



LIEBHERR

OIL ANALYSIS REPORT

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



Machine Id
LIEBHERR LH60C 106512-1528

Component
Hydraulic System

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

RECOMMENDATION

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | LH0288232 | LH0278464 | LH0278577 |
| Sample Date | | Client Info | | 29 Apr 2024 | 21 Mar 2024 | 05 Jan 2024 |
| Machine Age | hrs | Client Info | | 23144 | 22529 | 21976 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | Not Changd | Not Changd | Not Changd |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | ABNORMAL | NORMAL | ABNORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|---------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185(m) | >50 | 1 | 1 | 1 |
| Chromium | ppm | ASTM D5185(m) | >15 | <1 | <1 | <1 |
| Nickel | ppm | ASTM D5185(m) | >5 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >8 | 0 | 0 | <1 |
| Lead | ppm | ASTM D5185(m) | >5 | 0 | 0 | <1 |
| Copper | ppm | ASTM D5185(m) | >15 | <1 | <1 | <1 |
| Tin | ppm | ASTM D5185(m) | >5 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| White Metal | scalar | Visual* | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | Visual* | NONE | NONE | NONE | NONE |

CONTAMINATION

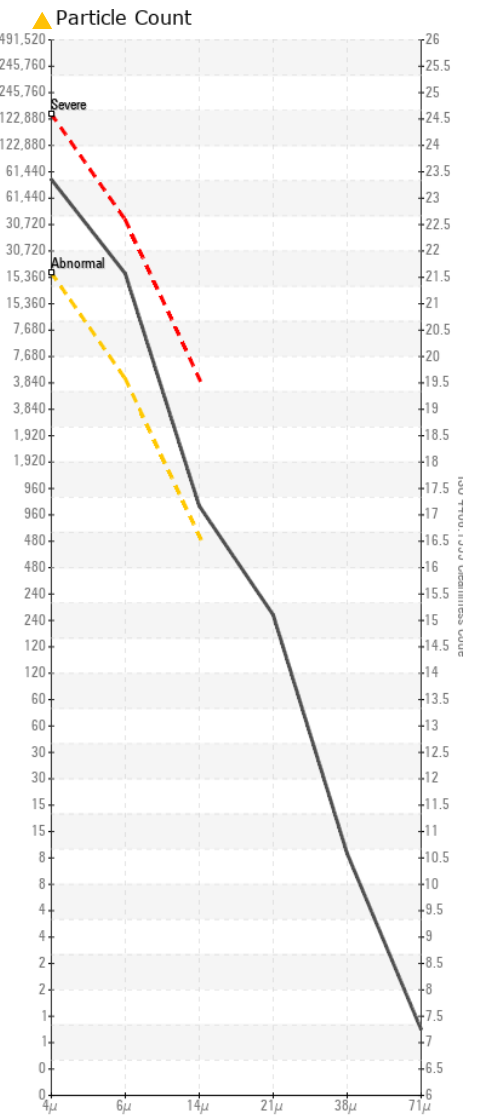
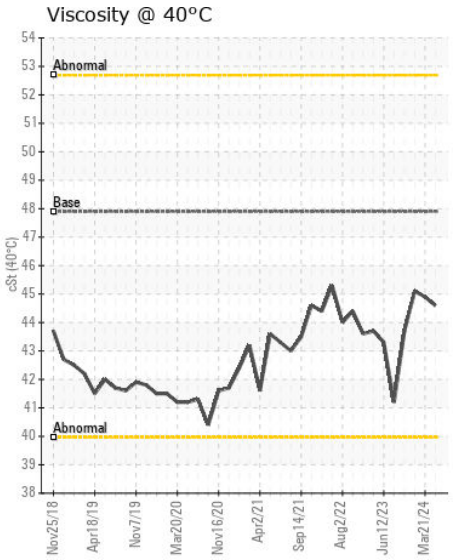
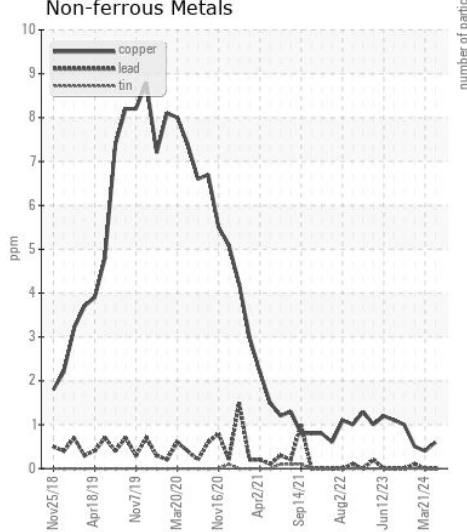
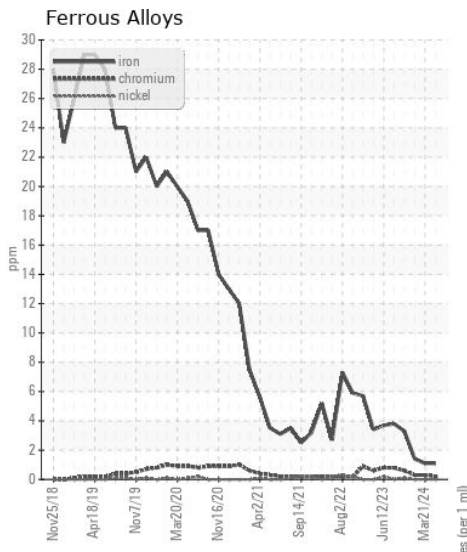
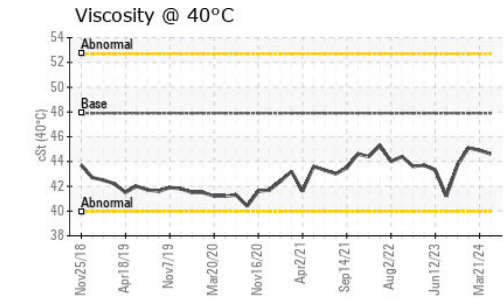
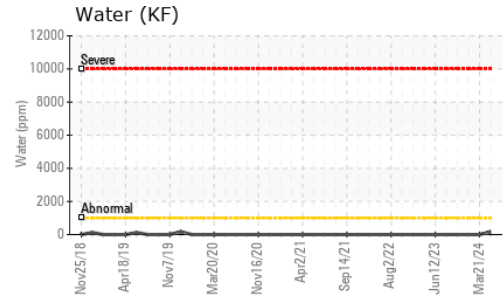
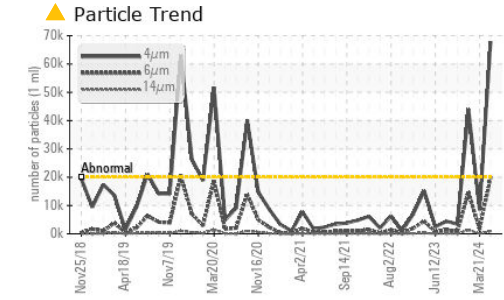
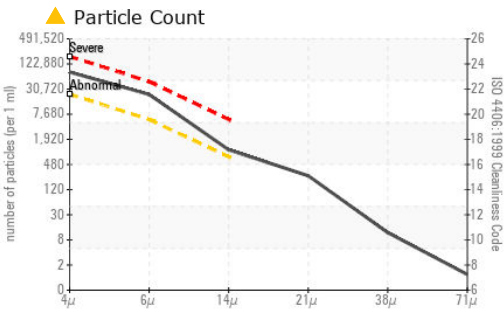
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The water content is negligible.

