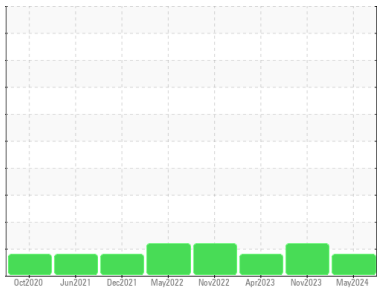
# OIL ANALYSIS REPORT

Sample Rating Trend




ISO

Area
## Marcus Hook/Cryogenic/Compressor
Machine Id
## CRYOGENIC COMPRESSOR 40-C-101F
Component
**Rotary Compressor**
Fluid
**FRICK COMPRESSOR OIL #12B (825 GAL)**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
There is a moderate amount of silt (particulates < 14 microns in size) present in the oil.

**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 | | **TO60001797** | TO60001824 | TO90003052 |
| Sample Date | | Client Info | | **09 May 2024** | 05 Nov 2023 | 25 Apr 2023 |
| 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 | | | | **ATTENTION** | ABNORMAL | ATTENTION |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >70 | **4** | 1 | 2 |
| Chromium | ppm | ASTM D5185m | >10 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Lead | ppm | ASTM D5185m | >4 | **<1** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Tin | ppm | ASTM D5185m | >3 | **<1** | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Calcium | ppm | ASTM D5185m | | **0** | 5 | 8 |
| Phosphorus | ppm | ASTM D5185m | | **39** | 12 | 11 |
| Zinc | ppm | ASTM D5185m | | **0** | 0 | 1 |
| Sulfur | ppm | ASTM D5185m | | **0** | 40 | 32 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >45 | **6** | 6 | 6 |
| Sodium | ppm | ASTM D5185m | | **4** | 3 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | 0 | <1 |
| Water | % | ASTM D6304 | >0.6 | **0.057** | 0.069 | 0.028 |
| ppm Water | ppm | ASTM D6304 | | **571** | 694.3 | 286.5 |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >2500 | **2356** | ▲ 4323 | 1739 |
| Particles >6µm | | ASTM D7647 | >320 | ● **506** | ▲ 832 | ● 413 |
| Particles >14µm | | ASTM D7647 | >80 | **19** | 23 | 15 |
| Particles >21µm | | ASTM D7647 | >20 | **4** | 2 | 3 |
| Particles >38µm | | ASTM D7647 | >4 | **0** | 0 | 0 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >18/15/13 | ● **18/16/11** | ▲ 19/17/12 | ● 18/16/11 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **0.099** | 0.09 | 0.085 |

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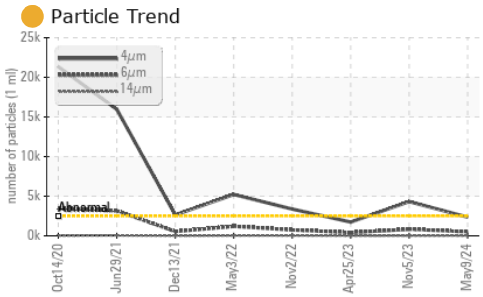
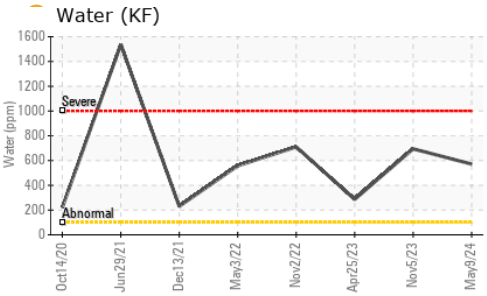
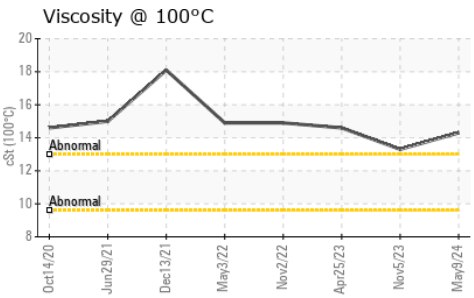
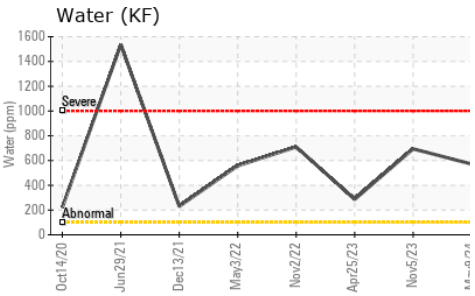
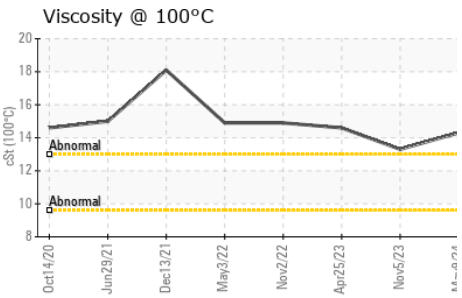


