



LIEBHERR

OIL ANALYSIS REPORT

| | |
|-----------------|----------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | ABNORMAL |

Machine Id
LIEBHERR 111447

Component
Hydraulic System

Fluid
PETRO CANADA HYDREX XV ALL SEASON HYDRAULIC OIL (--- LTR)

RECOMMENDATION

Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was specified as PETRO CANADA HYDREX XV ALL SEASON HYDRAULIC OIL, however, a fluid match indicates that this fluid is ISO 32 AW Hydraulic Oil. Please confirm the oil type and grade on your next sample.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|-------------|----------|----------|
| Sample Number | | Client Info | | LH0250439 | --- | --- |
| Sample Date | | Client Info | | 05 Dec 2023 | --- | --- |
| Machine Age | hrs | Client Info | | 873 | --- | --- |
| Oil Age | hrs | Client Info | | 0 | --- | --- |
| Filter Age | hrs | Client Info | | 0 | --- | --- |
| Oil Changed | | Client Info | | N/A | --- | --- |
| Filter Changed | | Client Info | | N/A | --- | --- |
| Sample Status | | | | ABNORMAL | --- | --- |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|---------------|------|------|-----|-----|
| Iron | ppm | ASTM D5185(m) | >20 | <1 | --- | --- |
| Chromium | ppm | ASTM D5185(m) | >10 | 0 | --- | --- |
| Nickel | ppm | ASTM D5185(m) | >10 | 0 | --- | --- |
| Titanium | ppm | ASTM D5185(m) | | 0 | --- | --- |
| Silver | ppm | ASTM D5185(m) | | 0 | --- | --- |
| Aluminum | ppm | ASTM D5185(m) | >10 | 0 | --- | --- |
| Lead | ppm | ASTM D5185(m) | >10 | <1 | --- | --- |
| Copper | ppm | ASTM D5185(m) | >75 | 8 | --- | --- |
| Tin | ppm | ASTM D5185(m) | >10 | 0 | --- | --- |
| Vanadium | ppm | ASTM D5185(m) | | 0 | --- | --- |
| White Metal | scalar | Visual* | NONE | NONE | --- | --- |
| Yellow Metal | scalar | Visual* | NONE | NONE | --- | --- |

CONTAMINATION

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

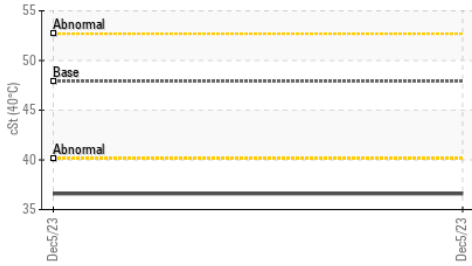
| | | | | | | |
|------------------|--------|---------------|-----------|----------|-----|-----|
| Silicon | ppm | ASTM D5185(m) | >20 | 0 | --- | --- |
| Potassium | ppm | ASTM D5185(m) | >20 | <1 | --- | --- |
| Water | | WC Method | >0.1 | NEG | --- | --- |
| Particles >4µm | | ASTM D7647 | >20000 | 4203 | --- | --- |
| Particles >6µm | | ASTM D7647 | >5000 | 1127 | --- | --- |
| Particles >14µm | | ASTM D7647 | >640 | 69 | --- | --- |
| Particles >21µm | | ASTM D7647 | >160 | 14 | --- | --- |
| Particles >38µm | | ASTM D7647 | >40 | 0 | --- | --- |
| Particles >71µm | | ASTM D7647 | >10 | 0 | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | 19/17/13 | --- | --- |
| Silt | scalar | Visual* | NONE | NONE | --- | --- |
| Debris | scalar | Visual* | NONE | VLITE | --- | --- |
| Sand/Dirt | scalar | Visual* | NONE | NONE | --- | --- |
| Appearance | scalar | Visual* | NORML | NORML | --- | --- |
| Odor | scalar | Visual* | NORML | NORML | --- | --- |
| Emulsified Water | scalar | Visual* | >0.1 | NEG | --- | --- |

FLUID CONDITION

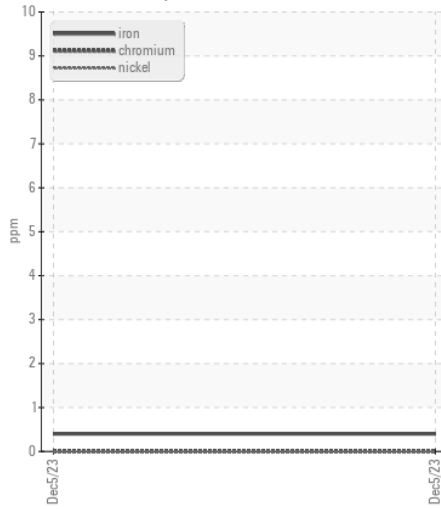
The oil viscosity is lower than typical, possibly indicating the addition of lighter grade oil. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The condition of the oil is acceptable for the time in service.

| | | | | | | |
|-------------|-----|---------------|------|--------|-----|-----|
| Sodium | ppm | ASTM D5185(m) | | <1 | --- | --- |
| Boron | ppm | ASTM D5185(m) | 0 | <1 | --- | --- |
| Barium | ppm | ASTM D5185(m) | 0 | <1 | --- | --- |
| Molybdenum | ppm | ASTM D5185(m) | 0 | 0 | --- | --- |
| Manganese | ppm | ASTM D5185(m) | 1 | 0 | --- | --- |
| Magnesium | ppm | ASTM D5185(m) | 0 | <1 | --- | --- |
| Calcium | ppm | ASTM D5185(m) | 100 | 58 | --- | --- |
| Phosphorus | ppm | ASTM D5185(m) | 670 | 233 | --- | --- |
| Zinc | ppm | ASTM D5185(m) | 850 | 249 | --- | --- |
| Sulfur | ppm | ASTM D5185(m) | 1600 | 661 | --- | --- |
| Visc @ 40°C | cSt | ASTM D7279(m) | 47.9 | ▲ 36.6 | --- | --- |