| | | | | | | |
|------------------|--------|---------------|-----------|-------------------|----------|-------------------|
| Silicon | ppm | ASTM D5185(m) | >25 | 0 | 0 | <1 |
| Potassium | ppm | ASTM D5185(m) | >20 | 0 | <1 | <1 |
| Water | % | ASTM D6304* | >0.1 | 0.016 | --- | --- |
| ppm Water | ppm | ASTM D6304* | >1000 | 165 | --- | --- |
| Particles >4µm | | ASTM D7647 | >20000 | ▲ 67861 | 8500 | ▲ 44052 |
| Particles >6µm | | ASTM D7647 | >5000 | ▲ 19777 | 1787 | ▲ 14766 |
| Particles >14µm | | ASTM D7647 | >640 | ● 947 | 47 | ▲ 1338 |
| Particles >21µm | | ASTM D7647 | >160 | ● 227 | 7 | ▲ 330 |
| Particles >38µm | | ASTM D7647 | >40 | 10 | 1 | 19 |
| Particles >71µm | | ASTM D7647 | >10 | 1 | 1 | 3 |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | ▲ 23/21/17 | 20/18/13 | ▲ 23/21/18 |
| Silt | scalar | Visual* | NONE | NONE | NONE | NONE |
| Debris | scalar | Visual* | NONE | NONE | NONE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | NONE | VLITE | NONE |
| Appearance | scalar | Visual* | NORML | NORML | NORML | NORML |
| Odor | scalar | Visual* | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.1 | .2% | NEG | NEG |

FLUID CONDITION

The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

| | | | | | | |
|-------------|-----|---------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Boron | ppm | ASTM D5185(m) | 0 | <1 | 0 | 0 |
| Barium | ppm | ASTM D5185(m) | 0 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | 0 | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | 1 | 0 | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 0 | 2 | 3 | 6 |
| Calcium | ppm | ASTM D5185(m) | 100 | 99 | 100 | 102 |
| Phosphorus | ppm | ASTM D5185(m) | 670 | 639 | 644 | 655 |
| Zinc | ppm | ASTM D5185(m) | 850 | 841 | 854 | 829 |
| Sulfur | ppm | ASTM D5185(m) | 1600 | 1486 | 1510 | 1600 |
| Visc @ 40°C | cSt | ASTM D7279(m) | 47.9 | 44.6 | 44.9 | 45.1 |



ISO 17025:2017
Accredited
Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : LH0288232
Lab Number : 02633175
Unique Number : 5774328
Test Package : MOB 1 (Additional Tests: KF, PrtCount)

Gerdau - Mandak Metal Processors Ltd.,
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 Selkirk, MB
 CA R1A 2B3
 Contact: Santiago Giraldo
 santiago.giraldo@gerdau.com

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.

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