

## **OIL ANALYSIS REPORT**

### Area **BUILDING 51 - CEREAL PRODUCTS** CENTRIFUGE A GEAR BOX (S/N 51CNTB-GB)

Component Gearbox Fluid

STATOIL MERETA 320 (--- LTR)

### Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

#### Wear

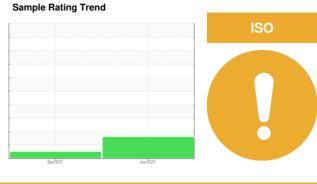
All component wear rates are normal.

#### Contamination

There is a light 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 INFORM   | MATION  | method   | limit/base  | current   | history1  | history2   |
|---|---|--|---|---|---|--|
| Sample Number   |   | Client Info  |   | WC0627636   | WC0826346   |  |
| Sample Date   |   | Client Info  |   | 26 Jun 2024   | 01 Sep 2023   |  |
| Machine Age   | hrs   | Client Info  |   | 0   | 0   |  |
| Oil Age   | hrs   | Client Info  |   | 0   | 0   |  |
| Oil Changed   |   | Client Info  |   | Not Changd  | Not Changd  |  |
| Sample Status   |   |  |   | ATTENTION   | NORMAL  |  |
| CONTAMINATIO  | N   | method   | limit/base  | current   | history1  | history2   |
| Water   |   | WC Method  | >0.2  | NEG   | NEG   |  |
| WEAR METALS   |   | method   | limit/base  | current   | history1  | history2   |
| Iron  | ppm   | ASTM D5185(m)  | >200  | 26  | 13  |  |
| Chromium  | ppm   | ASTM D5185(m)  | >15   | <1  | <1  |  |
| Nickel  | ppm   | ASTM D5185(m)  | >15   | <1  | 0   |  |
| Titanium  | ppm   | ASTM D5185(m)  |   | 0   | 0   |  |
| Silver  | ppm   | ASTM D5185(m)  |   | 0   | 0   |  |
| Aluminum  | ppm   | ASTM D5185(m)  | >25   | <1  | 0   |  |
| Lead  | ppm   | ASTM D5185(m)  | >100  | 0   | 0   |  |
| Copper  | ppm   | . ,  | >200  | 1   | <1  |  |
| Tin   | ppm   | ASTM D5185(m)  | >25   | 0   | 0   |  |
| Antimony  | ppm   | ASTM D5185(m)  | >5  | 0   | 0   |  |
| 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   |
| ADDITIVES<br>Boron  | ppm   | method<br>ASTM D5185(m)  | limit/base  | current<br><1   | history1<br><1  | history2   |
|   | ppm<br>ppm  |  | limit/base  |   |   |  |
| Boron   |   | ASTM D5185(m)  | limit/base  | <1  | <1  |  |
| Boron<br>Barium   | ppm   | ASTM D5185(m)<br>ASTM D5185(m)   | limit/base  | <1<br>0   | <1<br>0   |  |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm  | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | limit/base  | <1<br>0<br>0  | <1<br>0<br>0  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm   | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | limit/base  | <1<br>0<br>0<br><1  | <1<br>0<br>0<br>0   |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm<br>ppm                                    | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | limit/base  | <1<br>0<br>0<br><1<br><1  | <1<br>0<br>0<br>0<br>0  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm                                    | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | limit/base  | <1<br>0<br>0<br><1<br><1<br>4   | <1<br>0<br>0<br>0<br>0<br><1  | <br><br>   |
| 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 D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | limit/base  | <1<br>0<br>0<br><1<br><1<br>4<br>495  | <1<br>0<br>0<br>0<br>0<br><1<br>613   |  |
| 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                      | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | limit/base  | <1<br>0<br>0<br><1<br><1<br>4<br>4<br>995<br>9  | <1<br>0<br>0<br>0<br>0<br><1<br>613<br>3  |  |
| 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<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | limit/base  | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1  | <1<br>0<br>0<br>0<br><1<br>613<br>3<br>594  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   |   | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1  | <1<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm        | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | limit/base  | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>2<br>Urrent   | <1<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1<br>history1  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   | limit/base  | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>2<br>1<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | <1<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1<br>history1<br><1  | <br><br><br><br><br><br>history2                                 |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br><b>method</b><br>ASTM D5185(m)<br>ASTM D5185(m)   | limit/base<br>>50   | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>current<br><1<br><1<br>0  | <1<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1<br>kistory1<br><1<br><1  | <br><br><br><br><br><br>history2                                 |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<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 | ASTM D5185(m)<br>ASTM D5185(m)   | limit/base<br>>50<br>>20  | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>current<br><1<br><1<br>0  | <1<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1<br><b>history1</b><br><1<br><1<br><1<br>0  | <br><br><br><br><br><br>history2<br><br>                         |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<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 | ASTM D5185(m)<br>ASTM D5185(m)   | limit/base<br>>50<br>>20<br>limit/base<br>>20000  | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>current<br>current<br>0<br>current  | <1<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1<br><b>history1</b><br><1<br><1<br>0<br><b>history1</b>   |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm                                       | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)   | limit/base<br>>50<br>>20<br>limit/base<br>>20000  | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br><b>current</b><br><1<br><1<br>0<br><b>current</b><br>0<br><b>current</b>                    | <1<br>0<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1<br>history1<br><1<br><1<br>0<br>history1<br>  | <br><br><br><br><br><br>history2<br><br>history2<br>             |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >6µm                     | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)  | limit/base<br>>50<br>>20<br>limit/base<br>>20000<br>>5000<br>>5000<br>>640                | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br><u>current</u><br><1<br><1<br>0<br><u>current</u><br>20021<br>20021                         | <1<br>0<br>0<br>0<br>-1<br>613<br>3<br>594<br><1<br>history1<br><1<br><1<br>0<br>history1<br>   | <br><br><br><br><br><br>history2<br><br>history2<br><br>history2 |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >6µm<br>Particles >14µm  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D7647<br>ASTM D7647         | limit/base<br>>50<br>>20<br>limit/base<br>>20000<br>>5000<br>>5000<br>>640                | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>current<br><1<br><1<br>0<br>current<br>0<br>current<br>20021<br>5053<br>857                 | <1<br>0<br>0<br>0<br>0<br><1<br>613<br>3<br>594<br><1<br>history1<br><1<br><1<br>0<br>history1<br>  | <br><br><br><br><br><br><br>history2<br><br>history2             |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >14µm<br>Particles >21µm | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D7647<br>ASTM D7647<br>ASTM D7647<br>ASTM D7647               | limit/base<br>>50<br>>20<br>limit/base<br>>20000<br>>5000<br>>5000<br>>640<br>>160<br>>40 | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>current<br><1<br><1<br><1<br>0<br>current<br>20021<br>5053<br>857<br>146                    | <1<br>0<br>0<br>0<br>0<br>(1<br>613<br>3<br>594<br><1<br>history1<br><1<br><1<br>0<br>history1<br><br><br>  |  |
| Boron<br>Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>FLUID CLEANLIN<br>Particles >4µm<br>Particles >21µm<br>Particles >38µm | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D7647<br>ASTM D7647<br>ASTM D7647<br>ASTM D7647<br>ASTM D7647 | limit/base<br>>50<br>>20<br>limit/base<br>>20000<br>>5000<br>>5000<br>>640<br>>160<br>>40 | <1<br>0<br>0<br><1<br><1<br>4<br>495<br>9<br>483<br><1<br>Current<br><1<br><1<br>0<br>Current<br>0<br>20021<br>5053<br>857<br>146<br>9                | <1<br>0<br>0<br>0<br>(<br>0<br>(<br>1<br>613<br>3<br>594<br><1<br>(<br>1<br>(<br>1<br>(<br>1<br>(<br>1<br>0)<br>(<br>history1)<br>(<br><br><br><br><br>(<br><br><br>(<br>)<br>(<br> |  |



