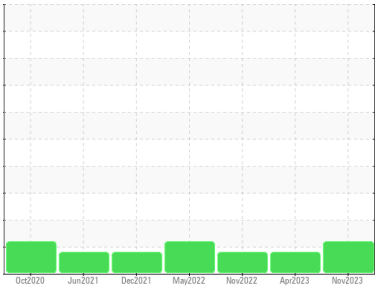
# PROBLEM SUMMARY

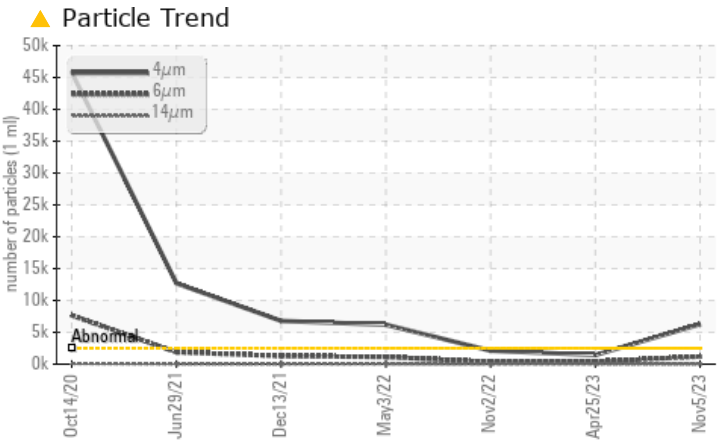
Sample Rating Trend




ISO

Area
**Marcus Hook/Cryogenic/Compressor**
Machine Id
**CRYOGENIC COMPRESSOR 40-C-301C**
Component
**Rotary Compressor**
Fluid
**FRICK COMPRESSOR OIL #12B (385 GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

## PROBLEMATIC TEST RESULTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample Status | | | | **ABNORMAL** | ATTENTION | ATTENTION |
| Particles >4µm | | ASTM D7647 | >2500 | ▲ **6272** | 1429 | 2110 |
| Particles >6µm | | ASTM D7647 | >320 | ▲ **1183** | ▲ 387 | ▲ 347 |
| Oil Cleanliness | | ISO 4406 (c) | >18/15/13 | ▲ **20/17/12** | ▲ 18/16/12 | ▲ 18/16/12 |

**Customer Id:** ETCMHOOK
**Sample No.:** TO60001827
**Lab Number:** 05999963
**Test Package:** IND 2

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Jonathan Hester +1 919-379-4092 x4092
jhester@wearcheckusa.com

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Filter | --- | --- | ? | We recommend you service the filters on this component if applicable. |

## HISTORICAL DIAGNOSIS

**25 Apr 2023 Diag: Don Baldridge**

ISO

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

**view report**

**02 Nov 2022 Diag: Don Baldridge**

ISO

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

**view report**

**03 May 2022 Diag: Don Baldridge**

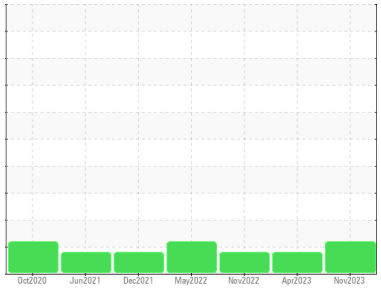
ISO

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

**view report**

# OIL ANALYSIS REPORT

Sample Rating Trend




ISO

Area
## Marcus Hook/Cryogenic/Compressor
Machine Id
## CRYOGENIC COMPRESSOR 40-C-301C
Component
**Rotary Compressor**
Fluid
**FRICK COMPRESSOR OIL #12B (385 GAL)**

## DIAGNOSIS

**Recommendation**
We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

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

**Contamination**
There is a high 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 | | **TO60001827** | TO90003045 | TO90002754 |
| Sample Date | | Client Info | | **05 Nov 2023** | 25 Apr 2023 | 02 Nov 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 | | | | **ABNORMAL** | ATTENTION | ATTENTION |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >70 | **4** | 6 | 2 |
| Chromium | ppm | ASTM D5185m | >10 | **0** | 0 | <1 |
| Nickel | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Lead | ppm | ASTM D5185m | >4 | **0** | 0 | <1 |
| Copper | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Tin | ppm | ASTM D5185m | >3 | **2** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **0** | 0 | 2 |
| 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 | | **<1** | <1 | <1 |
| Calcium | ppm | ASTM D5185m | | **126** | 126 | 118 |
| Phosphorus | ppm | ASTM D5185m | | **10** | 9 | 29 |
| Zinc | ppm | ASTM D5185m | | **0** | 2 | 0 |
| Sulfur | ppm | ASTM D5185m | | **332** | 288 | 121 |

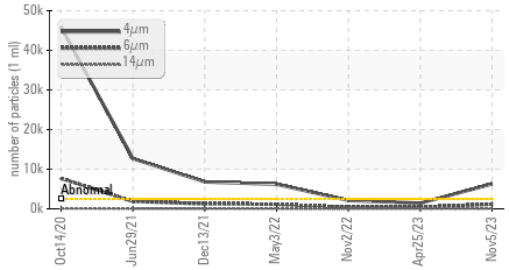
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >45 | **4** | 4 | 4 |
| Sodium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | <1 | <1 |
| Water | % | ASTM D6304 | >0.6 | **0.050** | 0.014 | 0.062 |
| ppm Water | ppm | ASTM D6304 | | **507.5** | 141.7 | 620 |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >2500 | ▲ **6272** | 1429 | 2110 |
| Particles >6µm | | ASTM D7647 | >320 | ▲ **1183** | ▲ 387 | ▲ 347 |
| Particles >14µm | | ASTM D7647 | >80 | **25** | 28 | 21 |
| Particles >21µm | | ASTM D7647 | >20 | **3** | 8 | 6 |
| Particles >38µm | | ASTM D7647 | >4 | **0** | 2 | 0 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >18/15/13 | ▲ **20/17/12** | ▲ 18/16/12 | ▲ 18/16/12 |

