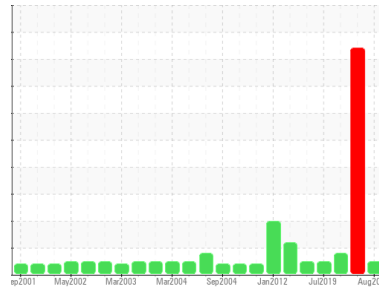




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
BOF/DESULF

Machine Id
D Desulph Tilt Car North drive Gearbox

Component
Gearbox

Fluid
ESSO SPARTAN EP 220 (45 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

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

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | WC0850087 | WC0796829 | WC0756727 |
| Sample Date | Client Info | | 16 Aug 2023 | 28 Feb 2023 | 26 Oct 2022 |
| Machine Age | hrs | Client Info | 0 | 0 | 0 |
| Oil Age | hrs | Client Info | 0 | 0 | 0 |
| Oil Changed | Client Info | | N/A | N/A | N/A |
| Sample Status | | | NORMAL | SEVERE | MARGINAL |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|-----------|-------------|--------------------|--------------|----------|----------|
| PQ | ASTM D8184* | >DFLT | 14 | 6 | 81 |
| Iron | ppm | ASTM D5185(m) >200 | 42 | 2 | ▲ 180 |
| Chromium | ppm | ASTM D5185(m) >15 | <1 | 1 | 1 |
| Nickel | ppm | ASTM D5185(m) >15 | <1 | 0 | <1 |
| Titanium | ppm | ASTM D5185(m) | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | <1 | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) >25 | <1 | 0 | <1 |
| Lead | ppm | ASTM D5185(m) >100 | 0 | 0 | <1 |
| Copper | ppm | ASTM D5185(m) >200 | <1 | 2 | <1 |
| Tin | ppm | ASTM D5185(m) >25 | 0 | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) >5 | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | 0 | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | 0 | 0 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|-------------------|--------------|----------|----------|
| Boron | ppm | ASTM D5185(m) .5 | 2 | <1 | 5 |
| Barium | ppm | ASTM D5185(m) | 0 | 0 | 1 |
| Molybdenum | ppm | ASTM D5185(m) 0 | <1 | <1 | <1 |
| Manganese | ppm | ASTM D5185(m) | <1 | 0 | 2 |
| Magnesium | ppm | ASTM D5185(m) 0 | 2 | <1 | <1 |
| Calcium | ppm | ASTM D5185(m) 1.7 | 5 | 2 | 17 |
| Phosphorus | ppm | ASTM D5185(m) 250 | 300 | ▲ <1 | 296 |
| Zinc | ppm | ASTM D5185(m) .3 | 9 | 2 | 8 |
| Sulfur | ppm | ASTM D5185(m) | 8843 | ▲ 12 | 9899 |
| Lithium | ppm | ASTM D5185(m) | <1 | <1 | <1 |

CONTAMINANTS

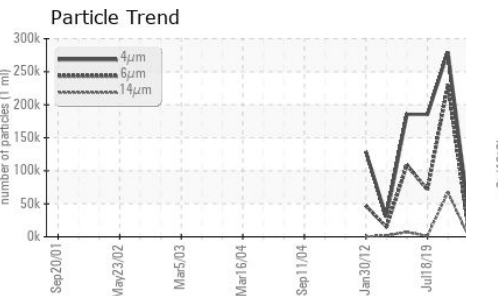
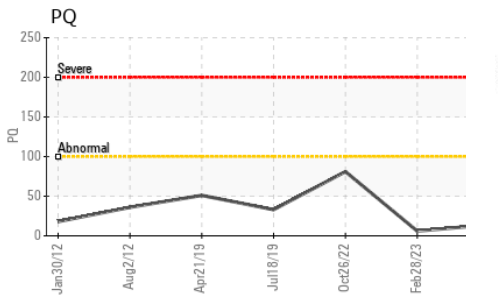
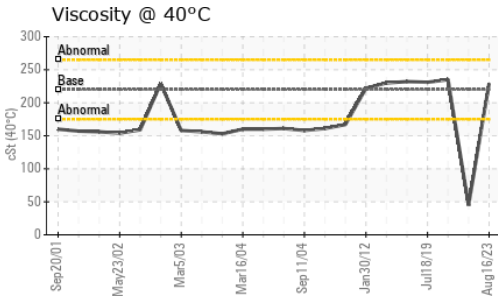
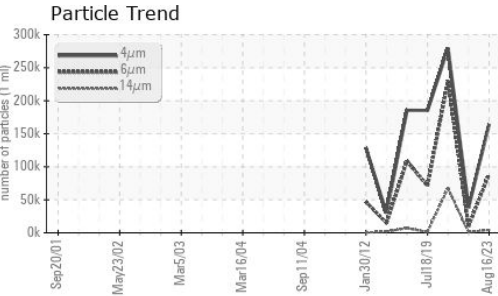
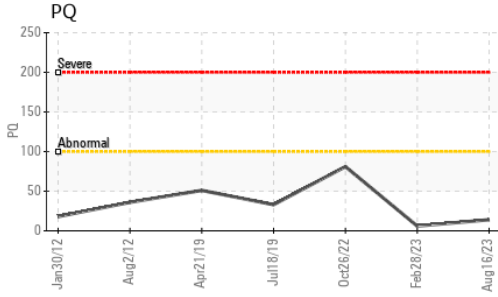
| | method | limit/base | current | history1 | history2 |
|-----------|--------|-------------------|--------------|----------|----------|
| Silicon | ppm | ASTM D5185(m) >50 | 4 | <1 | 5 |
| Sodium | ppm | ASTM D5185(m) | 1 | 231 | <1 |
| Potassium | ppm | ASTM D5185(m) >20 | <1 | 29 | 0 |

