



OIL ANALYSIS REPORT

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

Area
Furnaces
 Machine Id
N/A 61-31-000-029 (S/N #1 Fce Wide Belt)
 Component
Gear Reducer
 Fluid
ESSO SPARTAN EP 220 (--- GAL)

RECOMMENDATION

We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition. Please specify the component make and model with your next sample.

WEAR

All component wear rates are normal.

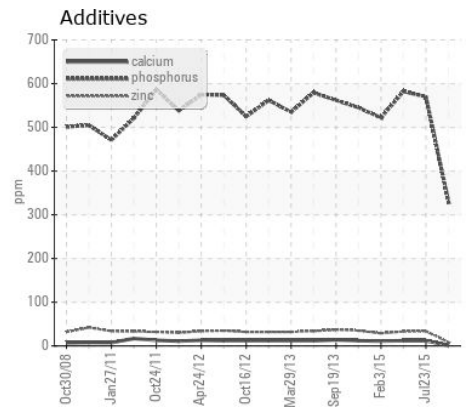
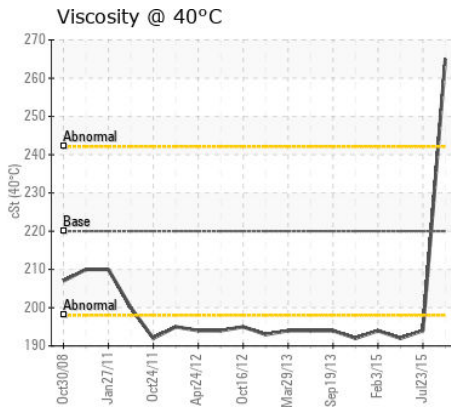
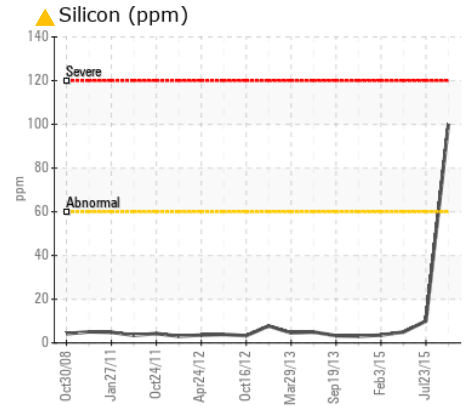
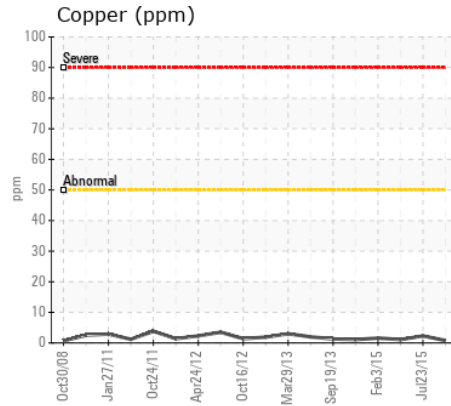
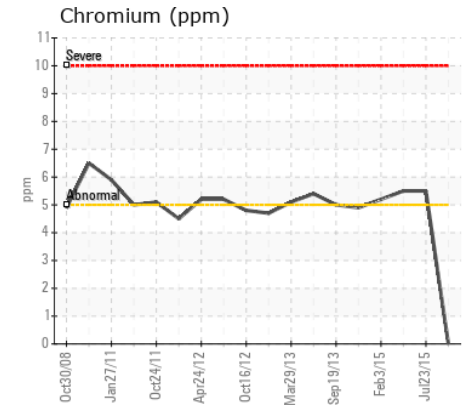
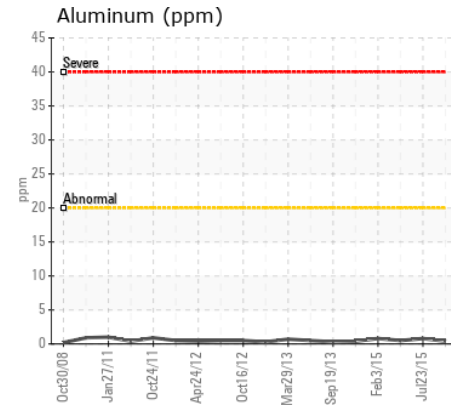
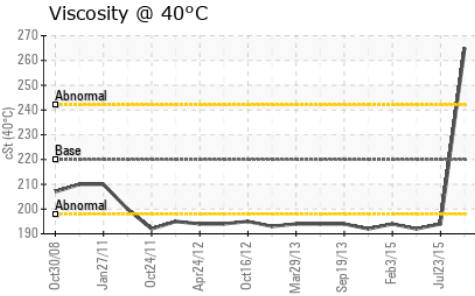
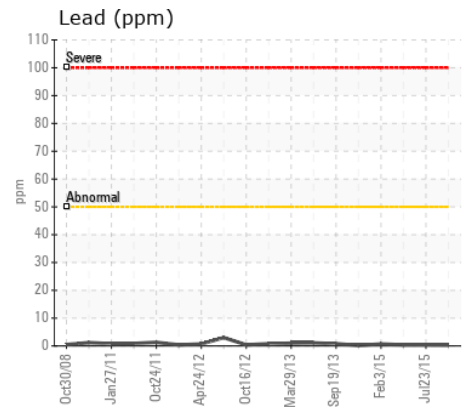
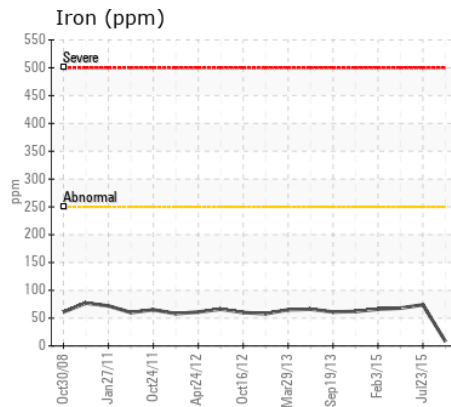
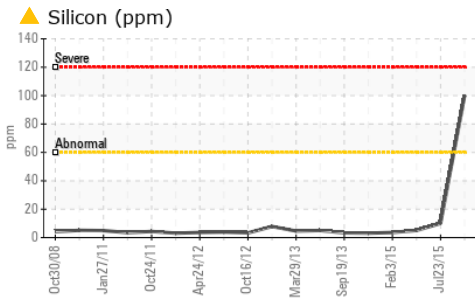
CONTAMINATION

There is a moderate concentration of dirt present in the oil.

FLUID CONDITION

The viscosity of the oil is higher than normal, possibly indicating the addition of a heavier grade of oil. The oil is no longer serviceable due to the presence of contaminants.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|------------------|--------|---------------|-----------|-------------|-------------|-------------|
| Sample Number | | Client Info | | WC0884655 | WC0261591 | WC0261453 |
| Sample Date | | Client Info | | 05 Feb 2024 | 23 Jul 2015 | 29 Apr 2015 |
| Machine Age | days | Client Info | | 0 | 0 | 0 |
| Oil Age | days | Client Info | | 0 | 0 | 0 |
| Filter Age | days | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Filter Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | ABNORMAL | NORMAL | NORMAL |
| Iron | ppm | ASTM D5185(m) | >250 | 8 | 74 | 68 |
| Chromium | ppm | ASTM D5185(m) | >5 | 0 | 6 | 6 |
| Nickel | ppm | ASTM D5185(m) | >5 | 0 | 2 | <1 |
| Titanium | ppm | ASTM D5185(m) | | 0 | <1 | 0 |
| Silver | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | <1 | <1 | <1 |
| Lead | ppm | ASTM D5185(m) | >50 | <1 | <1 | <1 |
| Copper | ppm | ASTM D5185(m) | >50 | <1 | 2 | 1 |
| Tin | ppm | ASTM D5185(m) | >5 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| White Metal | scalar | Visual* | NONE | NONE | VLITE | NONE |
| Yellow Metal | scalar | Visual* | NONE | NONE | NONE | NONE |
| Silicon | ppm | ASTM D5185(m) | >60 | ▲ 100 | 10 | 5 |
| Potassium | ppm | ASTM D5185(m) | >20 | <1 | 2 | 2 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Silt | scalar | Visual* | NONE | NONE | VLITE | NONE |
| Debris | scalar | Visual* | NONE | NONE | VLITE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | NONE | NONE | NONE |
| Appearance | scalar | Visual* | NORML | NORML | NORML | NORML |
| Odor | scalar | Visual* | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | Visual* | >0.2 | NEG | NEG | NEG |
| Sodium | ppm | ASTM D5185(m) | | <1 | 2 | 2 |
| Boron | ppm | ASTM D5185(m) | .5 | 12 | 19 | 31 |
| Barium | ppm | ASTM D5185(m) | | 0 | 2 | 2 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | 0 | 0 | <1 |
| Manganese | ppm | ASTM D5185(m) | | 0 | <1 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 0 | <1 | <1 | <1 |
| Calcium | ppm | ASTM D5185(m) | 1.7 | 1 | 12 | 12 |
| Phosphorus | ppm | ASTM D5185(m) | 250 | 331 | 570 | 582 |
| Zinc | ppm | ASTM D5185(m) | .3 | 9 | 34 | 33 |
| Sulfur | ppm | ASTM D5185(m) | | 2792 | 11958 | 11960 |
| Visc @ 40°C | cSt | ASTM D7279(m) | 220 | 265 | 194 | 192 |



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0884655 **Received** : 16 Feb 2024
Lab Number : 02616375 **Tested** : 20 Feb 2024
Unique Number : 5733485 **Diagnosed** : 20 Feb 2024 - Kevin Marson
Test Package : MOB 1

Vale - Copper Cliff Smelter
 COPPER CLIFF SMELTER WAREHOUSE, 155 BALSAM ST.
 COPPER CLIFF, ON
 CA P0M 1N0
 Contact: Andy Kozachanko
 andrew.kozachanko@vale.com
 T: (705)682-6687
 F: (705)682-6939

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.