

OIL ANALYSIS REPORT

Sample Rating Trend



WARREN 1-2 - J100162892

Diesel Engine

NAPA Motor Oil 15W40 (--- 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

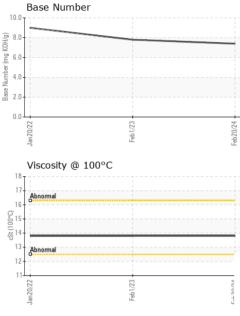
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

| SAMPLE INFORM | IATION | method | limit/base | current | history1 | history2 |
|---|--|--|---|---|---|---|
| Sample Number | | Client Info | | WC0894427 | WC0771558 | WC0637008 |
| Sample Date | | Client Info | | 20 Feb 2024 | 01 Feb 2023 | 20 Jan 2022 |
| Machine Age | hrs | Client Info | | 572 | 501 | 470 |
| Oil Age | hrs | Client Info | | 48 | 23 | 0 |
| Oil Changed | | Client Info | | Not Changd | Not Changd | Not Changd |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINATION | J | method | limit/base | current | history1 | history2 |
| Fuel | | WC Method | >5 | <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 | >100 | 2 | 2 | 3 |
| Chromium | ppm | ASTM D5185m | >20 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 1 | 2 | 2 |
| Lead | ppm | ASTM D5185m | >40 | 0 | 1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | <1 | 1 | 2 |
| Tin | ppm | ASTM D5185m | >15 | 0 | <1 | 0 |
| Antimony | ppm | ASTM D5185m | | | | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Cadinium | ppiii | | | v | Ū | |
| ADDITIVES | ppm | method | limit/base | current | history1 | history2 |
| | ppm | | limit/base | - | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185m | limit/base | current 21 | history1 244 | history2 381 |
| ADDITIVES Boron Barium | ppm ppm | method ASTM D5185m ASTM D5185m | limit/base | current 21 0 | history1 244 0 | history2 381 0 |
| ADDITIVES Boron Barium Molybdenum | ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | current 21 0 22 | history1 244 0 98 | history2 381 0 95 |
| ADDITIVES Boron Barium Molybdenum Manganese | ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | current 21 0 22 0 | history1 244 0 98 <1 | history2 381 0 95 <1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | current 21 0 22 0 26 | history1 244 0 98 <1 219 | history2 381 0 95 <1 437 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | Current 21 0 22 0 26 2284 | history1 244 0 98 <1 219 1807 | history2 381 0 95 <1 437 1309 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | Current 21 0 22 0 26 2284 954 | history1 244 0 98 <1 219 1807 949 | history2 381 0 95 <1 437 1309 771 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base | Current 21 0 22 0 26 2284 954 1084 | history1 244 0 98 <1 219 1807 949 1197 | history2 381 0 95 <1 437 1309 771 948 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | | Current 21 0 22 0 26 2284 954 1084 3807 | history1 244 0 98 <1 219 1807 949 1197 3990 | history2 381 0 95 <1 437 1309 771 948 2608 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS | ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m | limit/base | current 21 0 22 0 26 2284 954 1084 3807 current | history1 244 0 98 <1 219 1807 949 1197 3990 history1 | history2 381 0 95 <1 437 1309 771 948 2608 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base | current 21 0 22 0 26 2284 954 1084 3807 current 3 | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base | current 21 0 22 0 26 2284 954 1084 3807 current 3 1 | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 2 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base >25 >20 | current 21 0 22 0 26 2284 954 1084 3807 current 3 1 <1 | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 2 <1 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 2 0 0 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED | ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base >25 >20 limit/base | current 21 0 22 0 26 2284 954 1084 3807 current 3 1 <1 current | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 2 <1 4 2 <1 history1 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 2 0 history2 4 2 0 history2 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % | ppm | method ASTM D5185m | limit/base >25 >20 limit/base >3 | current 21 0 22 0 26 2284 954 1084 3807 current 3 1 <1 current 0.1 | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 2 <1 <1 history1 0.1 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 2 0 history2 4 2 0 history2 0.1 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m | limit/base >25 >20 limit/base >3 >20 | current 21 0 22 0 26 2284 954 1084 3807 current 3 1 <1 current 0.1 5.6 | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 2 <1 0.1 6.1 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 2 0 history2 4 2 0 history2 0.1 5.0 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D5185m | limit/base >25 >20 limit/base >3 >20 >3 >20 | current 21 0 22 0 26 2284 954 1084 3807 current 3 1 <1 current 0.1 5.6 15.7 | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 2 <1 history1 4 2 <1 history1 0.1 6.1 19.1 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 2 0 history2 0 bistory2 0.1 5.0 21.8 |
| ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA | ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm | method ASTM D5185m ASTM D7185M *ASTM D7624 *ASTM D7415 method | limit/base >25 >20 limit/base >3 >20 >30 >30 | current 21 0 22 0 26 2284 954 1084 3807 current 3 1 <1 current 0.1 5.6 15.7 current | history1 244 0 98 <1 219 1807 949 1197 3990 history1 4 2 <1 0.1 6.1 19.1 history1 | history2 381 0 95 <1 437 1309 771 948 2608 history2 4 2 0 history2 4 2 0 history2 0.1 5.0 21.8 history2 |

