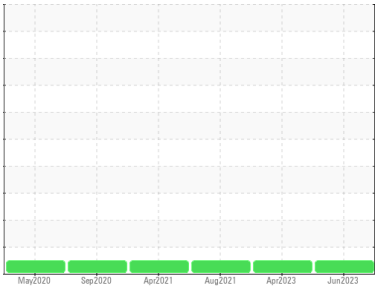
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
## GM Seattle Off Raod Shop
Machine Id
## [GM Seattle Off Raod Shop] 40-832
Component
**Diesel Engine**
Fluid
**SHELL 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Oil and filter change at the time of sampling has been noted. 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/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PE0002200** | PE0001257 | PE12291168 |
| Sample Date | | Client Info | | **28 Jun 2023** | 19 Apr 2023 | 18 Aug 2021 |
| Machine Age | hrs | Client Info | | **6016** | 5346 | 4232 |
| Oil Age | hrs | Client Info | | **673** | 1510 | 370 |
| Oil Changed | | Client Info | | **Changed** | Changed | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | <1.0 | <1.0 |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >50 | **11** | 15 | 6 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | 1 | 0 |
| Nickel | ppm | ASTM D5185m | >5 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **3** | 4 | 2 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >30 | **2** | 2 | 1 |
| Tin | ppm | ASTM D5185m | >15 | **0** | 0 | 0 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **38** | 67 | 17 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **40** | 17 | 25 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | --- |
| Magnesium | ppm | ASTM D5185m | | **694** | 278 | 404 |
| Calcium | ppm | ASTM D5185m | | **2465** | 2393 | 2314 |
| Phosphorus | ppm | ASTM D5185m | | **1265** | 1049 | 1102 |
| Zinc | ppm | ASTM D5185m | | **1707** | 1401 | 1340 |
| Sulfur | ppm | ASTM D5185m | | **4728** | 3904 | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >15 | **4** | 5 | 3 |
| Sodium | ppm | ASTM D5185m | >150 | **4** | 4 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | **2** | 4 | 3 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.1** | 0.1 | <0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **14.7** | 17.6 | 12 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **27.8** | 29.1 | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **29.0** | 35.1 | 18 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **6.5** | 5.1 | 5.89 |

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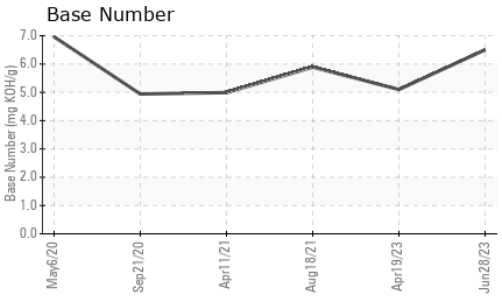
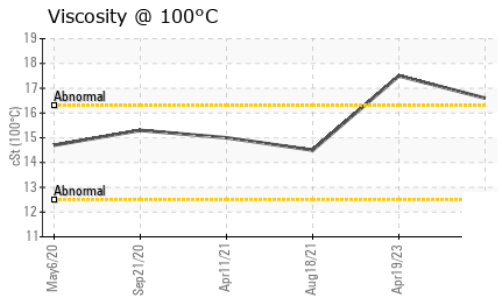
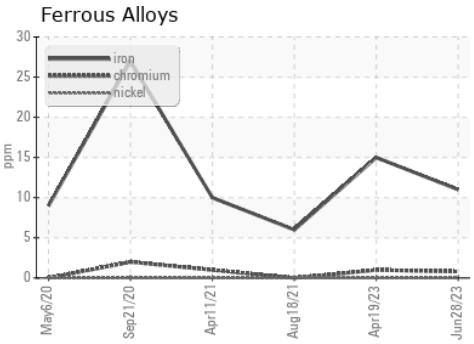


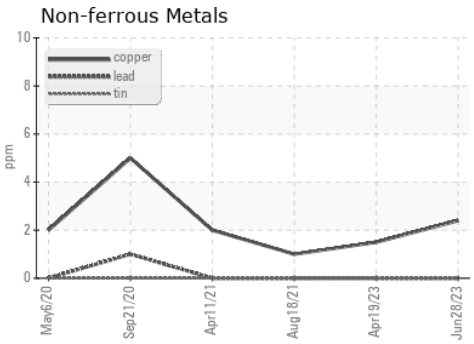



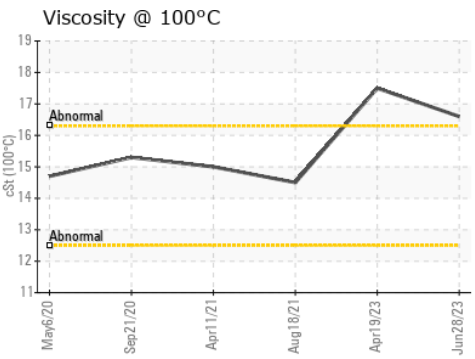

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Appearance | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Emulsified Water | scalar | *Visual | >0.1 | **NEG** | NEG | --- |
| Free Water | scalar | *Visual | | **NEG** | NEG | --- |

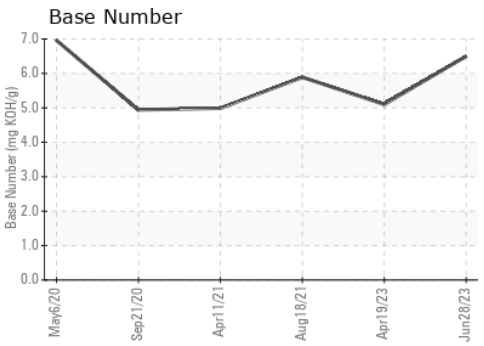
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | | **16.6** | 17.5 | 14.5 |

## GRAPHS




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PE0002200
**Lab Number** : 05903591
**Unique Number** : 10564947
**Test Package** : CONST ( Additional Tests: FT-IR, ICP, KV100, SCREEN, TBN )
**Received** : 20 Jul 2023
**Diagnosed** : 24 Jul 2023
**Diagnostician** : Doug Bogart

*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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Report Id: GARSEA [WUSCAR] 05903591 (Generated: 07/24/2023 21:40:16) Rev: 1

Submitted By: Stoneway Concrete - Seattle - Jesse Patterson