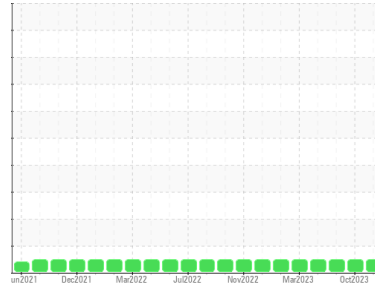


Area
Plymouth & Brockton
 Machine Id
431

Component
Diesel Engine
 Fluid
PETRO CANADA DURON SHP 15W40 (36 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 | PCA0104706 | PCA0104570 | PCA0090679 | |
| Sample Date | Client Info | 02 Dec 2023 | 19 Oct 2023 | 05 Jul 2023 | |
| Machine Age | mls | Client Info | 277291 | 262884 | 233885 |
| Oil Age | mls | Client Info | 12000 | 24000 | 24000 |
| Oil Changed | Client Info | Not Chngd | Changed | 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 >90 | 12 | 20 | 19 |
| Chromium | ppm ASTM D5185m >20 | <1 | <1 | 2 |
| Nickel | ppm ASTM D5185m >2 | 0 | 0 | 0 |
| Titanium | ppm ASTM D5185m >2 | 2 | <1 | <1 |
| Silver | ppm ASTM D5185m >2 | 0 | 0 | 0 |
| Aluminum | ppm ASTM D5185m >20 | 3 | 1 | <1 |
| Lead | ppm ASTM D5185m >40 | 0 | 0 | 0 |
| Copper | ppm ASTM D5185m >330 | <1 | <1 | <1 |
| Tin | ppm ASTM D5185m >15 | 0 | <1 | <1 |
| Vanadium | ppm ASTM D5185m | 0 | 0 | <1 |
| Cadmium | ppm ASTM D5185m | 0 | 0 | 0 |

ADDITIVES

| method | limit/base | current | history1 | history2 |
|------------|----------------------|-------------|----------|----------|
| Boron | ppm ASTM D5185m 0 | 7 | <1 | 7 |
| Barium | ppm ASTM D5185m 0 | 0 | 0 | 0 |
| Molybdenum | ppm ASTM D5185m 60 | 59 | 55 | 63 |
| Manganese | ppm ASTM D5185m 0 | 0 | <1 | <1 |
| Magnesium | ppm ASTM D5185m 1010 | 937 | 873 | 993 |
| Calcium | ppm ASTM D5185m 1070 | 1087 | 1071 | 1132 |
| Phosphorus | ppm ASTM D5185m 1150 | 1008 | 885 | 1012 |
| Zinc | ppm ASTM D5185m 1270 | 1198 | 1166 | 1254 |
| Sulfur | ppm ASTM D5185m 2060 | 3418 | 2521 | 3508 |

CONTAMINANTS

| method | limit/base | current | history1 | history2 |
|-----------|---------------------|----------|----------|----------|
| Silicon | ppm ASTM D5185m >25 | 3 | 4 | 3 |
| Sodium | ppm ASTM D5185m | 0 | 2 | 2 |
| Potassium | ppm ASTM D5185m >20 | 1 | <1 | <1 |

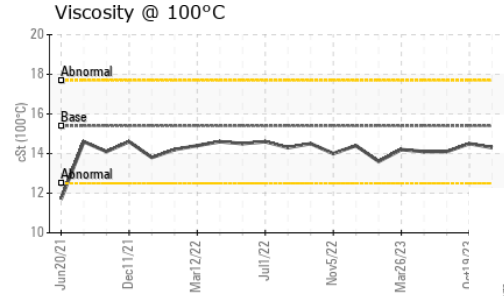
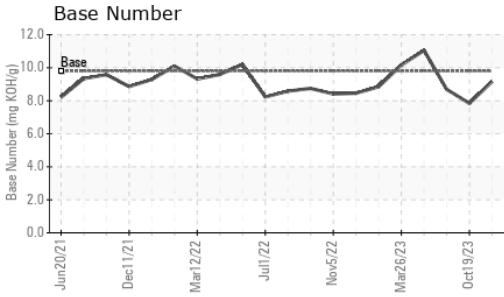
INFRA-RED

| method | limit/base | current | history1 | history2 |
|-----------|--------------------------|-------------|----------|----------|
| Soot % | % *ASTM D7844 >6 | 1.7 | 2.8 | 2.3 |
| Nitration | Abs/cm *ASTM D7624 >20 | 8.3 | 11.2 | 10.8 |
| Sulfation | Abs/.1mm *ASTM D7415 >30 | 21.2 | 25.8 | 23.6 |

