

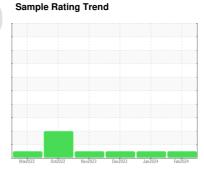
# **OIL ANALYSIS REPORT**



(BC33042) 622M Component

**Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (33 GAL)





## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

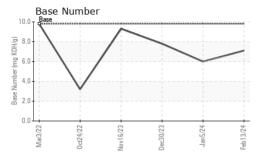
## **Fluid Condition**

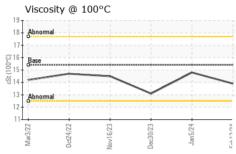
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date   Client Info   13 Feb 2024   05 Jan 2024   30 Date	
Machine Age         hrs         Client Info         10161         10104         1005           Oil Age         hrs         Client Info         10161         10104         1005           Oil Changed         Client Info         Not Changd         N/A         Chan           Sample Status         NoRMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         F           Fuel         WC Method         >3.0         <1.0	.0059237
Oil Age	Dec 2023
Oil Changed Sample Status         Client Info MormAL         Not Changd NORMAL         N/A NORMAL         Chan NORMAL           CONTAMINATION         method         limit/base         current         history1         Full           Fuel         WC Method         >3.0         <1.0         <1.0         <1           Water         WC Method         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         Full           Iron         ppm         ASTM D5185m         >120         31         29         4           Chromium         ppm         ASTM D5185m         >20         <1         1         <1           Nickel         ppm         ASTM D5185m         >5         0         0         0         0           Silver         ppm         ASTM D5185m         >20         5         1         2         1         2           Aluminum         ppm         ASTM D5185m         >20         5         1         2         2         1         1         0           Copper         ppm         ASTM D5185m <t< th=""><th>54</th></t<>	54
Sample Status	54
CONTAMINATION         method         limit/base         current         history1         instory1           Fuel         WC Method         >3.0         <1.0         <1.0         <1           Water         WC Method         NEG         NEG         NEG           Olycol         WC Method         NEG         NEG         NE           WEAR METALS         method         limit/base         current         history1         pt           Iron         ppm         ASTM D5185m         >120         31         29         4           Chromium         ppm         ASTM D5185m         >20         <1         1         <1           Nickel         ppm         ASTM D5185m         >5         0         0         0         0           Silver         ppm         ASTM D5185m         >2         <1         0         0         0           Aluminum         ppm         ASTM D5185m         >20         5         1         2         1         2           Lead         ppm         ASTM D5185m         >40         0         <1         0         0         0         0         0         0         0         0         0         0	nged
Fuel	RMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1           Iron         ppm         ASTM D5185m         >120         31         29         4           Chromium         ppm         ASTM D5185m         >20         <1	history2
Section   Sect	1.0
WEAR METALS         method         limit/base         current         history1         Framework           Iron         ppm         ASTM D5185m         >120         31         29         4           Chromium         ppm         ASTM D5185m         >20         <1	IEG
Iron	IEG
Chromium         ppm         ASTM D5185m         >20         <1	history2
Nickel         ppm         ASTM D5185m         >5         0         0         0           Titanium         ppm         ASTM D5185m         >2         <1	
Titanium         ppm         ASTM D5185m         >2         <1         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         5         1         2           Lead         ppm         ASTM D5185m         >40         0         <1	1
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         5         1         2           Lead         ppm         ASTM D5185m         >40         0         <1         0           Copper         ppm         ASTM D5185m         >330         2         <1         <1           Tin         ppm         ASTM D5185m         0         0         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         h           Boron         ppm         ASTM D5185m         0         2         2         2         3           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         56         57         46           Magnesium         ppm         ASTM D5185m         1010         922	
Aluminum         ppm         ASTM D5185m         >20         5         1         2           Lead         ppm         ASTM D5185m         >40         0         <1	
Aluminum         ppm         ASTM D5185m         >20         5         1         2           Lead         ppm         ASTM D5185m         >40         0         <1	
Lead         ppm         ASTM D5185m         >40         0         <1         0           Copper         ppm         ASTM D5185m         >330         2         <1         <1           Tin         ppm         ASTM D5185m         >15         <1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         h           Boron         ppm         ASTM D5185m         0         2         2         2         3           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         2         2         2         3           Magnesium         ppm         ASTM D5185m         0         <1         0         <1           Calcium         ppm         ASTM D5185m         1070         1011         1041         80           Phosphorus         ppm         ASTM D5185m         12	
Copper         ppm         ASTM D5185m         >330         2         <1         <1           Tin         ppm         ASTM D5185m         >15         <1	
