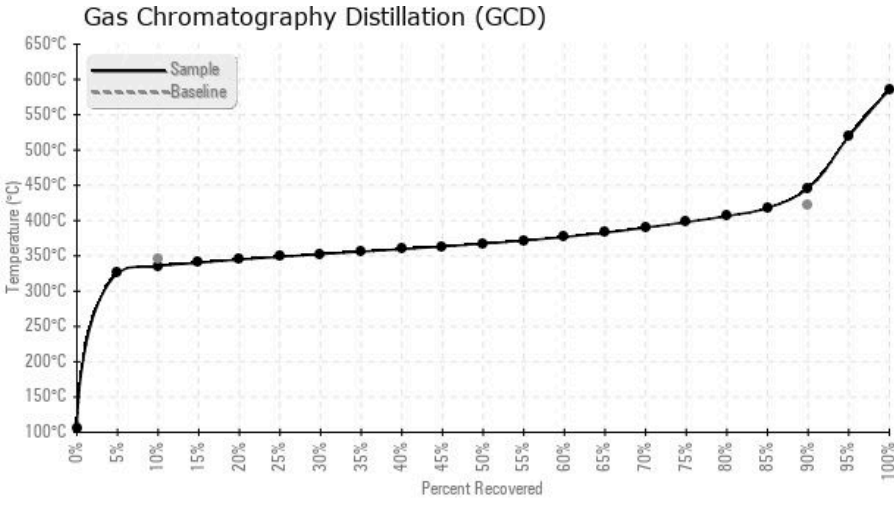
| Sample Date | Received Date | Fluid Age | Sample Location | Flash Point (COC) | Water (KF) | Viscosity (40°C) | Acid Number | Solids | GCD 10% | GCD 50% | GCD 90% | GCD % < 335°C |
|---------------|---------------|-----------|-----------------|-------------------|------------|------------------|-------------|--------|-----------|-----------|-----------|---------------|
| | mm/dd/yy | | | °F/°C | ppm | cSt | mg/KOH/g | %wt | °F/°C | °F/°C | °F/°C | % |
| 01/23/19 | 02/27/19 | 9y | SUPPLY ROOM | 374 / 190 | 49.7 | 23.9 | 0.921 | 0.148 | 636 / 335 | 693 / 367 | 835 / 446 | 9.23 |
| Baseline Data | | | | 349 / 176 | | 19.0 | 0.03 | | 655 / 346 | | 790 / 421 | 3.40 |





| Sample Date | Iron | Chromium | Nickel | Aluminum | Copper | Lead | Tin | Cadmium | Silver | Vanadium | Silicon | Sodium | Potassium | Titanium | Molybdenum | Antimony | Manganese | Lithium | Boron | Magnesium | Calcium | Barium | Phosphorus | Zinc |
|---------------|------|----------|--------|----------|--------|------|-----|---------|--------|----------|---------|--------|-----------|----------|------------|----------|-----------|---------|-------|-----------|---------|--------|------------|------|
| 01/23/19 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Baseline Data | | | 0 | 0 | | | | | | 0 | | | 0 | 0 | | | | | 0 | | | | 0 | |

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



Historical Comments

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