FLUID DEGRADATION

| method | limit/base | current | history1 | history2 |
|------------------|--------------------------|-------------|----------|----------|
| Oxidation | Abs/.1mm *ASTM D7414 >25 | 14.4 | 18.0 | 16.8 |
| Base Number (BN) | mg KOH/g ASTM D2896 9.8 | 9.16 | 7.84 | 8.69 |

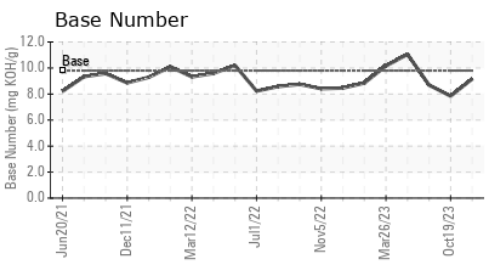
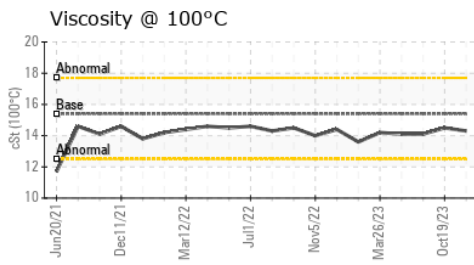
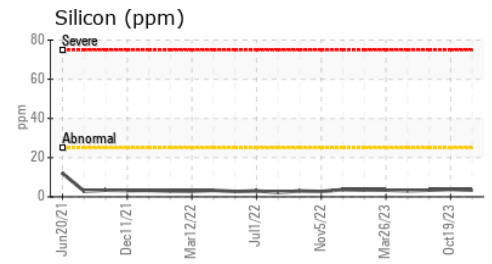
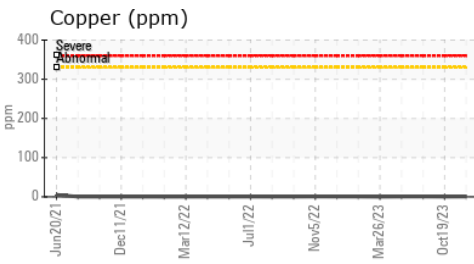
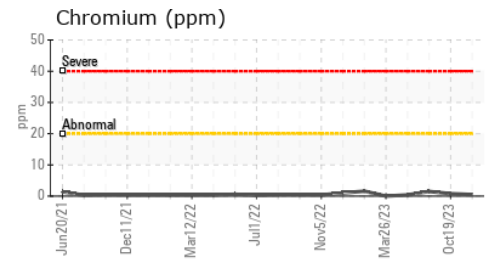
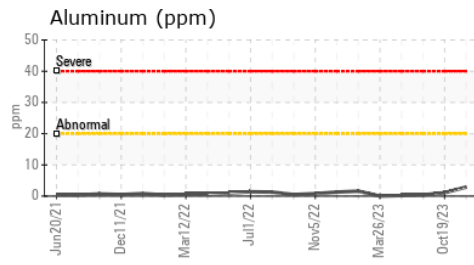
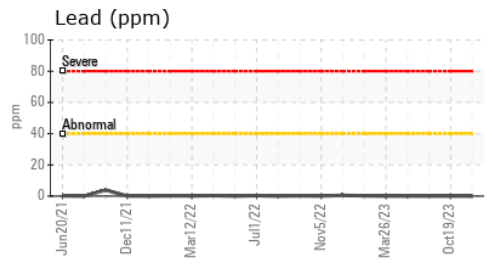
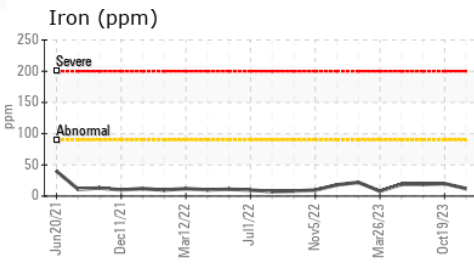
OIL ANALYSIS REPORT



| 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 | >0.2 | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 | |
|------------------|--------|------------|---------|-------------|----------|------|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | 14.3 | 14.5 | 14.1 |

GRAPHS



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : PCA0104706 **Received** : 21 Dec 2023
Lab Number : **06042317** **Diagnosed** : 22 Dec 2023
Unique Number : 10802925 **Diagnostician** : Wes Davis
Test Package : MOB 2

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 PLYMOUTH, MA
 US 02360
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 Dpelquin@P-B.com
 T: (508)732-6039
 F: (508)732-6091

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)