Tin         ppm         ASTM D5185m         >15         <1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         b           Boron         ppm         ASTM D5185m         0         2         2         2         3           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         56         57         46           Manganese         ppm         ASTM D5185m         1010         922         905         79           Calcium         ppm         ASTM D5185m         1070         1011         1041         80           Phosphorus         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base	1
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         2         2         2         3           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         56         57         46           Manganese         ppm         ASTM D5185m         0         <1	
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         h           Boron         ppm         ASTM D5185m         0         2         2         2         3           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         56         57         46           Manganese         ppm         ASTM D5185m         0         <1	
ADDITIVES         method         limit/base         current         history1         F           Boron         ppm         ASTM D5185m         0         2         2         3           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         56         57         46           Manganese         ppm         ASTM D5185m         0         <1	
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         56         57         46           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         922         905         79           Calcium         ppm         ASTM D5185m         1070         1011         1041         80           Phosphorus         ppm         ASTM D5185m         1150         948         893         89           Zinc         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         >20         <1         1         2	history2
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         56         57         46           Manganese         ppm         ASTM D5185m         0         <1	
Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         922         905         79           Calcium         ppm         ASTM D5185m         1070         1011         1041         80           Phosphorus         ppm         ASTM D5185m         1150         948         893         89           Zinc         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1	
Magnesium         ppm         ASTM D5185m         1010         922         905         79           Calcium         ppm         ASTM D5185m         1070         1011         1041         80           Phosphorus         ppm         ASTM D5185m         1150         948         893         89           Zinc         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         >20         <1	6
Magnesium         ppm         ASTM D5185m         1010         922         905         79           Calcium         ppm         ASTM D5185m         1070         1011         1041         80           Phosphorus         ppm         ASTM D5185m         1150         948         893         89           Zinc         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1	1
Calcium         ppm         ASTM D5185m         1070         1011         1041         80           Phosphorus         ppm         ASTM D5185m         1150         948         893         89           Zinc         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         history2         history2         history2         history3         history3         history3         history3         history3         history4         his	91
Phosphorus         ppm         ASTM D5185m         1150         948         893         89           Zinc         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1	05
Zinc         ppm         ASTM D5185m         1270         1205         1267         10           Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1	98
Sulfur         ppm         ASTM D5185m         2060         2671         2832         26           CONTAMINANTS         method         limit/base         current         history1         h           Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1	087
Silicon         ppm         ASTM D5185m         >25         5         8         7           Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1         1         2	667
Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1         1         2	history2
Sodium         ppm         ASTM D5185m         4         6         2           Potassium         ppm         ASTM D5185m         >20         <1         1         2	
Potassium         ppm         ASTM D5185m         >20         <1         1         2	
NEDA DED	
INFRA-RED method limit/base current history1 h	history2
Soot % % *ASTM D7844 >4 <b>0.3</b> 0.7 0	
<b>Nitration</b> Abs/cm *ASTM D7624 >20 <b>7.8</b> 13.6 3.8	.8
	7.9
FLUID DEGRADATION method limit/base current history1 h	history2
Oxidation	2.0
	3.0



# **OIL ANALYSIS REPORT**

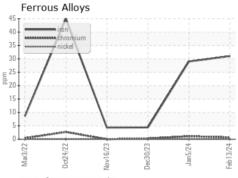


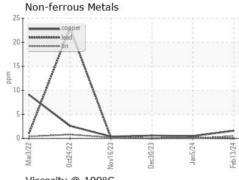


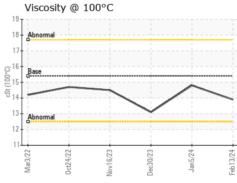
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

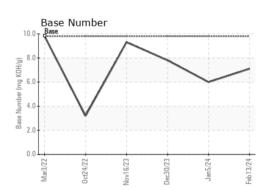
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.8	13.1

## **GRAPHS**













Laboratory Sample No. Lab Number : 06091529

: GFL0110113 Unique Number : 10884382 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 16 Feb 2024 **Tested** : 19 Feb 2024

Diagnosed : 19 Feb 2024 - Wes Davis

GFL Environmental - 410 - Michigan West

39000 Van Born Rd Wayne, MI US 48184

Contact: Belal Dgheish bdgheish@gflenv.com T: (734)714-2340

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)