25k -

umber of particles (1 ml) 15k 10k 10k

0k -

25k

number of particles (1 ml) 12 k 12 k 10 k 12 k

0k

1.0

4.0 Acid Number

360 -350 -340 -(0-0+) 320 -310 -300 -290 -280 -

# **OIL ANALYSIS REPORT**

| ticle Trend  | FLUID DEGRADA  | TION                    | method                         | limit/base                                 | current            | history1      | history2  |
|--|--|-------------------------|--------------------------------|--|--------------------|---------------|---|
| 4μm<br>10.000  | Acid Number (AN)   | mg KOH/g                | ASTM D974*                     |  | 0.75               | 0.93          |   |
| μπτιπ 14μm   | 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          |   |
| Jun 26/24 +  | Silt   | scalar                  | Visual*                        | NONE                                       | NONE               | NONE          |   |
| Jun2!  | Debris   | scalar                  | Visual*                        | NONE                                       | VLITE              | VLITE         |   |
| cle Trend  | Sand/Dirt  | scalar                  | Visual*                        | NONE                                       | NONE               | NONE          |   |
|  | Appearance   | scalar                  | Visual*                        | NORML                                      | NORML              | NORML         |   |
| 4μm<br>πal. 6μm  | Odor   | scalar                  | Visual*                        | NORML                                      | NORML              | NORML         |   |
| 14μm   | Emulsified Water   | scalar                  | Visual*                        | >0.2                                       | NEG                | NEG           |   |
|  | Free Water   | scalar                  | Visual*                        |  | NEG                | NEG           |   |
|  | FLUID PROPERT  | IES                     | method                         | limit/base                                 | current            | history1      | history2  |
|  | Visc @ 40°C  | cSt                     | ASTM D7279(m)                  | 320  | 295                | 296           |   |
| Jun 26/24  | SAMPLE IMAGES  | ;                       | method                         | limit/base                                 | current            | history1      | history2  |
| ع<br>Number  | Color  |                         |                                |  |                    |               | no image  |
|  | Bottom   |                         |                                |  | 0                  |               | no image  |
|  | GRAPHS   |                         |                                |  |                    |               |   |
| ti-<br>ti-cac  | Ferrous Alloys   |                         |                                | 491,520                                    | Particle Cou       | int           | 20  |
| osity @ 40°C<br>mal  | E 20 - chromium  |                         |                                | 122,880                                    | Severe<br>Abnormal |               | -24<br>-22  |
| mal  | Non-ferrous Metals   | 5                       |                                | Jun 26/24<br>0f particles (per 1 m         | )-<br>)-           |               | -20<br>-18<br>-16<br>-14                                  |
| PO BC erry   | E 5-   |                         |                                |  |                    |               | 12  |
|  | Viscosity @ 40°C   |                         |                                | (D)HC                                      |                    | 14µ 21µ<br>er | 38µ 71µ   |
|  | 340<br>5 320<br>300<br>280<br>400000000000000000000000000000000000 |                         |                                | Acid Number (mg KOH(g)                     | 5-                 |               |   |
|  | Sep 1/23   |                         |                                | Jun26/24                                   | Sep1/23            |               | 4C/3C1  |
| Laboratory<br>Sample No.<br>Lab Number<br>Unique Number<br>Test Package                          | r :5802515<br>9 :IND 2   | Recei<br>Teste<br>Diagn | ved : 02   d : 04   iosed : 04 | 2 Jul 2024<br>4 Jul 2024<br>4 Jul 2024 - W | 2072<br>Ves Davis  | Contact       | AST, BOX 251<br>/INDSOR, ON<br>CA N8Y 4S<br>:: Matt Moran |
| To discuss this sample repor<br>Test denoted (*) outside scop<br>Validity of results and interpr |  | ethod mo                | odified, (e) te                | sted at exter                              | nal lab.           |               | od-ricard.con<br>519)561-535<br>519)971-571               |

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Contact/Location: Matt Morand - HIRWIN