Contact/Location: BRANDON RICE - NATRAL



OIL ANALYSIS REPORT



| lumber | : WearCheck USA - 50 : WC0894427 : 06101322 : 10899552 : MOB 1 (Additional T | Recei [:] Teste Diagn | ved : 2 d : 2 osed : 2 | ry, NC 27513 27 Feb 2024 28 Feb 2024 28 Feb 2024 - Do | NATIONAL POWER COF 4541 PRESLYN E RALEIGH, N US 276 Contact: BRANDON RIC brandon.rice@natpow.cc | | |
|----------|---|--------------------------------------|------------------------------|--|--|-----------|----------|
| | Jan 20/22 → | Feb1/23 + | | Feb20/24 | Jan20/22 | Feb1/23 + | |
| | Abnormal | | | 2 | .0 | | |
| | 16 - 9 (0,001) 47 73 4bnormal | | | r (mg Ko | .0 - | | |
| | Abnormal | ! ! | | (B)HC | | | |
| | ⊸ Viscosity @ 100° | | | يت. | ് Base Numbe | | |
| | Jan 20/22 | Feb 1/23 | | Feb20/24 | Jan 20/22 | Feb1/23 | |
| | 0 | | | | | | |
| | 100 - | | | d. | Abnormal | | |
| | <u></u> <u></u> <u></u> <u></u> <u></u> 200- | | | u. | | | |
| | 300 | | | | 50 | | |
| | Copper (ppm) | | | | Silicon (ppm |) | |
| | Jan 20/22 | Feb | | Feb20/24 | Jan20/22 | Feb | |
| | 0/22 | Feb 1/23 - | | 0/24 | 0/22 | Feb1/23 | |
| | 10- | | | | 10- | | |
| | | | | | | | |
| | 30 20 - Abnormal | | | | | | |
| | 40 Severe | | | | 10 Severe | | |
| | Aluminum (ppm) | | | | Chromium (| ppm) | |
| | Jan 20,22 | Feb 1/23 | | Feb20/24 | Jan 20/22 | Feb1/23 | |
| | 0/22 | | |)/24 | 0 322 | 1/23 | |
| | 50- | | | | 20 - | | |
| L | Abnormal | | | <u> </u> | 40 - Abnormal | | |
| רייר אים | 150 | | | | 50 - | | |
| Vt | 250 200 Severe | 1 | | | 30 Severe | 1 | |
| | Iron (ppm) | | | | Lead (ppm) | | |
| | GRAPHS | | | | | | |
| | Visc @ 100°C | cSt | ASTM D44 | 5 | 13.8 | 13.8 | 13.8 |
| | FLUID PROPER | TIES | method | limit/base | current | history1 | history2 |
| | Free Water | scalar | *Visual | | NEG | NEG | NEG |
| | Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| Feb20/24 | Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| /24 | Appearance | scalar scalar | *Visual | NORML | NORE | NORML | NORML |
| | Debris Sand/Dirt | scalar | *Visual *Visual | NONE | NONE | NONE | NONE |
| | Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| | Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| | Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| | White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |



Certificate L2367

Contact/Location: BRANDON RICE - NATRAL