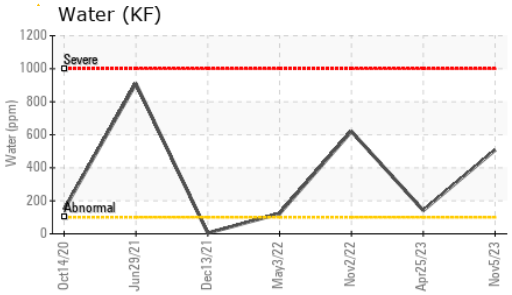
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **0.083** | 0.115 | 0.33 |

# OIL ANALYSIS REPORT

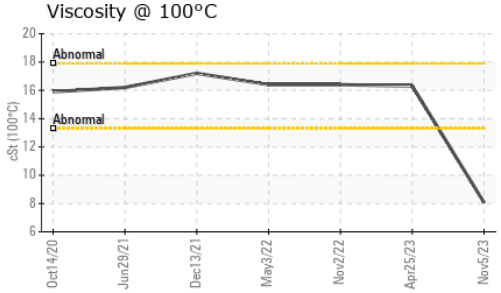
Particle Trend




Water (KF)



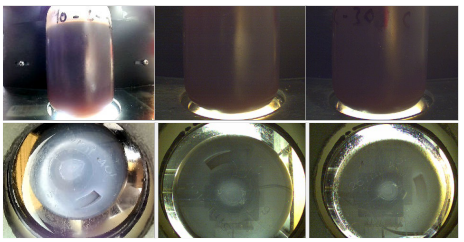

Viscosity @ 100°C




| 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** | LIGHT | LIGHT |
| 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 |

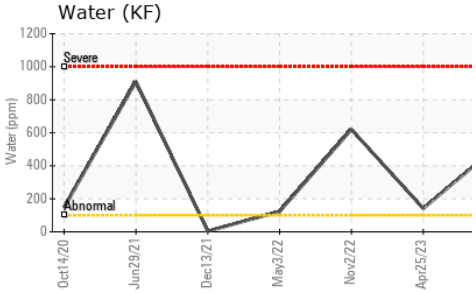
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | | **107.0** | 106 | 110 |
| Visc @ 100°C | cSt | ASTM D445 | | **8.07** | 16.3 | 16.4 |
| Viscosity Index (VI) | Scale | ASTM D2270 | | **---** | 165 | 160 |

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

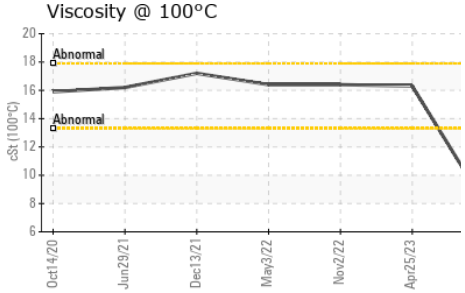


## GRAPHS

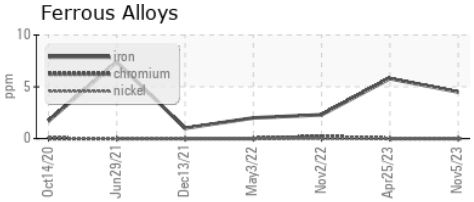
Water (KF)



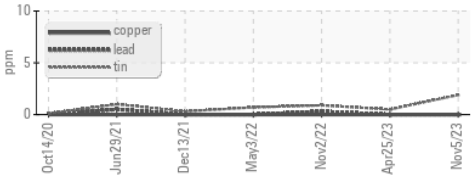

Viscosity @ 100°C



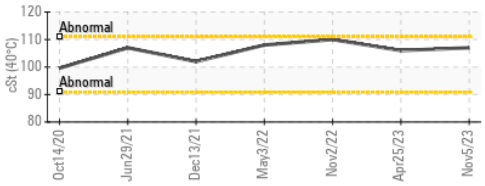

Ferrous Alloys



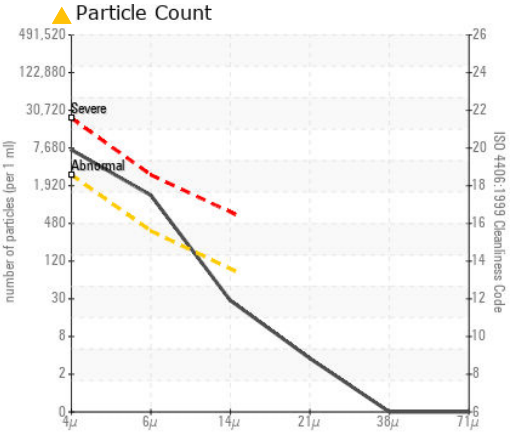

Non-ferrous Metals



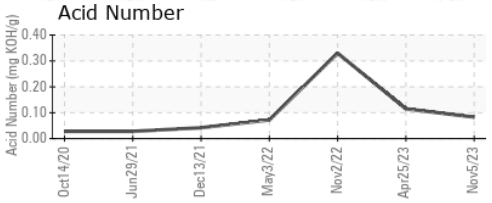

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : TO60001827 **Received** : 06 Nov 2023
**Lab Number** : 05999963 **Diagnosed** : 14 Nov 2023
**Unique Number** : 10728323 **Diagnostician** : Jonathan Hester
**Test Package** : IND 2 ( Additional Tests: KF, KV100, PrtCount, VI )

*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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