# PROBLEM SUMMARY

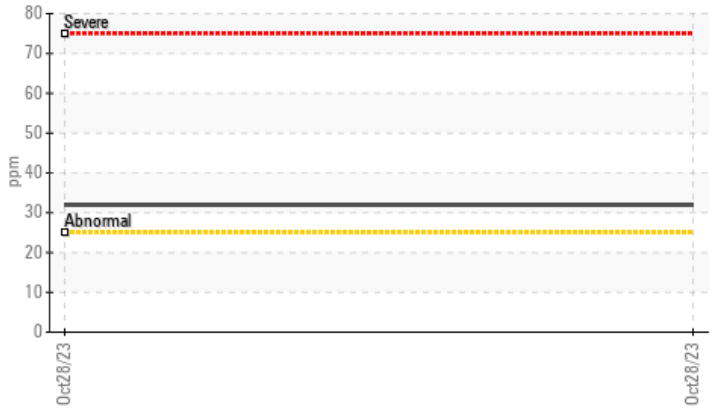
Sample Rating Trend


**DIRT**

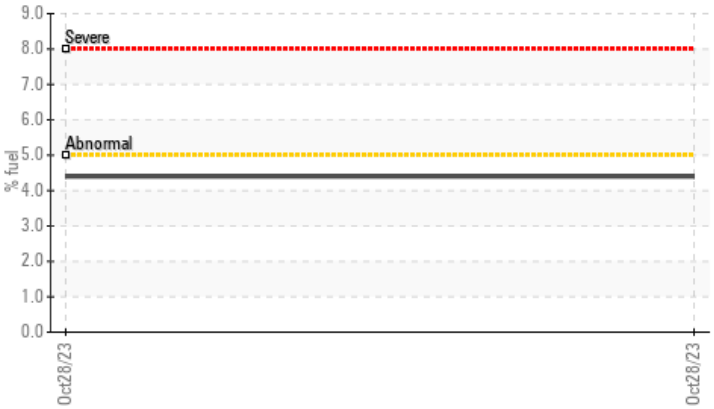
Machine Id
## WESTERN STAR WESTERN STAR
Component
**Diesel Engine**
Fluid
**NOT GIVEN (--- GAL)**

## COMPONENT CONDITION SUMMARY

▲ Silicon (ppm)




▲ Fuel Dilution




## RECOMMENDATION

We advise that you check the fuel injection system. Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

## PROBLEMATIC TEST RESULTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample Status | | | | **ABNORMAL** | --- | --- |
| Silicon | ppm | ASTM D5185m | >25 | ▲ **32** | --- | --- |
| Fuel | % | ASTM D3524 | >5 | ▲ **4.4** | --- | --- |

**Customer Id:** SHOQUI
**Sample No.:** WC0838329
**Lab Number:** 05999642
**Test Package:** FLEET

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Don Baldridge +1
don.b505@comcast.net

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Information Required | MISSED | Dec 11 2023 | ? | Please specify the brand, type, and viscosity of the oil on your next sample. |
| Check Fuel/injector System | MISSED | Dec 11 2023 | ? | We advise that you check the fuel injection system. |

## HISTORICAL DIAGNOSIS

# OIL ANALYSIS REPORT

Sample Rating Trend


**DIRT**

Machine Id
## WESTERN STAR WESTERN STAR
Component
**Diesel Engine**
Fluid
**NOT GIVEN (--- GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check the fuel injection system. 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**
Elemental level of silicon (Si) above normal. There is a moderate amount of fuel present in the oil.

**Fluid Condition**
The BN result indicates that there is suitable alkalinity remaining in the oil.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0838329** | --- | --- |
| Sample Date | | Client Info | | **28 Oct 2023** | --- | --- |
| Machine Age | mls | Client Info | | **764000** | --- | --- |
| Oil Age | mls | Client Info | | **0** | --- | --- |
| Oil Changed | | Client Info | | **N/A** | --- | --- |
| Sample Status | | | | **ABNORMAL** | --- | --- |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **35** | --- | --- |
| Chromium | ppm | ASTM D5185m | >20 | **2** | --- | --- |
| Nickel | ppm | ASTM D5185m | >4 | **0** | --- | --- |
| Titanium | ppm | ASTM D5185m | | **<1** | --- | --- |
| Silver | ppm | ASTM D5185m | >3 | **0** | --- | --- |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | --- | --- |
| Lead | ppm | ASTM D5185m | >40 | **2** | --- | --- |
| Copper | ppm | ASTM D5185m | >330 | **2** | --- | --- |
| Tin | ppm | ASTM D5185m | >15 | **4** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | --- | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | --- | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **43** | --- | --- |
| Barium | ppm | ASTM D5185m | | **0** | --- | --- |
| Molybdenum | ppm | ASTM D5185m | | **40** | --- | --- |
| Manganese | ppm | ASTM D5185m | | **1** | --- | --- |
| Magnesium | ppm | ASTM D5185m | | **524** | --- | --- |
| Calcium | ppm | ASTM D5185m | | **1651** | --- | --- |
| Phosphorus | ppm | ASTM D5185m | | **771** | --- | --- |
| Zinc | ppm | ASTM D5185m | | **949** | --- | --- |
| Sulfur | ppm | ASTM D5185m | | **2501** | --- | --- |

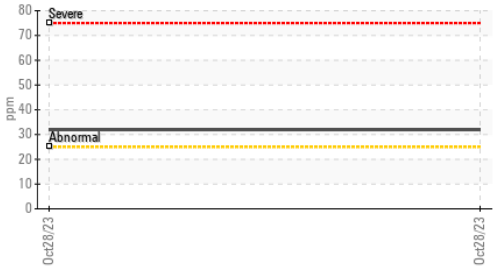
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | ▲ **32** | --- | --- |
| Sodium | ppm | ASTM D5185m | | **2** | --- | --- |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | --- | --- |
| Fuel | % | ASTM D3524 | >5 | ▲ **4.4** | --- | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **1.4** | --- | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **7.2** | --- | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **24.2** | --- | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **19.6** | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **9.5** | --- | --- |

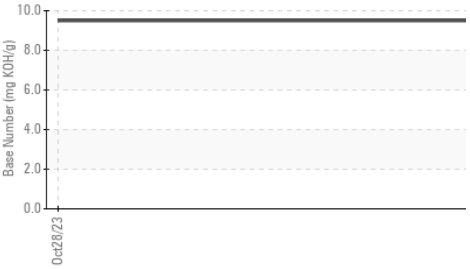
# OIL ANALYSIS REPORT

Silicon (ppm)

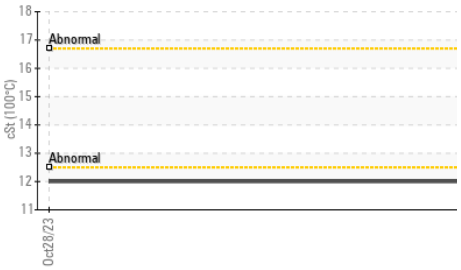



Fuel Dilution


Base Number




Viscosity @ 100°C

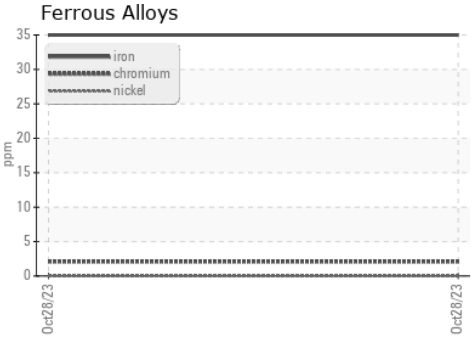



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | --- | --- |
| Silt |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

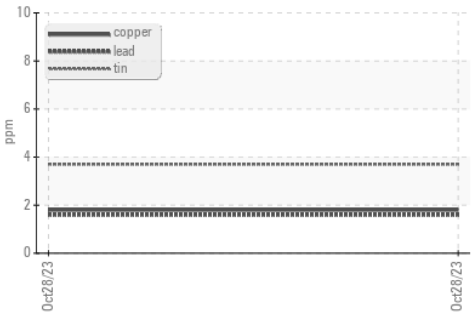
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | | **12.0** | --- | --- |

GRAPHS

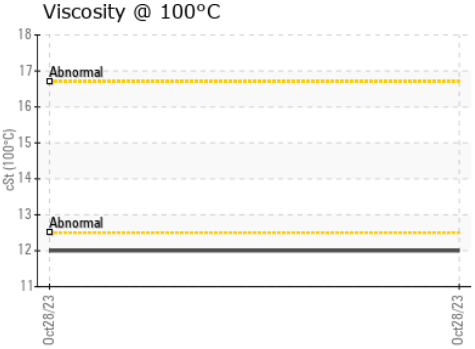
Ferrous Alloys



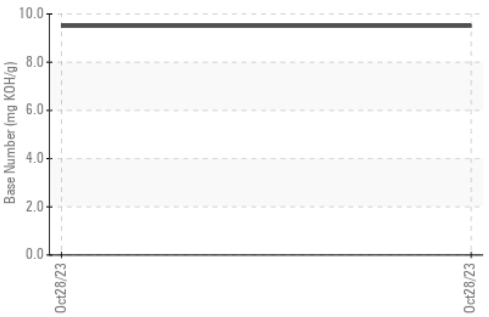

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0838329 **Recieved** : 06 Nov 2023
**Lab Number** : 05999642 **Diagnosed** : 08 Nov 2023
**Unique Number** : 10728002 **Diagnostician** : Don Baldridge
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

*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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