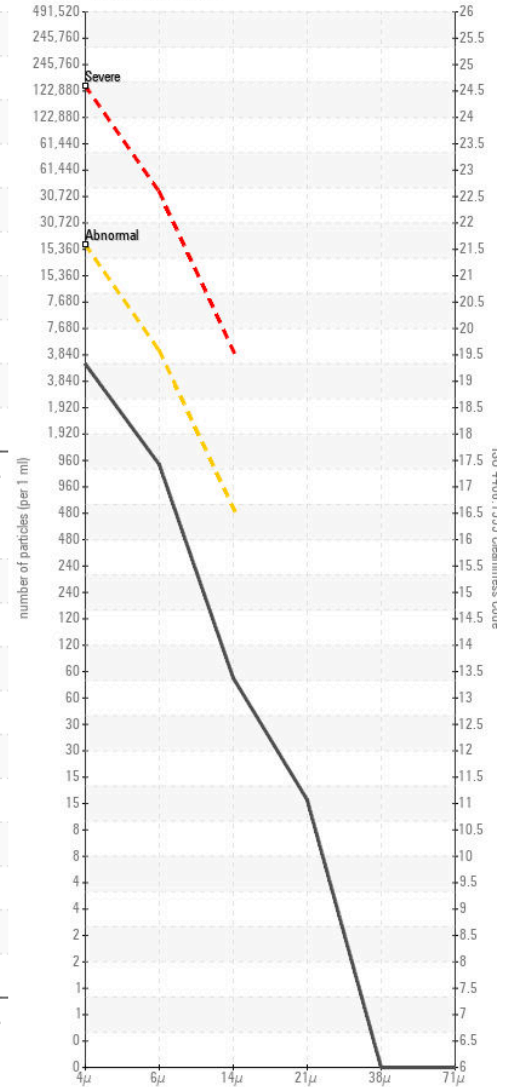
▲ Viscosity @ 40°C



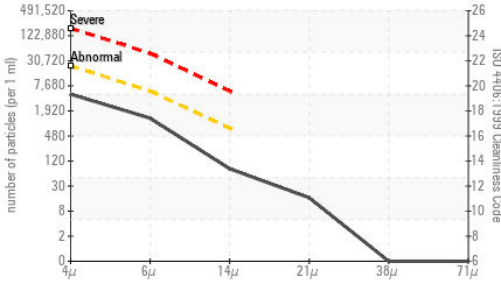
Ferrous Alloys



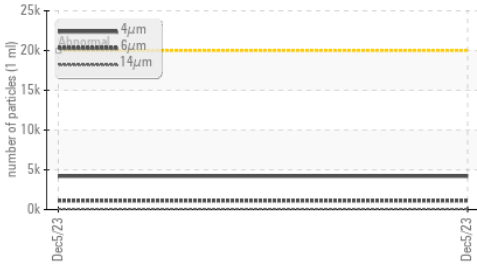
Particle Count



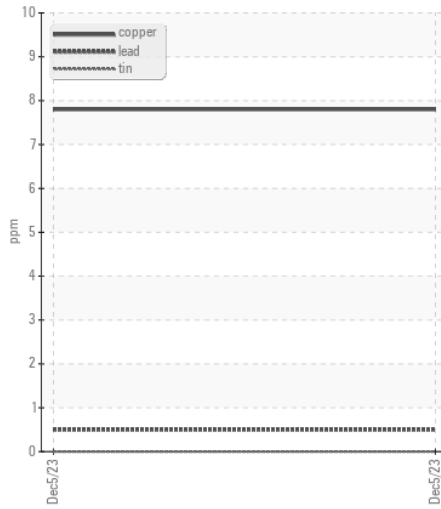
Particle Count



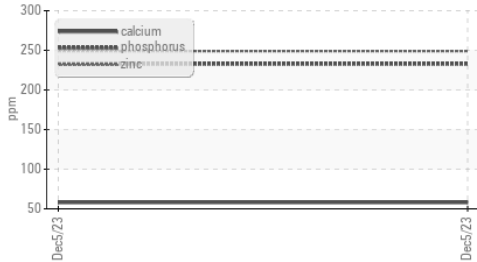
Particle Trend



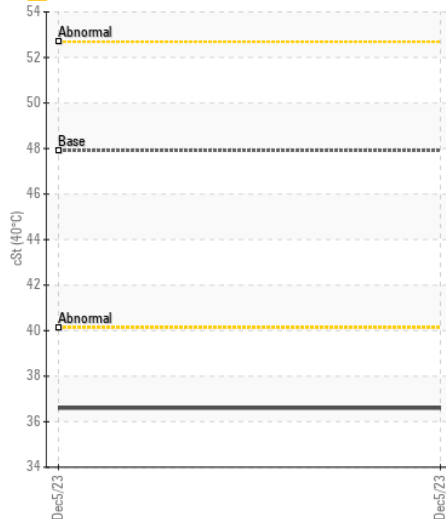
Non-ferrous Metals



Additives



▲ Viscosity @ 40°C



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0250439
Lab Number : 02625727
Unique Number : 5750846
Test Package : MOB 1 (Additional Tests: PrtCount)

KELLER FOUNDATION LTD
 ZONE 3, ACHESON INDUSTRIAL AREA, 2-53016 HWY 60
 ACHESON, AB
 CA T7X 5A7
 Contact:

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

T:
F: