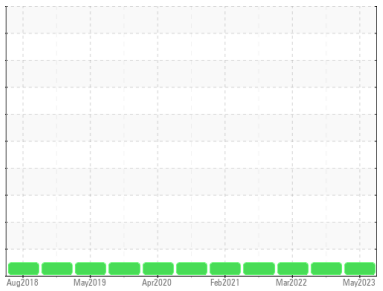
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## PIERCE 2223
Component
**Diesel Engine**
Fluid
**CHEVRON DELO 400 XLE 15W40 (35 QTS)**

## 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/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0804027** | WC0741898 | WC0666072 |
| Sample Date | | Client Info | | **22 May 2023** | 03 Nov 2022 | 03 Mar 2022 |
| Machine Age | hrs | Client Info | | **9074** | 8914 | 8624 |
| Oil Age | hrs | Client Info | | **455** | 290 | 533 |
| Oil Changed | | Client Info | | **Changed** | Not Changd | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<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 | >200 | **31** | 24 | 38 |
| Chromium | ppm | ASTM D5185m | >10 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **11** | 10 | 11 |
| Silver | ppm | ASTM D5185m | >2 | **<1** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >30 | **1** | 2 | 2 |
| Lead | ppm | ASTM D5185m | >30 | **<1** | <1 | 2 |
| Copper | ppm | ASTM D5185m | >30 | **4** | 3 | 5 |
| Tin | ppm | ASTM D5185m | >4 | **<1** | <1 | <1 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | 0 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **84** | 100 | 65 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **52** | 55 | 46 |
| Manganese | ppm | ASTM D5185m | | **1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | **696** | 663 | 698 |
| Calcium | ppm | ASTM D5185m | | **1453** | 1430 | 1403 |
| Phosphorus | ppm | ASTM D5185m | 760 | **713** | 732 | 731 |
| Zinc | ppm | ASTM D5185m | 830 | **902** | 866 | 860 |
| Sulfur | ppm | ASTM D5185m | 2770 | **3391** | 3446 | 2658 |

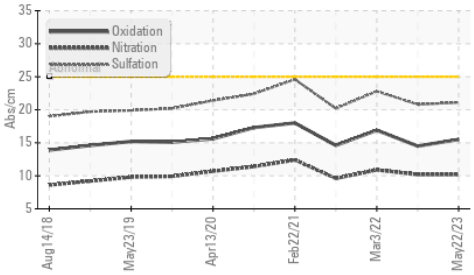
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >30 | **6** | 6 | 8 |
| Sodium | ppm | ASTM D5185m | | **7** | 4 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | **4** | 1 | 0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.8** | 0.8 | 1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.2** | 10.2 | 10.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **21.1** | 20.8 | 22.8 |

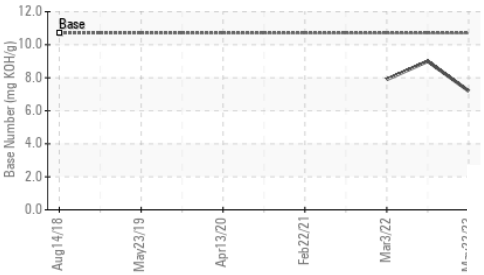
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **15.5** | 14.5 | 16.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.7 | **7.2** | 9.0 | 7.9 |

# OIL ANALYSIS REPORT

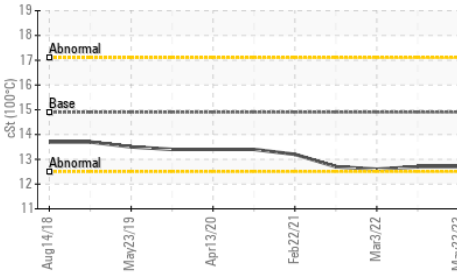
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

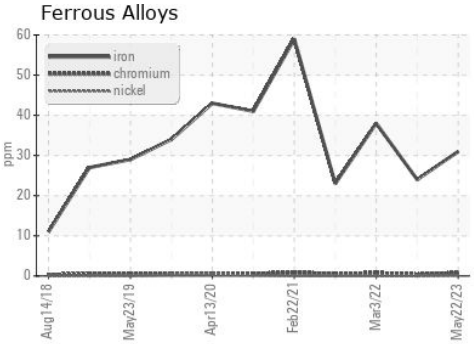



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

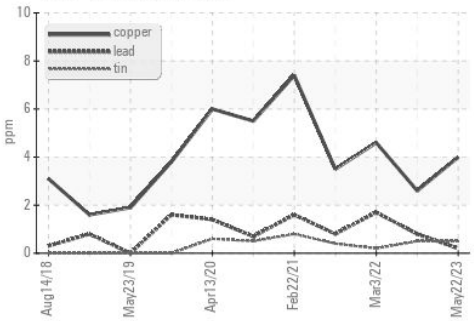
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.9 | **12.7** | 12.7 | 12.6 |

## GRAPHS

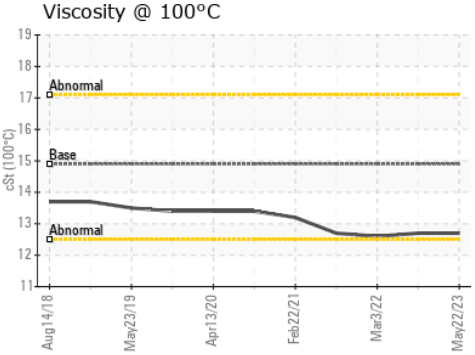
Ferrous Alloys



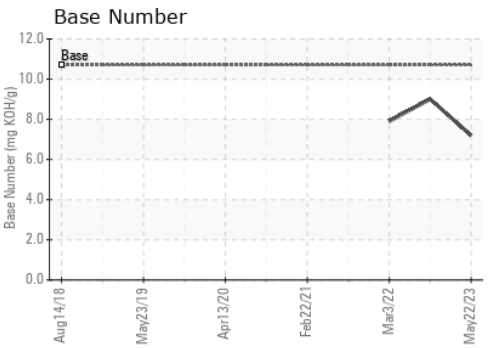

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0804027 **Received** : 25 May 2023
**Lab Number** : 05857000 **Tested** : 26 May 2023
**Unique Number** : 10486355 **Diagnosed** : 26 May 2023 - Wes Davis
**Test Package** : CONST ( Additional Tests: TBN )

*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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