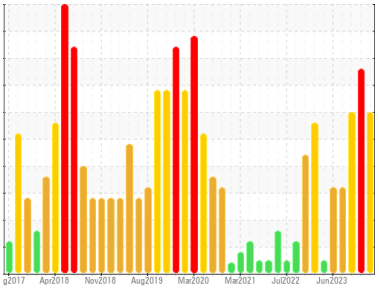
# PROBLEM SUMMARY

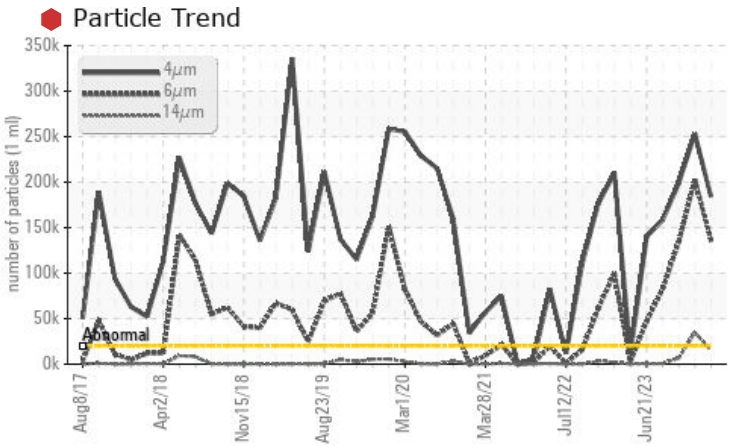
Sample Rating Trend



ISO

Area
**1311**
Machine Id
## CRUSHER LUBE SYSTEM
Component
**Gear Lube System**
Fluid
**PETRO CANADA ENDURATEX EP 320 (1703 LTR)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **SEVERE** | SEVERE | SEVERE |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | **184240** | 253066 | 198745 |
| Particles >6µm | | ASTM D7647 | >5000 | **136230** | 202713 | 134527 |
| Particles >14µm | | ASTM D7647 | >640 | **14904** | 34794 | 6625 |
| Particles >21µm | | ASTM D7647 | >160 | **930** | 2636 | 227 |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | **25/24/21** | 25/25/22 | 25/24/20 |

**Customer Id:** INCVOS
**Sample No.:** PC0070731
**Lab Number:** 02602033
**Test Package:** IND 2

*To manage this report scan the QR code*

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wesd@wearcheck.ca

*To change component or sample information:*
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gloria.gonzalez@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Filter | --- | --- | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. |
| Resample | --- | --- | ? | Resample in 30-45 days to monitor this situation. |
| Check Breathers | --- | --- | ? | The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. |
| Check Dirt Access | --- | --- | ? | We advise that you check all areas where contaminants can enter the system. |
| Filter Fluid | --- | --- | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. |

## HISTORICAL DIAGNOSIS

ISO

**18 Nov 2023 Diag: Wes Davis**

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.All component wear rates are normal. There is a high amount of particulates (2 to 100 microns in size) present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

ISO

**10 Oct 2023 Diag: Wes Davis**

Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

ISO

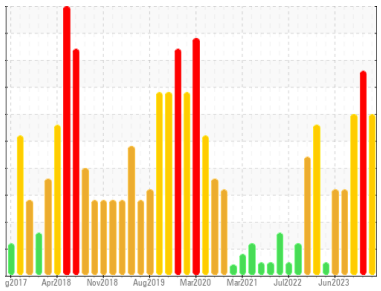
**02 Sep 2023 Diag: Wes Davis**

Check seals and/or filters for points of contaminant entry. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. Resample in 30-45 days to monitor this situation.All component wear rates are normal. There is a high amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
**1311**
Machine Id
## CRUSHER LUBE SYSTEM
Component
**Gear Lube System**
Fluid
**PETRO CANADA ENDURATEX EP 320 (1703 LTR)**

## DIAGNOSIS

**Recommendation**

We advise that you check all areas where contaminants can enter the system. We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. Resample in 30-45 days to monitor this situation.

**Wear**

All component wear rates are normal.

**Contamination**

There is a high amount of particulates (2 to 100 microns in size) present in the oil.

**Fluid Condition**

The AN level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PC0070731** | PC0058539 | PC0058536 |
| Sample Date | | Client Info | | **02 Dec 2023** | 18 Nov 2023 | 10 Oct 2023 |
| Machine Age | days | Client Info | | **0** | 0 | 0 |
| Oil Age | days | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **SEVERE** | SEVERE | SEVERE |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Water | | WC Method | >0.1 | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >150 | **50** | 77 | 41 |
| Chromium | ppm | ASTM D5185(m) | >10 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >10 | **2** | 3 | 2 |
| Titanium | ppm | ASTM D5185(m) | | **0** | <1 | 0 |
| Silver | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |
| Aluminum | ppm | ASTM D5185(m) | >25 | **7** | 13 | 8 |
| Lead | ppm | ASTM D5185(m) | >100 | **9** | 9 | 9 |
| Copper | ppm | ASTM D5185(m) | >50 | **22** | 24 | 20 |
| Tin | ppm | ASTM D5185(m) | >10 | **3** | 4 | 3 |
| Antimony | ppm | ASTM D5185(m) | >5 | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

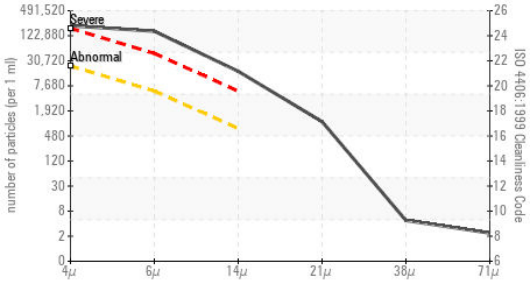
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 55 | **11** | 11 | 10 |
| Barium | ppm | ASTM D5185(m) | 0 | **<1** | <1 | <1 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Manganese | ppm | ASTM D5185(m) | 0 | **0** | <1 | 0 |
| Magnesium | ppm | ASTM D5185(m) | 0 | **7** | 10 | 6 |
| Calcium | ppm | ASTM D5185(m) | 0 | **8** | 11 | 7 |
| Phosphorus | ppm | ASTM D5185(m) | 240 | **193** | 193 | 201 |
| Zinc | ppm | ASTM D5185(m) | 1 | **4** | 4 | 4 |
| Sulfur | ppm | ASTM D5185(m) | 13700 | **7726** | 7790 | 8002 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >50 | **19** | 34 | 20 |
| Sodium | ppm | ASTM D5185(m) | | **2** | 4 | 3 |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | <1 | <1 |

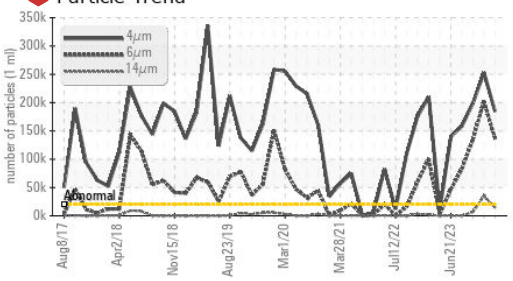
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | **184240** | 253066 | 198745 |
| Particles >6µm | | ASTM D7647 | >5000 | **136230** | 202713 | 134527 |
| Particles >14µm | | ASTM D7647 | >640 | **14904** | 34794 | 6625 |
| Particles >21µm | | ASTM D7647 | >160 | **930** | 2636 | 227 |
| Particles >38µm | | ASTM D7647 | >40 | **4** | 6 | 2 |
| Particles >71µm | | ASTM D7647 | >10 | **2** | 1 | 1 |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | **25/24/21** | 25/25/22 | 25/24/20 |

# OIL ANALYSIS REPORT

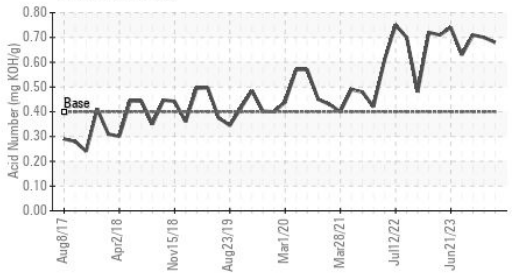
Particle Count



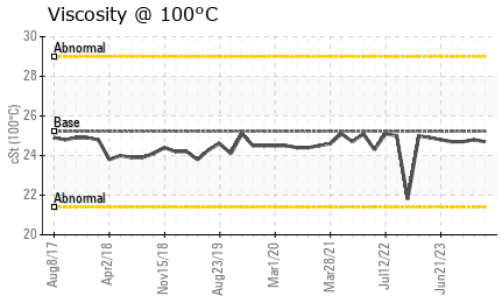

Particle Trend



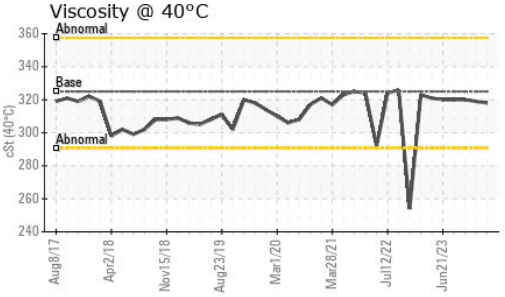

Acid Number




Viscosity @ 100°C



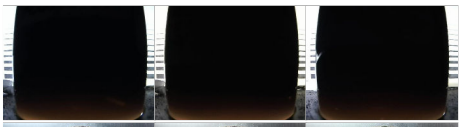

Viscosity @ 40°C




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.4 | **0.68** | 0.70 | 0.71 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **NONE** | VLITE | 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* | >0.1 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 325 | **318** | 319 | 320 |
| Visc @ 100°C | cSt | ASTM D7279(m) | 25.22 | **24.7** | 24.8 | 24.7 |
| Viscosity Index (VI) | Scale | ASTM D2270* | 100 | **99** | 99 | 98 |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | | |
| Bottom | | |  | | |

ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : PC0070731 **Received** : 08 Dec 2023
**Lab Number** : 02602033 **Diagnosed** : 09 Dec 2023
**Unique Number** : 5695118 **Diagnostician** : Wes Davis
**Test Package** : IND 2 ( Additional Tests: KV100, TAN Man, VI )

*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*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