

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend



NORMAL

# TRANE VCU SANGER HALL C1 - 23555 (S/N L99M84950M)

Refrigeration Compressor

TRANE 0022 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

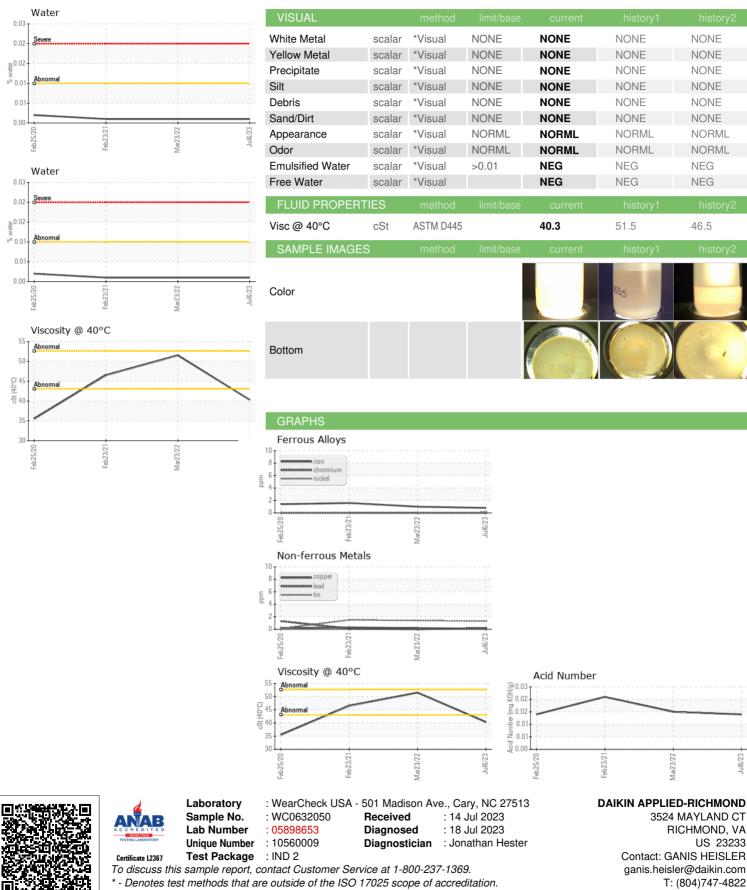
### Fluid Condition

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

| SAMPLE INFORM   | ΛΑΤΙΟΝ   | method   | limit/base                        | current   | history1  | history2  |
|---|--|--|-----------------------------------|---|---|---|
| Sample Number   |  | Client Info  |                                   | WC0632050   | WC0631990   | WC0487323   |
| Sample Date   |  | Client Info  |                                   | 06 Jul 2023   | 23 Mar 2022   | 23 Feb 2021   |
| Machine Age   | hrs  | Client Info  |                                   | 19666   | 13113   | 8173  |
| Oil Age   | hrs  | Client Info  |                                   | 0   | 0   | 0   |
| Oil Changed   |  | Client Info  |                                   | Changed   | Not Changd  | Not Changd  |
| Sample Status   |  |  |                                   | NORMAL  | MARGINAL  | ABNORMAL  |
| WEAR METALS   |  | method   | limit/base                        | current   | history1  | history2  |
| Iron  | ppm  | ASTM D5185m  | >8                                | <1  | 1   | 2   |
| Chromium  | ppm  | ASTM D5185m  | >2                                | 0   | 0   | 0   |
| Nickel  | ppm  | ASTM D5185m  |                                   | <1  | 0   | 0   |
| Titanium  | ppm  | ASTM D5185m  |                                   | 0   | 0   | 0   |
| Silver  | ppm  | ASTM D5185m  | >2                                | 0   | <1  | 0   |
| Aluminum  | ppm  | ASTM D5185m  | >3                                | 0   | 0   | 0   |
| Lead  | ppm  | ASTM D5185m  | >2                                | <1  | 0   | <1  |
| Copper  | ppm  | ASTM D5185m  | >8                                | <1  | <1  | <1  |
| Tin   | ppm  | ASTM D5185m  | >4                                | 1   | 1   | 2   |
| Antimony  | ppm  | ASTM D5185m  |                                   |   |   | 0   |
| Vanadium  | ppm  | ASTM D5185m  |                                   | 0   | 0   | 0   |
| Cadmium   | ppm  | ASTM D5185m  |                                   | 0   | 0   | 0   |
|   |  |  |                                   |   |   |   |
| ADDITIVES   |  | method   | limit/base                        | current   | history1  | history2  |
| ADDITIVES<br>Boron  | ppm  | method<br>ASTM D5185m  | limit/base                        | current<br>0  | history1<br><1  | <1  |
|   | ppm<br>ppm   |  | limit/base                        |   |   |   |
| Boron   |  | ASTM D5185m  | limit/base                        | 0   | <1  | <1  |
| Boron<br>Barium   | ppm  | ASTM D5185m<br>ASTM D5185m   | limit/base                        | 0<br>2  | <1<br>0   | <1<br>0   |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base                        | 0<br>2<br>0<br>0<br><1  | <1<br>0<br>0  | <1<br>0<br>0<br><1<br>0   |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm  | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base                        | 0<br>2<br>0<br>0  | <1<br>0<br>0<br>0   | <1<br>0<br>0<br><1<br>0<br>0  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base                        | 0<br>2<br>0<br>0<br><1<br>0<br><1   | <1<br>0<br>0<br>0<br>0  | <1<br>0<br>0<br><1<br>0   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base                        | 0<br>2<br>0<br>0<br><1<br>0   | <1<br>0<br>0<br>0<br>0<br>0   | <1<br>0<br>0<br><1<br>0<br>0  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                             | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   | limit/base                        | 0<br>2<br>0<br>0<br><1<br>0<br><1   | <1<br>0<br>0<br>0<br>0<br>0<br>4  | <1<br>0<br>0<br><1<br>0<br>0<br>5   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base                        | 0<br>2<br>0<br>0<br><1<br>0<br><1<br>8  | <1<br>0<br>0<br>0<br>0<br>0<br>4<br>0   | <1<br>0<br><1<br>0<br>0<br>5<br>0   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m   |                                   | 0<br>2<br>0<br>0<br><1<br>0<br><1<br>8<br>0<br>0<br><i>current</i><br>21                                | <1<br>0<br>0<br>0<br>0<br>0<br>4<br>0<br>14   | <1<br>0<br><1<br>0<br>0<br>5<br>0<br>73   |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base                        | 0<br>2<br>0<br>0<br><1<br>0<br><1<br>8<br>0<br>0  | <1<br>0<br>0<br>0<br>0<br>0<br>4<br>0<br>14<br>history1   | <1<br>0<br>0<br><1<br>0<br>0<br>5<br>0<br>73<br>history2                                      |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon                                 | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m                             | limit/base                        | 0<br>2<br>0<br>0<br><1<br>0<br><1<br>8<br>0<br>0<br><i>current</i><br>21                                | <1<br>0<br>0<br>0<br>0<br>0<br>4<br>0<br>14<br>14<br>history1                                     | <1<br>0<br>0<br><1<br>0<br>0<br>5<br>0<br>73<br>0<br>73<br>history2<br>▲ 71<br>0<br>0<br>0    |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium                       | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m<br><b>method</b><br>ASTM D5185m                             | limit/base                        | 0<br>2<br>0<br>0<br><1<br>0<br><1<br>8<br>0<br>0<br><i>current</i><br>21<br>0                           | <1<br>0<br>0<br>0<br>0<br>0<br>4<br>0<br>14<br>14<br><b>history1</b><br>51<br>1                   | <1<br>0<br>0<br><1<br>0<br>0<br>5<br>0<br>73<br>73<br>history2<br>71<br>0                     |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium          | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m                | limit/base<br>>15<br>>20          | 0<br>2<br>0<br>0<br><1<br>0<br><1<br>8<br>0<br>0<br>21<br>0<br><1                                       | <1<br>0<br>0<br>0<br>0<br>0<br>4<br>0<br>14<br><b>history1</b><br><b>\$</b> 51<br>1<br>0          | <1<br>0<br>0<br><1<br>0<br>0<br>5<br>0<br>73<br><b>history2</b><br><b>^</b> 71<br>0<br>0<br>0 |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>Water | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m | limit/base<br>>15<br>>20<br>>0.01 | 0<br>2<br>0<br>0<br><1<br>0<br><1<br>8<br>0<br>0<br><i>current</i><br>21<br>0<br><1<br>0<br><1<br>0.001 | <1<br>0<br>0<br>0<br>0<br>0<br>4<br>0<br>14<br><b>history1</b><br><b>\$</b> 51<br>1<br>0<br>0.001 | <1 0 0 4 0 0 <1 0 0 0 5 0 73 0 73 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0                       |



## **OIL ANALYSIS REPORT**



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Contact/Location: GANIS HEISLER - MCQRIC

Mar23/22

3524 MAYLAND CT

RICHMOND, VA

T: (804)747-4822

F: (804)747-6686

US 23233

NONE

NONE

NONE

NONE NONE

NONE

NORML

NORML

NEG

NEG

46.5