

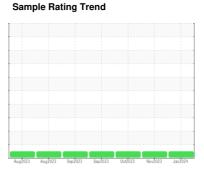
# **OIL ANALYSIS REPORT**



{UNASSIGNED}
Machine Id
933045
Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (8 GAL)





# 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

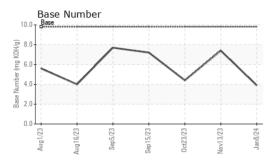
## **Fluid Condition**

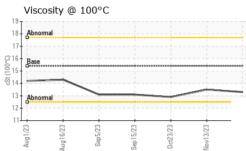
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Fuel         WC Method         >3.0         <1.0	story2
Machine Age         hrs         Client Info         1749         1315         1149           Oil Age         hrs         Client Info         600         166         459           Oil Changed         Client Info         Changed         Not Changd         Changed           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/bass         current         history1         his           Fuel         WC Method         >3.0         <1.0	94358
Oil Age         hrs         Client Info         600         166         459           Oil Changed Sample Status         Client Info         Changed NORMAL         Not Changed NORMAL         Avit Changed NORMAL         Not Changed NorMal         <	1 2023
Oil Changed Sample Status         Client Info         Changed NORMAL         Not Changd NORMAL         Changed NORMAL           CONTAMINATION         method         Limit/base         current         history1         history1           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         NEG           WEAR METALS         method         limit/base         current         history1         history2         o         o         o         o         o         o         o         o         o         o         o         o         o         o         o         o	
Sample Status	
CONTAMINATION         method         limit/base         current         history1         his           Fuel         WC Method         >3.0         <1.0         <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         his           Iron         ppm         ASTM D5185m         >90         21         12         30           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         <1         <1         <1           Nilver         ppm         ASTM D5185m         >2         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <td< th=""><th>jed</th></td<>	jed
Fuel	1AL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >90         21         12         30           Chromium         ppm         ASTM D5185m         >20         <1	story2
Silver	0
WEAR METALS	G
Iron	G
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >2         1         0         <1	story2
Nickel	
Titanium         ppm         ASTM D5185m         >2         0         -1         -1           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >2         0         0         0           Lead         ppm         ASTM D5185m         >40         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	
Titanium         ppm         ASTM D5185m         >2         0         <1         <1           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         4         2         8           Lead         ppm         ASTM D5185m         >40         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         4         2         8           Lead         ppm         ASTM D5185m         >20         4         2         8           Lead         ppm         ASTM D5185m         >40         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <t< td=""><td></td></t<>	
Aluminum         ppm         ASTM D5185m         >20         4         2         8           Lead         ppm         ASTM D5185m         >40         <1	
Lead         ppm         ASTM D5185m         >40         <1         <1         <1           Copper         ppm         ASTM D5185m         >330         2         1         5           Tin         ppm         ASTM D5185m         >15         1         <1         <1         <1           Vanadium         ppm         ASTM D5185m         <1         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0         <1         <1         0           ADDITIVES         method         limit/base         current         history1         his           Boron         ppm         ASTM D5185m         0         0         0         3         5           Barium         ppm         ASTM D5185m         0         0         0         4         4           Molybdenum         ppm         ASTM D5185m         0         0         0         4         4           Magnesium         ppm         ASTM D5185m         0         1         <1         <1         4           Magnesium         ppm         ASTM D5185m         1070         1079         1139         1138	
Copper         ppm         ASTM D5185m         >330         2         1         5           Tin         ppm         ASTM D5185m         >15         1         <1	
Tin         ppm         ASTM D5185m         >15         1         <1         <1         <1         <1         <1         <1         0           Vanadium         ppm         ASTM D5185m         < 1         <1         <1         0         0         <1         <1         0         0         <1         <1         0         0         <1         <1         <1         0         0         <1         <1         <1         <1         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <td></td>	
Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         his           Boron         ppm         ASTM D5185m         0         0         3         5           Barium         ppm         ASTM D5185m         0         0         0         4           Molybdenum         ppm         ASTM D5185m         0         0         0         4           Magnesium         ppm         ASTM D5185m         0         1         <1	
Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         his           Boron         ppm         ASTM D5185m         0         0         3         5           Barium         ppm         ASTM D5185m         0         0         0         4           Molybdenum         ppm         ASTM D5185m         60         65         62         65           Manganese         ppm         ASTM D5185m         1010         926         980         830           Calcium         ppm         ASTM D5185m         1070         1079         1139         1136           Phosphorus         ppm         ASTM D5185m         1270         1279         1293         115           Sulfur         ppm         ASTM D5185m         2060         2715         3119         320           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20         4	
Boron         ppm         ASTM D5185m         0         0         3         5           Barium         ppm         ASTM D5185m         0         0         0         4           Molybdenum         ppm         ASTM D5185m         60         65         62         65           Manganese         ppm         ASTM D5185m         0         1         <1         4           Magnesium         ppm         ASTM D5185m         1010         926         980         830           Calcium         ppm         ASTM D5185m         1070         1079         1139         1136           Phosphorus         ppm         ASTM D5185m         1150         938         1064         996           Zinc         ppm         ASTM D5185m         1270         1279         1293         1157           Sulfur         ppm         ASTM D5185m         2060         2715         3119         3207           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20	
Barium         ppm         ASTM D5185m         0         0         4           Molybdenum         ppm         ASTM D5185m         60         65         62         65           Manganese         ppm         ASTM D5185m         0         1         <1         4           Magnesium         ppm         ASTM D5185m         1010         926         980         830           Calcium         ppm         ASTM D5185m         1070         1079         1139         1139           Phosphorus         ppm         ASTM D5185m         1150         938         1064         996           Zinc         ppm         ASTM D5185m         1270         1279         1293         1157           Sulfur         ppm         ASTM D5185m         2060         2715         3119         3207           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current<	story2
Molybdenum         ppm         ASTM D5185m         60         65         62         65           Manganese         ppm         ASTM D5185m         0         1         <1         4           Magnesium         ppm         ASTM D5185m         1010         926         980         830           Calcium         ppm         ASTM D5185m         1070         1079         1139         1139           Phosphorus         ppm         ASTM D5185m         1150         938         1064         996           Zinc         ppm         ASTM D5185m         1270         1279         1293         1157           Sulfur         ppm         ASTM D5185m         2060         2715         3119         3207           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         *ASTM D7624         >20	
Manganese         ppm         ASTM D5185m         0         1         <1         4           Magnesium         ppm         ASTM D5185m         1010         926         980         830           Calcium         ppm         ASTM D5185m         1070         1079         1139         1138           Phosphorus         ppm         ASTM D5185m         1150         938         1064         996           Zinc         ppm         ASTM D5185m         1270         1279         1293         1157           Sulfur         ppm         ASTM D5185m         2060         2715         3119         3207           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7624         >20         10.0         6.9         8.4	
Magnesium         ppm         ASTM D5185m         1010         926         980         830           Calcium         ppm         ASTM D5185m         1070         1079         1139         1138           Phosphorus         ppm         ASTM D5185m         1150         938         1064         996           Zinc         ppm         ASTM D5185m         1270         1279         1293         1157           Sulfur         ppm         ASTM D5185m         2060         2715         3119         320°           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7624         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	
Calcium         ppm         ASTM D5185m         1070         1079         1139         1136           Phosphorus         ppm         ASTM D5185m         1150         938         1064         996           Zinc         ppm         ASTM D5185m         1270         1279         1293         1155           Sulfur         ppm         ASTM D5185m         2060         2715         3119         3205           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	
Phosphorus         ppm         ASTM D5185m         1150         938         1064         996           Zinc         ppm         ASTM D5185m         1270         1279         1293         1157           Sulfur         ppm         ASTM D5185m         2060         2715         3119         3207           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >20         4         5         24           Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	)
Zinc         ppm         ASTM D5185m         1270         1279         1293         1157           Sulfur         ppm         ASTM D5185m         2060         2715         3119         3207           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         >25         3         4         2           Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	8
Sulfur         ppm         ASTM D5185m         2060         2715         3119         320°           CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	j
CONTAMINANTS         method         limit/base         current         history1         his           Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	7
Silicon         ppm         ASTM D5185m         >25         5         4         10           Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	1
Sodium         ppm         ASTM D5185m         3         4         2           Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	story2
Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	
Potassium         ppm         ASTM D5185m         >20         4         5         24           INFRA-RED         method         limit/base         current         history1         his           Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	
Soot %         %         *ASTM D7844         >6         0         0         0           Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	
Nitration         Abs/cm         *ASTM D7624         >20         10.0         6.9         8.4	story2
Sulfation Abe/1mm *ASTM D7/15 > 30 19.9 17.3 18.4	
Odifiation Application Applica	
FLUID DEGRADATION method limit/base current history1 his	4
Oxidation	story2
Base Number (BN) mg KOH/g   ASTM D2896   9.8   3.9   7.4   4.4	story2



# **OIL ANALYSIS REPORT**

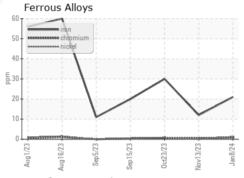


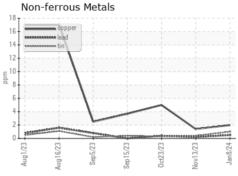


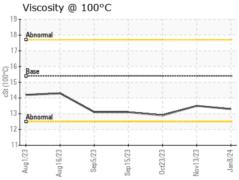
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

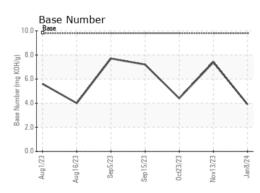
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.5	12.9

## **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0107219 : 06057850 : 10829232

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Recieved

: 11 Jan 2024 : 12 Jan 2024 Diagnosed Diagnostician : Wes Davis

GFL Environmental - 010 - Stockbridge

1280 Rum Creek Parkway Stockbridge, GA US 30281

Contact: JOSHUA TINKER joshuatinker@gflenv.com T:

\* - 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)

Report Id: GFL010 [WUSCAR] 06057850 (Generated: 01/12/2024 11:50:50) Rev: 1

Submitted By: JOSHUA TINKER

F: