

### **OIL ANALYSIS REPORT**

Sample Rating Trend



# Machine Id 5012902

Component Diesel Engine Fluid NOT GIVEN (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

|   |  |  | Loco Apicoci Magco  | 21 Jan2022 Aug2022 Feb20   |  |  |
|---|--|--|---|--|--|--|
| SAMPLE INFORM   | <b>IATION</b>  | method   | limit/base  | current  | history1   | history2   |
| Sample Number   |  | Client Info  |   | IL05934641   | IL05840489   | IL05771178   |
| Sample Date   |  | Client Info  |   | 28 Jul 2023  | 03 May 2023  | 03 Feb 2023  |
| Machine Age   | mls  | Client Info  |   | 260217   | 236875   | 212216   |
| Oil Age   | mls  | Client Info  |   | 0  | 0  | 0  |
| Oil Changed   |  | Client Info  |   | N/A  | N/A  | N/A  |
| Sample Status   |  |  |   | NORMAL   | NORMAL   | NORMAL   |
| CONTAMINATIO  | N  | method   | limit/base  | current  | history1   | history2   |
| Fuel  |  | WC Method  | >5  | <1.0   | <1.0   | <1.0   |
| Glycol  |  | WC Method  |   | NEG  | NEG  | NEG  |
| WEAR METALS   |  | method   | limit/base  | current  | history1   | history2   |
| Iron  | ppm  | ASTM D5185m  | >100  | 39   | 26   | 23   |
| Chromium  | ppm  | ASTM D5185m  | >20   | <1   | <1   | <1   |
| Nickel  | ppm  | ASTM D5185m  | >4  | 0  | <1   | 0  |
| Titanium  | ppm  | ASTM D5185m  |   | 0  | <1   | 0  |
| Silver  | ppm  | ASTM D5185m  | >3  | 0  | 0  | 0  |
| Aluminum  | ppm  | ASTM D5185m  | >20   | 6  | 4  | 6  |
| Lead  | ppm  | ASTM D5185m  | >40   | 0  | 0  | <1   |
| Copper  | ppm  | ASTM D5185m  | >330  | 2  | <1   | 1  |
| Tin   | ppm  | ASTM D5185m  | >15   | <1   | <1   | <1   |
| Vanadium  | ppm  | ASTM D5185m  |   | <1   | 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>29  | history1<br>28   | history2<br>21   |
|   | ppm<br>ppm   |  | limit/base  |  |  |  |
| Boron   |  | ASTM D5185m  | limit/base  | 29   | 28   | 21   |
| Boron<br>Barium   | ppm  | ASTM D5185m<br>ASTM D5185m   | limit/base  | 29<br>0  | 28<br>0  | 21<br>0  |
| Boron<br>Barium<br>Molybdenum   | ppm<br>ppm   | ASTM D5185m<br>ASTM D5185m<br>ASTM D5185m  | limit/base  | 29<br>0<br>90  | 28<br>0<br>67  | 21<br>0<br>70  |
| 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  | 29<br>0<br>90<br><1  | 28<br>0<br>67<br><1  | 21<br>0<br>70<br><1  |
| 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  | 29<br>0<br>90<br><1<br>810   | 28<br>0<br>67<br><1<br>801   | 21<br>0<br>70<br><1<br>829   |
| 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  | 29<br>0<br>90<br><1<br>810<br>1642   | 28<br>0<br>67<br><1<br>801<br>1439   | 21<br>0<br>70<br><1<br>829<br>1318   |
| 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  | 29<br>0<br>90<br><1<br>810<br>1642<br>960  | 28<br>0<br>67<br><1<br>801<br>1439<br>794  | 21<br>0<br>70<br><1<br>829<br>1318<br>713  |
| 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  | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216  | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054  | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995   |
| 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   |   | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251  | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676  | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846   |
| 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  | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br>current   | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1  | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<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>  | limit/base  | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br>current<br>11   | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5   | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6  |
| 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<br>>25   | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br>current<br>11<br>5  | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5<br>4  | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6<br>3   |
| 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               | ASTM D5185m<br>ASTM D5185m  | limit/base<br>>25<br>>20  | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br>current<br>11<br>5<br>4   | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5<br>4<br>5   | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6<br>3<br>3  |
| 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>INFRA-RED                                     | 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>>25<br>>20<br>limit/base<br>>3                      | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br>current<br>11<br>5<br>4<br>4  | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5<br>4<br>5<br>4<br>5<br>5<br>4   | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6<br>3<br>3<br>3   |
| 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>INFRA-RED<br>Soot %                           | 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>>25<br>>20<br>limit/base<br>>3                      | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br><u>current</u><br>11<br>5<br>4<br><u>current</u>  | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5<br>4<br>5<br>4<br>5<br>5<br>4<br>5<br>4<br>5                            | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6<br>3<br>3<br>3<br>history2<br>0.5                        |
| 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>INFRA-RED<br>Soot %<br>Nitration              | 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>>25<br>>20<br>limit/base<br>>3<br>>20               | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br><i>current</i><br>11<br>5<br>4<br><i>current</i><br>0.7<br>13.5                           | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5<br>4<br>5<br>4<br>5<br><u>history1</u><br>0.4<br>11.9                   | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6<br>3<br>3<br>3<br>history2<br>0.5<br>13.1                |
| 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>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D5185m                              | Imit/base >25 >20 Imit/base >20 >3 >20 >30                        | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br><i>current</i><br>11<br>5<br>4<br><i>current</i><br>0.7<br>13.5<br>27.1                   | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5<br>4<br>5<br>5<br>4<br>5<br>5<br>history1<br>0.4<br>11.9<br>24.0        | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6<br>3<br>3<br>3<br>history2<br>0.5<br>13.1<br>24.4        |
| 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>INFRA-RED<br>Soot %<br>Nitration<br>Sulfation | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185m<br>ASTM D7844<br>*ASTM D7624<br>*ASTM D7415 | limit/base<br>>25<br>>20<br>limit/base<br>>3<br>>20<br>>30<br>>30 | 29<br>0<br>90<br><1<br>810<br>1642<br>960<br>1216<br>3251<br><i>current</i><br>11<br>5<br>4<br><i>current</i><br>0.7<br>13.5<br>27.1<br><i>current</i> | 28<br>0<br>67<br><1<br>801<br>1439<br>794<br>1054<br>2676<br>history1<br>5<br>4<br>5<br>4<br>5<br>5<br>history1<br>0.4<br>11.9<br>24.0<br>history1 | 21<br>0<br>70<br><1<br>829<br>1318<br>713<br>995<br>2846<br>history2<br>6<br>3<br>3<br>history2<br>0.5<br>13.1<br>24.4<br>history2 |

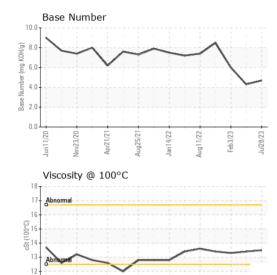


Jun11/20

ur21/21

## **OIL ANALYSIS REPORT**

Ferrous Alloys



lan14/22

| 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   | >0.2       | NEG     | NEG      | NEG      |
| Free Water       | scalar | *Visual   |            | NEG     | NEG      | NEG      |
| FLUID PROPERT    | IES    | method    | limit/base | current | history1 | history2 |
| Visc @ 100°C     | cSt    | ASTM D445 |            | 13.5    | 13.4     | 13.3     |
| GRAPHS           |        |           |            |         |          |          |

70 Aug11/22 Feb3/23 60 50 40 30 20 10 η. Jun11/20 Apr21/21, 00/2/20 Aug25/21 Jan 14/22 Aug11/22 Feb 3/23 ul28/23 Non-ferrous Metals 3( 25 lead 20 ۵ 4 15 10 5 0 ul28/23 ua11/22 h3/73 an14/7 Jun 11, Viscosity @ 100°C Base Number 18 10.0 17 8 (mg KOH/g) 16 cSt (100°C) 6 ( umber 4 ( 13 Base 12 11-0.0 Jun11/20 Aug11/22 Feb3/23 -Jul28/23 -Aug11/22. Feb3/23 -Apr21/21 Aug25/21 Jan 14/22 Apr21/21 Jan 14/22 Jul28/23 Nov23/20 Jun11/20 Vov23/20 Aug25/21 TAMPA IDEALEASE Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. : IL05934641 Received : 25 Aug 2023 5951 ORIENT ROAD Lab Number : 05934641 Diagnosed : 28 Aug 2023 TAMPA, FL Unique Number : 10619912 Diagnostician : Sean Felton US 33610-9565 Test Package : FLEET Contact: Russ Cook russcook@idealease.com T: (813)626-9285



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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