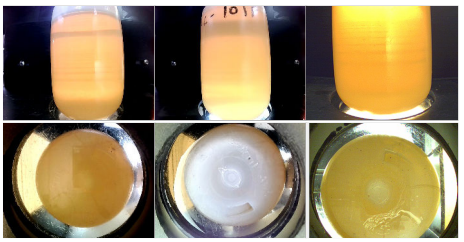



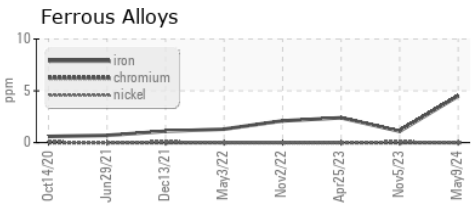

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | 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 | >0.6 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

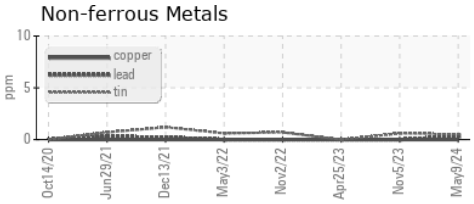
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | | **88.0** | 91.7 | 95.1 |
| Visc @ 100°C | cSt | ASTM D445 | | **14.3** | 13.3 | 14.6 |
| Viscosity Index (VI) | Scale | ASTM D2270 | | **168** | 145 | 159 |

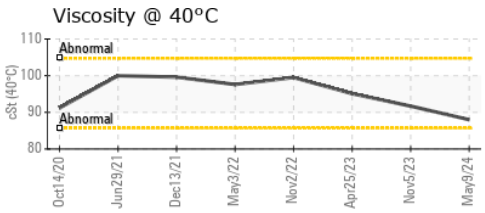
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |

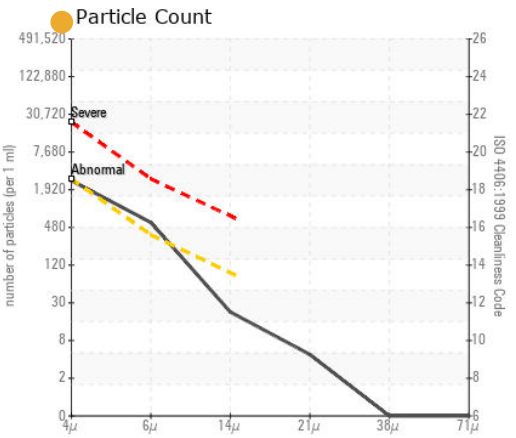


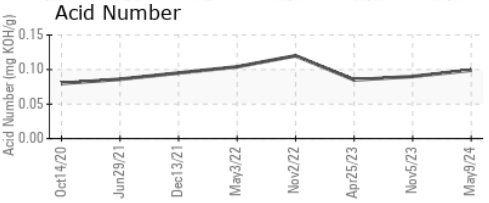
## GRAPHS




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : TO60001797
**Lab Number** : 06182907
**Unique Number** : 11034233
**Test Package** : IND 2 ( Additional Tests: KF, KV100, PrtCount, VI )

**Received** : 17 May 2024
**Tested** : 29 May 2024
**Diagnosed** : 29 May 2024 - Jonathan Hester

Certificate L2367

*To discuss this sample report, contact Customer Service at 1-800-237-1369.*
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
*Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)*

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Submitted By: ERIC THORNTON