

OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id INTERNATIONAL 330

Component

Diesel Engine

SERVICE PRO 15W40 SYN BLEND (--- 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

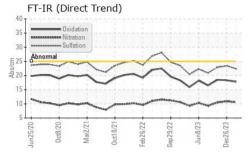
Fluid Condition

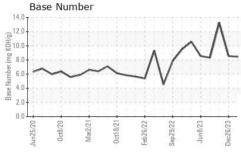
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

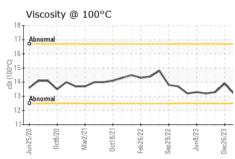
| SAMPLE INFORMATION method limit/bass current history1 history2 | -) | | inzuzu uctz | UZU MIATZUZI UCIZUZI | redzuzz Sepzuzz Junzuzs | D8C2023 | |
|--|------------------|----------|-------------|----------------------|-------------------------|-------------|-------------|
| Sample Date | SAMPLE INFOR | MATION | method | limit/base | current | history1 | history2 |
| Sample Date Client Info 17 Apr 2024 26 Dec 2023 17 Oct 2023 Machine Age mis Client Info 13624 13038 14962 Coil Age mis Client Info 13624 13038 14962 Changed C | Sample Number | | Client Info | | RW0005403 | RW0004768 | RW0004527 |
| Machine Age mls Client Info 376783 363159 350121 Oil Age mls Client Info 13624 13038 14962 Oil Changed Client Info Changed | | | Client Info | | 17 Apr 2024 | 26 Dec 2023 | 17 Oct 2023 |
| Oil Changed Sample Status Client Info MoRMAL Changed NORMAL Changed NoRMAD Change NEG Change N | Machine Age | mls | Client Info | | - | 363159 | 350121 |
| Sample Status | Oil Age | mls | Client Info | | 13624 | 13038 | 14962 |
| CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 23 18 17 Chromium ppm ASTM D5185m >5 <1 1 1 Nickel ppm ASTM D5185m >4 0 0 <1 1 Silver ppm ASTM D5185m >20 4 5 6 6 Lead ppm ASTM D5185m >20 4 5 6 6 Lead ppm ASTM D5185m >90 0 1 2 1 1 2 1 1 2 1 1 <th>Oil Changed</th> <th></th> <th>Client Info</th> <th></th> <th>Changed</th> <th>Changed</th> <th>Changed</th> | Oil Changed | | Client Info | | Changed | Changed | Changed |
| Fuel | Sample Status | | | | NORMAL | NORMAL | NORMAL |
| Water Glycol WC Method Glycol >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 23 18 17 Chromium ppm ASTM D5185m >5 <1 | CONTAMINATIC | N | method | limit/base | current | history1 | history2 |
| Glycol WE Method NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >165 23 18 17 Chromium ppm ASTM D5185m >5 <1 1 1 Nickel ppm ASTM D5185m >4 0 0 <1 Silver ppm ASTM D5185m >2 0 0 <1 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 4 5 6 Lead ppm ASTM D5185m >90 0 1 2 Copper ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 1 Vanadium ppm ASTM D5185m 0 0 0 1 | Fuel | | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| WEAR METALS | Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Iron | Glycol | | WC Method | | NEG | NEG | NEG |
| Chromium ppm ASTM D5185m >5 <1 | WEAR METALS | | method | limit/base | current | history1 | history2 |
| Nickel ppm ASTM D5185m >4 0 0 <1 | Iron | ppm | ASTM D5185m | >165 | 23 | 18 | 17 |
| Titanium ppm ASTM D5185m >2 0 0 <1 | Chromium | ppm | ASTM D5185m | >5 | <1 | 1 | 1 |
| Silver | Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | <1 |
| Aluminum ppm ASTM D5185m >20 4 5 6 Lead ppm ASTM D5185m >150 3 5 11 Copper ppm ASTM D5185m >90 0 1 2 Tin ppm ASTM D5185m >5 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 0 0 10 Madrium ppm ASTM D5185m 63 55 70 Manganese ppm ASTM D5185m 938 869 948 Calcium ppm ASTM D5185m 1223 1300 1305 Phosphorus ppm ASTM D5185m 1301 1343 1363 Sulfur | Titanium | ppm | ASTM D5185m | >2 | 0 | 0 | <1 |
| Lead | Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Copper ppm ASTM D5185m >90 0 1 2 Tin ppm ASTM D5185m >5 <1 <1 <1 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 22 10 Barium ppm ASTM D5185m 63 55 70 Manganese ppm ASTM D5185m 63 55 70 Magnesium ppm ASTM D5185m 938 869 948 Calcium ppm ASTM D5185m 1223 1300 1305 Phosphorus ppm ASTM D5185m 1124 1105 1190 Zinc ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current | Aluminum | ppm | ASTM D5185m | >20 | 4 | 5 | 6 |
| Tin ppm ASTM D5185m >5 <1 | Lead | ppm | ASTM D5185m | >150 | 3 | 5 | 11 |
| Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 <1 | Copper | ppm | ASTM D5185m | >90 | 0 | 1 | 2 |
| Cadmium ppm ASTM D5185m 0 0 <1 | Tin | ppm | ASTM D5185m | >5 | <1 | <1 | <1 |
| ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 22 10 Barium ppm ASTM D5185m 0 0 10 Molybdenum ppm ASTM D5185m 63 55 70 Manganese ppm ASTM D5185m 938 869 948 Calcium ppm ASTM D5185m 1223 1300 1305 Phosphorus ppm ASTM D5185m 1124 1105 1190 Zinc ppm ASTM D5185m 1301 1343 1363 Sulfur ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 3 3 1 Potassium ppm ASTM D5185m 3 3 1 Potassium ppm ASTM D5185m 3 3 | Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Boron | Cadmium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| Barium ppm ASTM D5185m 0 0 10 Molybdenum ppm ASTM D5185m 63 55 70 Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 938 869 948 Calcium ppm ASTM D5185m 1223 1300 1305 Phosphorus ppm ASTM D5185m 1124 1105 1190 Zinc ppm ASTM D5185m 1301 1343 1363 Sulfur ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 3 3 1 Potassium ppm ASTM D5185m 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7844 >7.5 0.9 1.2 <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th> | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 63 55 70 Manganese ppm ASTM D5185m <1 | Boron | ppm | ASTM D5185m | | 10 | 22 | 10 |
| Manganese ppm ASTM D5185m <1 | Barium | ppm | ASTM D5185m | | 0 | 0 | 10 |
| Magnesium ppm ASTM D5185m 938 869 948 Calcium ppm ASTM D5185m 1223 1300 1305 Phosphorus ppm ASTM D5185m 1124 1105 1190 Zinc ppm ASTM D5185m 1301 1343 1363 Sulfur ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 35 4 3 4 Sodium ppm ASTM D5185m 33 3 1 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % "ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm "ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION | Molybdenum | ppm | ASTM D5185m | | 63 | 55 | 70 |
| Calcium ppm ASTM D5185m 1223 1300 1305 Phosphorus ppm ASTM D5185m 1124 1105 1190 Zinc ppm ASTM D5185m 1301 1343 1363 Sulfur ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 3 4 Sodium ppm ASTM D5185m 3 3 1 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 | Manganese | ppm | ASTM D5185m | | <1 | <1 | <1 |
| Phosphorus ppm ASTM D5185m 1124 1105 1190 Zinc ppm ASTM D5185m 1301 1343 1363 Sulfur ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 3 4 Sodium ppm ASTM D5185m >3 3 1 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 | Magnesium | ppm | ASTM D5185m | | 938 | 869 | 948 |
| Zinc ppm ASTM D5185m 1301 1343 1363 Sulfur ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 3 4 Sodium ppm ASTM D5185m >20 3 6 13 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 | Calcium | ppm | ASTM D5185m | | 1223 | 1300 | 1305 |
| Sulfur ppm ASTM D5185m 3490 3118 3887 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 3 4 Sodium ppm ASTM D5185m >20 3 6 13 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/.mm *ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | Phosphorus | ppm | ASTM D5185m | | 1124 | 1105 | 1190 |
| CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >35 4 3 4 Sodium ppm ASTM D5185m >20 3 6 13 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | Zinc | ppm | ASTM D5185m | | 1301 | 1343 | 1363 |
| Silicon ppm ASTM D5185m >35 4 3 4 Sodium ppm ASTM D5185m 3 3 1 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | Sulfur | ppm | ASTM D5185m | | 3490 | 3118 | 3887 |
| Sodium ppm ASTM D5185m 3 3 1 Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | | S | method | limit/base | current | history1 | history2 |
| Potassium ppm ASTM D5185m >20 3 6 13 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >7.5 0.9 1.2 0.9 Nitration Abs/cm *ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | Silicon | ppm | ASTM D5185m | >35 | 4 | 3 | 4 |
| INFRA-RED | Sodium | ppm | ASTM D5185m | | 3 | 3 | 1 |
| Soot % % *ASTM D7844 > 7.5 0.9 1.2 0.9 Nitration Abs/cm *ASTM D7624 > 20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 > 30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 > 25 17.8 18.3 18.5 | Potassium | ppm | ASTM D5185m | >20 | 3 | 6 | 13 |
| Nitration Abs/cm *ASTM D7624 >20 10.6 10.9 10.5 Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 22.4 23.4 22.9 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | Soot % | % | *ASTM D7844 | >7.5 | 0.9 | 1.2 | 0.9 |
| FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | Nitration | Abs/cm | *ASTM D7624 | >20 | 10.6 | 10.9 | 10.5 |
| Oxidation Abs/.1mm *ASTM D7414 >25 17.8 18.3 18.5 | Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 22.4 | 23.4 | 22.9 |
| | FLUID DEGRAD | ATION | method | limit/base | current | history1 | history2 |
| Base Number (BN) mg KOH/g ASTM D2896 8.44 8.56 13.28 | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 17.8 | 18.3 | 18.5 |
| | Base Number (BN) | mg KOH/g | ASTM D2896 | | 8.44 | 8.56 | 13.28 |



OIL ANALYSIS REPORT



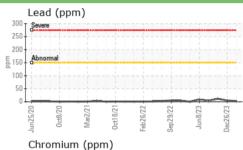


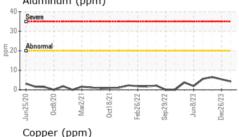


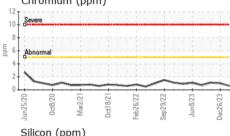
| VISUAL | | method | limit/base | current | history1 | history2 |
|-------------------------|--------|---------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | 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 |
| | | | | | | |

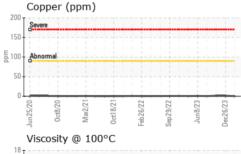
| FLUID PROPER | THES | method | | riistory i | History2 |
|--------------|------|-----------|------|------------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 13.2 | 13.9 | 13.3 |

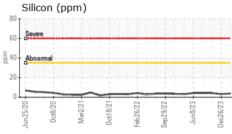
| | n (ppr | n) | | | | | |
|----------|-------------|---------|----------|----------|----------|---------|----------|
| 300 Seve | re | | | | 7777 | | 77.77 |
| 250 | | | | | | | |
| Abno | ormal | | | | | | |
| 100 | | | | | | | |
| 50 | | | | | | | _ |
| Jun25/20 | Oct8/20 | Mar2/21 | Oct18/21 | Feb26/22 | Sep29/22 | Jun8/23 | Jec26/23 |
| - | | | | | | | |
| Álu | minun | n (ppi | m) | | 0, | | |
| , | minun re | n (ppi | n) | 7-7-7 | -1-1-1 | -5-5-5 | |

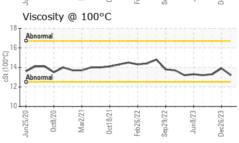


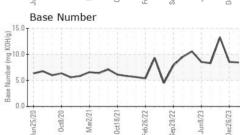
















Laboratory Sample No. Unique Number : 10992527

: RW0005403 Lab Number : 06157104

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received : 22 Apr 2024 **Tested**

: 23 Apr 2024 Diagnosed : 23 Apr 2024 - Wes Davis **MICHIGAN WOOD CARRIERS**

P.O. BOX 337 VANDERBILT, MI US 49795

Contact: STEVE WOLFE sbeyer@ntimberlands.com T: (989)983-2485

Test Package : MOB 2 Certificate 12367 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)

F: (989)983-9678