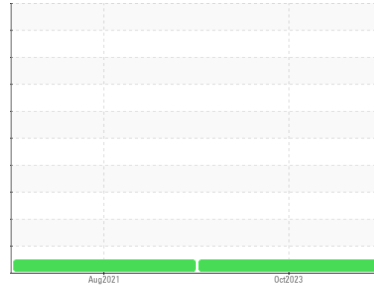




OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



Machine Id
CAUSTIC TANK
 Component
Gearbox
 Fluid
GEAR OIL ISO 150 (--- GAL)

DIAGNOSIS

Recommendation

This is a baseline read-out on the submitted sample. Due to this condition we recommend the following action... We advise an early resample to confirm this situation.

Wear

{not applicable}

Contamination

Insufficient sample was received to conduct all the routine laboratory tests.

Fluid Condition

{not applicable}

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|----------|
| Sample Number | Client Info | | WC0799291 | WC0456603 | --- |
| Sample Date | Client Info | | 05 Oct 2023 | 25 Aug 2021 | --- |
| Machine Age | hrs | Client Info | 0 | 0 | --- |
| Oil Age | hrs | Client Info | 0 | 0 | --- |
| Oil Changed | Client Info | | N/A | N/A | --- |
| Sample Status | | | NORMAL | NORMAL | --- |

WEAR METALS

| | method | limit/base | current | history1 | history2 | |
|-----------|--------|---------------|---------|--------------|----------|-----|
| Iron | ppm | ASTM D5185(m) | >200 | 123 | 52 | --- |
| Chromium | ppm | ASTM D5185(m) | >10 | 1 | <1 | --- |
| Nickel | ppm | ASTM D5185(m) | >10 | 1 | <1 | --- |
| Titanium | ppm | ASTM D5185(m) | | 0 | 0 | --- |
| Silver | ppm | ASTM D5185(m) | | <1 | 0 | --- |
| Aluminum | ppm | ASTM D5185(m) | | <1 | <1 | --- |
| Lead | ppm | ASTM D5185(m) | | <1 | <1 | --- |
| Copper | ppm | ASTM D5185(m) | | 2 | 2 | --- |
| Tin | ppm | ASTM D5185(m) | | <1 | <1 | --- |
| Antimony | ppm | ASTM D5185(m) | >5 | 0 | <1 | --- |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | --- |
| Beryllium | ppm | ASTM D5185(m) | | 0 | 0 | --- |
| Cadmium | ppm | ASTM D5185(m) | | 0 | 0 | --- |

ADDITIVES

| | method | limit/base | current | history1 | history2 | |
|------------|--------|---------------|---------|--------------|----------|-----|
| Boron | ppm | ASTM D5185(m) | 50 | 6 | 4 | --- |
| Barium | ppm | ASTM D5185(m) | 15 | 15 | 3 | --- |
| Molybdenum | ppm | ASTM D5185(m) | 15 | 0 | 0 | --- |
| Manganese | ppm | ASTM D5185(m) | | 1 | 1 | --- |
| Magnesium | ppm | ASTM D5185(m) | 50 | <1 | <1 | --- |
| Calcium | ppm | ASTM D5185(m) | 50 | 55 | 20 | --- |
| Phosphorus | ppm | ASTM D5185(m) | 350 | 243 | 230 | --- |
| Zinc | ppm | ASTM D5185(m) | 100 | 12 | 22 | --- |
| Sulfur | ppm | ASTM D5185(m) | 12500 | 5129 | 7944 | --- |
| Lithium | ppm | ASTM D5185(m) | | 2 | <1 | --- |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 | |
|-----------|--------|---------------|---------|--------------|----------|-----|
| Silicon | ppm | ASTM D5185(m) | | 7 | 8 | --- |
| Sodium | ppm | ASTM D5185(m) | | 3 | 2 | --- |
| Potassium | ppm | ASTM D5185(m) | >20 | <1 | <1 | --- |

VISUAL

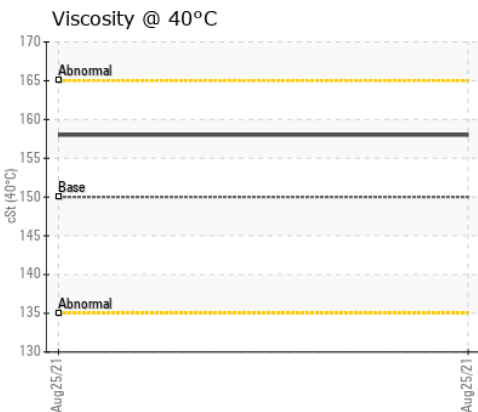
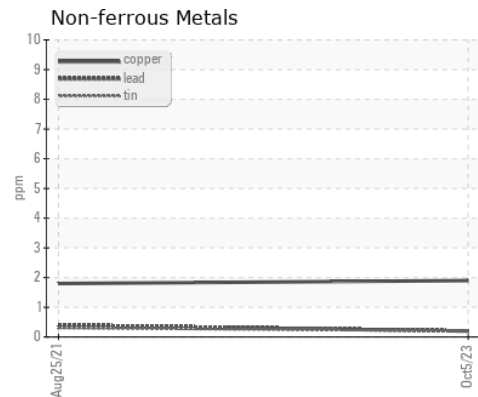
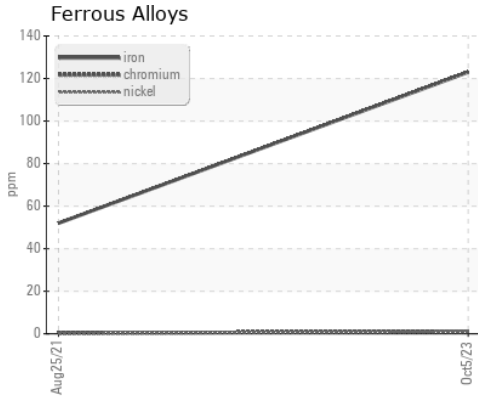
| | method | limit/base | current | history1 | history2 | |
|--------------|--------|------------|---------|--------------|----------|-----|
| White Metal | scalar | Visual* | NONE | NONE | NONE | --- |
| Yellow Metal | scalar | Visual* | NONE | NONE | NONE | --- |
| Precipitate | scalar | Visual* | NONE | NONE | NONE | --- |
| Silt | scalar | Visual* | NONE | NONE | NONE | --- |
| Debris | scalar | Visual* | NONE | NONE | VLITE | --- |
| Sand/Dirt | scalar | Visual* | NONE | NONE | NONE | --- |
| Appearance | scalar | Visual* | NORML | NORML | NORML | --- |
| Odor | scalar | Visual* | NORML | NORML | NORML | --- |



OIL ANALYSIS REPORT

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---------------|--------|------------|---------|----------|----------|
| Color | | | | | no image |
| Bottom | | | | | no image |

GRAPHS



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0799291
Lab Number : 02588453
Unique Number : 5657519
Test Package : TEST (Additional Tests: ICP)

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.