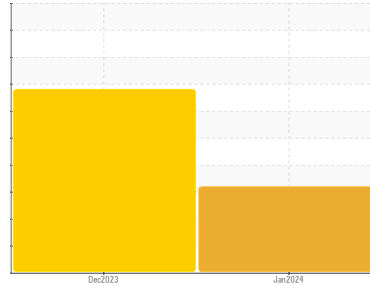




OIL ANALYSIS REPORT

Sample Rating Trend



DIRT



Area
Bernardsville
Machine Id
MACK 1240
Component
Diesel Engine
Fluid
GIBRALTAR 15W/40 SUPER S-3 LX (11)

DIAGNOSIS

Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor.

Wear

Cylinder, crank, or cam shaft wear is indicated.

Contamination

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

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 INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|----------|
| Sample Number | Client Info | | WC0875342 | WC0875333 | --- |
| Sample Date | Client Info | | 11 Jan 2024 | 15 Dec 2023 | --- |
| Machine Age | hrs | Client Info | 21137 | 20949 | --- |
| Oil Age | hrs | Client Info | 0 | 0 | --- |
| Oil Changed | Client Info | | N/A | N/A | --- |
| Sample Status | | | ABNORMAL | SEVERE | --- |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|------------|----------|----------|
| Water | WC Method | >0.2 | NEG | NEG | --- |
| Glycol | WC Method | | NEG | NEG | --- |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|------------------|--------------|----------|----------|
| Iron | ppm | ASTM D5185m >120 | ▲ 120 | 32 | --- |
| Chromium | ppm | ASTM D5185m >20 | 3 | <1 | --- |
| Nickel | ppm | ASTM D5185m >5 | 3 | ▲ 12 | --- |
| Titanium | ppm | ASTM D5185m >2 | <1 | <1 | --- |
| Silver | ppm | ASTM D5185m >2 | 0 | <1 | --- |
| Aluminum | ppm | ASTM D5185m >20 | ▲ 14 | 3 | --- |
| Lead | ppm | ASTM D5185m >40 | 5 | 2 | --- |
| Copper | ppm | ASTM D5185m >330 | 16 | 14 | --- |
| Tin | ppm | ASTM D5185m >15 | 1 | 4 | --- |
| Vanadium | ppm | ASTM D5185m | 0 | <1 | --- |
| Cadmium | ppm | ASTM D5185m | 0 | 0 | --- |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|------------------|-------------|----------|----------|
| Boron | ppm | ASTM D5185m | 5 | 23 | --- |
| Barium | ppm | ASTM D5185m | 0 | 0 | --- |
| Molybdenum | ppm | ASTM D5185m 66 | 64 | 61 | --- |
| Manganese | ppm | ASTM D5185m | 2 | 2 | --- |
| Magnesium | ppm | ASTM D5185m 1000 | 689 | 492 | --- |
| Calcium | ppm | ASTM D5185m 1050 | 1454 | 1388 | --- |
| Phosphorus | ppm | ASTM D5185m 1150 | 979 | 721 | --- |
| Zinc | ppm | ASTM D5185m 1270 | 1216 | 920 | --- |
| Sulfur | ppm | ASTM D5185m | 2892 | 2383 | --- |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|-----------------|-------------|----------|----------|
| Silicon | ppm | ASTM D5185m >25 | ▲ 47 | 82 | --- |
| Sodium | ppm | ASTM D5185m | 7 | 10 | --- |
| Potassium | ppm | ASTM D5185m >20 | 8 | 8 | --- |
| Fuel | % | ASTM D3524 >3.0 | 0.5 | ▲ 3.9 | --- |

INFRA-RED

| | method | limit/base | current | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 >4 | 2 | 0.5 | --- |
| Nitration | Abs/cm | *ASTM D7624 >20 | 11.8 | 10.2 | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | 25.8 | 22.1 | --- |

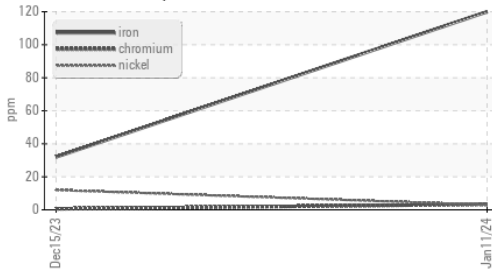
FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 >25 | 19.1 | 21.7 | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 10.1 | 5.74 | 5.86 | --- |



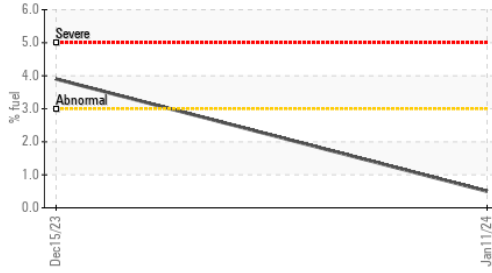
OIL ANALYSIS REPORT

▲ Ferrous Alloys



| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | NONE | --- |
| Precipitate | scalar | *Visual | NONE | NONE | --- |
| Silt | scalar | *Visual | NONE | NONE | --- |
| Debris | scalar | *Visual | NONE | NONE | --- |
| Sand/Dirt | scalar | *Visual | NONE | NONE | --- |
| Appearance | scalar | *Visual | NORML | NORML | --- |
| Odor | scalar | *Visual | NORML | NORML | --- |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | --- |
| Free Water | scalar | *Visual | | NEG | --- |