FLUID CLEANLINESS

| | method | limit/base | current | history1 | history2 |
|-----------------|--------------|------------|-----------------|----------|----------|
| Particles >4µm | ASTM D7647 | | 164383 | 38229 | 279528 |
| Particles >6µm | ASTM D7647 | >10240000 | 88461 | 10214 | 229944 |
| Particles >14µm | ASTM D7647 | >10240000 | 4360 | 899 | 67516 |
| Particles >21µm | ASTM D7647 | >2560000 | 945 | 221 | 19771 |
| Particles >38µm | ASTM D7647 | >640000 | 38 | 7 | 506 |
| Particles >71µm | ASTM D7647 | >160000 | 5 | 2 | 15 |
| Oil Cleanliness | ISO 4406 (c) | >--/30/30 | 25/24/19 | 22/21/17 | 25/25/23 |



OIL ANALYSIS REPORT

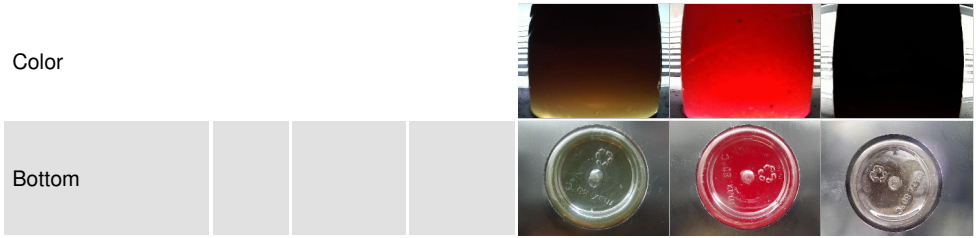


| FLUID DEGRADATION | method | limit/base | current | history1 | history2 | |
|-------------------|----------|------------|---------|-------------|----------|------|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.75 | 0.48 | 3.79 | 0.62 |

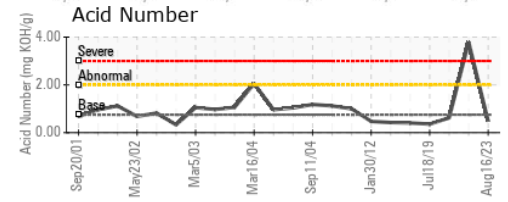
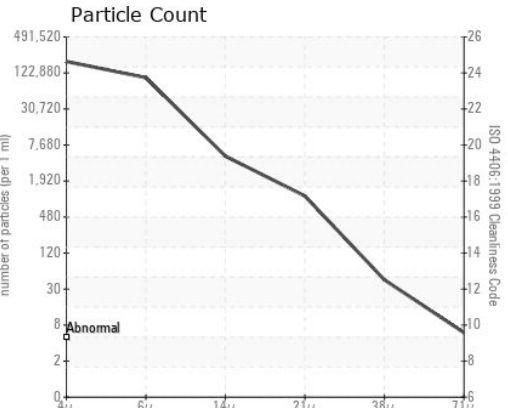
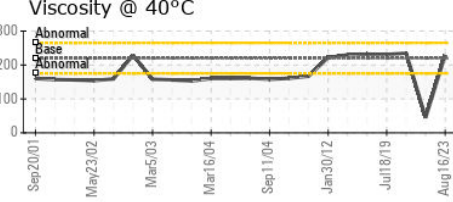
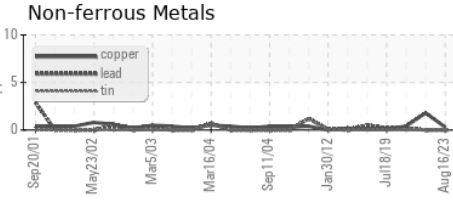
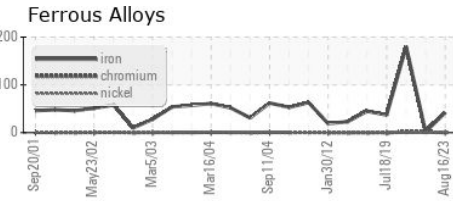
| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|--------------|----------|
| White Metal | scalar | Visual* | NONE | NONE | NONE |
| Yellow Metal | scalar | Visual* | NONE | NONE | NONE |
| Precipitate | scalar | Visual* | NONE | NONE | NONE |
| Silt | scalar | Visual* | NONE | VLITE | NONE |
| Debris | scalar | Visual* | NONE | VLITE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | NONE | NONE |
| Appearance | scalar | Visual* | NORML | NORML | FRGLY |
| Odor | scalar | Visual* | NORML | NORML | NORML |
| Emulsified Water | scalar | Visual* | >5 | NEG | >10% |
| Free Water | scalar | Visual* | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 | |
|------------------|--------|---------------|---------|------------|----------|-----|
| Visc @ 40°C | cSt | ASTM D7279(m) | 220 | 229 | 45.0 | 235 |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---------------|--------|------------|---------|----------|----------|
|---------------|--------|------------|---------|----------|----------|



GRAPHS



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **STELCO - BOSC - Basic Oxygen Slab Caster**

Sample No. : WC0850087 **Received** : 16 Aug 2023

Lab Number : 02576224 **Diagnosed** : 18 Aug 2023

Unique Number : 5629284 **Diagnostician** : Wes Davis

Test Package : IND 2 (Additional Tests: PQ, PrtCount, TAN Man)

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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