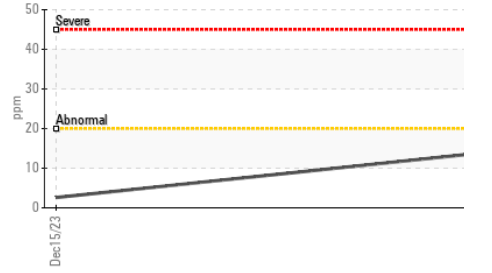
● Fuel Dilution



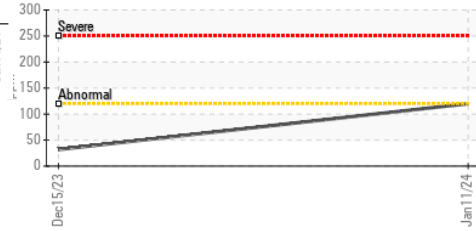
| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | 14.3 | ▲ 11.5 |

GRAPHS

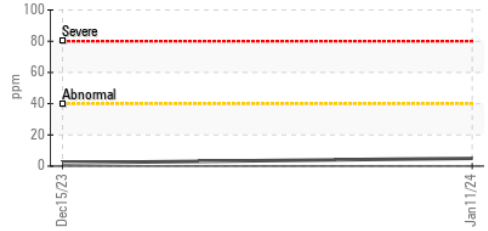
▲ Aluminum (ppm)



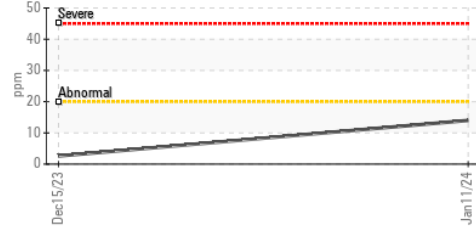
▲ Iron (ppm)



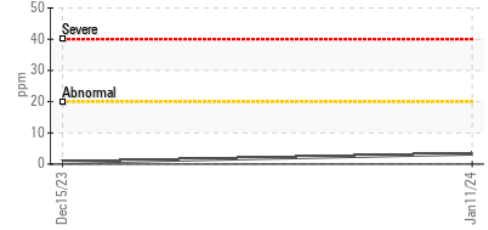
Lead (ppm)



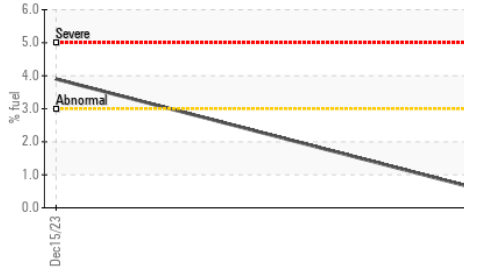
▲ Aluminum (ppm)



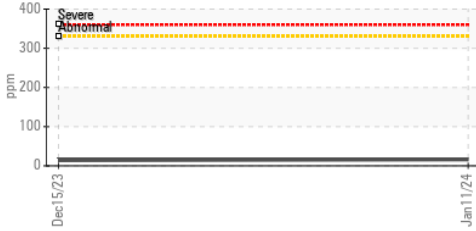
Chromium (ppm)



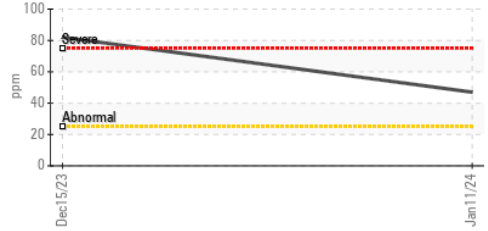
● Fuel Dilution



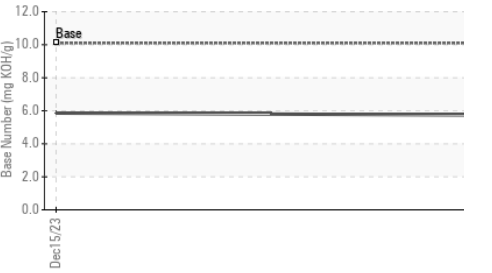
Copper (ppm)



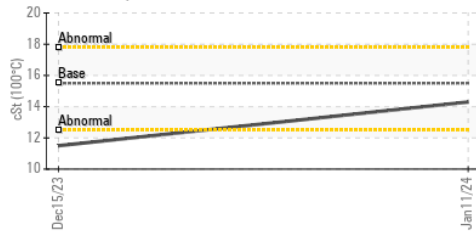
▲ Silicon (ppm)



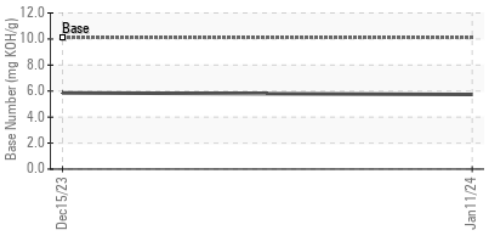
Base Number



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0875342 **Received** : 17 Jan 2024
Lab Number : 06063790 **Diagnosed** : 20 Jan 2024
Unique Number : 10835172 **Diagnostician** : Don Baldrige
Test Package : MOB 2 (Additional Tests: PercentFuel)

INTERSTATE WASTE-BERNARDSVILLE
 33 OLD QUARRY ROAD
 BERNARDSVILLE, NJ
 US 07924
 Contact: Pablo Chardon
 PChardon@interstatewaste.com

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)

T:
F: