

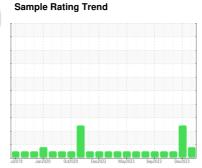




(81J0TW) 423036-402352

Component **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (--- GAL)





## **DIAGNOSIS**

### Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

All component wear rates are normal.

# Contamination

Light fuel dilution occurring. No other contaminants were detected in the oil.

### **Fluid Condition**

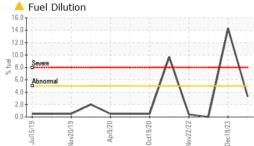
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

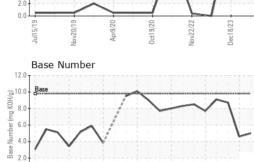
SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Number         Client Info         GFL0109820         GFL0099921         GFL0099121         GFL009912         GFL009912 <th colspan="7">N SHP 15W40 ( GAL)</th>	N SHP 15W40 ( GAL)						
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         13776         13621         13442           Oil Age         hrs         Client Info         0         0         0         600           Dil Changed         Client Info         Not Changd         Not Changd         NoRMAL           CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         29         43         20           Chromium         ppm         ASTM D5185m         >5         1         2         2           Klockel         ppm         ASTM D5185m         >2         0         0         <1	Sample Number		Client Info		GFL0109820	GFL0099921	GFL0095172
Dil Age	Sample Date		Client Info		31 Jan 2024	18 Dec 2023	09 Nov 2023
Dil Changed   Client Info	•	hrs	Client Info			13621	13442
MARGINAL   SEVERE   NORMAL	Oil Age	hrs	Client Info		0	0	600
MARGINAL   SEVERE   NORMAL	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Water         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         29         43         20           Chromium         ppm         ASTM D5185m         >5         1         2         2           Vickel         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >30         2         2         5           Lead         ppm         ASTM D5185m         >30         <1         1         <1         <1           Copper         ppm         ASTM D5185m         >5         <1         0         0         0           Copper         ppm         ASTM D5185m         >5         <1         0         0         0           Copper         ppm         ASTM D5185m         0         <	Sample Status				MARGINAL	SEVERE	NORMAL
Citycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         29         43         20           Chromium         ppm         ASTM D5185m         >5         1         2         2           Nickel         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >3         0         0         <1           Aluminum         ppm         ASTM D5185m         >30         2         2         5           Lead         ppm         ASTM D5185m         >30         <1         1         <1           Copper         ppm         ASTM D5185m         >5         <1         0         0           Vanadium         ppm         ASTM D5185m         0         <1         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >80         29         43         20           Chromium         ppm         ASTM D5185m         >5         1         2         2           Nickel         ppm         ASTM D5185m         >0         0         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Concording   Chromium   Chromi	Glycol		WC Method		NEG	NEG	NEG
Description	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>80	29	43	20
Description	Chromium	ppm	ASTM D5185m	>5	1	2	2
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Aluminum   ppm   ASTM D5185m   >30   2   2   5   Lead   ppm   ASTM D5185m   >30   <1   1   <1   Copper   ppm   ASTM D5185m   >150   <1   3   4   Tin   ppm   ASTM D5185m   >5   <1   0   0   Vanadium   ppm   ASTM D5185m   0   0   0   0   Cadmium   ppm   ASTM D5185m   0   0   0   0   Calcium   ppm   ASTM D5185m   1070   972   894   1030   Calcium   ppm   ASTM D5185m   1070   972   894   1030   Calcium   ppm   ASTM D5185m   1270   1160   1034   1140   Calcium   ppm   ASTM D5185m   2060   2816   2212   3215    CONTAMINANTS   method   limit/base   current   history1   history2   Contassium   ppm   ASTM D5185m   >20   3   2   3   Coldium   ppm   ASTM D5185m   >20   3   3   Coldium   ppm   ASTM D5185m   >20   3   3   Co	Titanium	ppm	ASTM D5185m		0	0	<1
Lead         ppm         ASTM D5185m         >30         <1         1         <1           Copper         ppm         ASTM D5185m         >150         <1         3         4           Fin         ppm         ASTM D5185m         >5         <1         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         6           Barium         ppm         ASTM D5185m         0         0         0         6           Molybdenum         ppm         ASTM D5185m         0         57         55         60           Magnesium         ppm         ASTM D5185m         1010         364         813         869           Calcium         ppm         ASTM D5185m         1070         972         894         103           Prosphorus         ppm         ASTM D5185m         1270         1160 <t< td=""><td>Silver</td><td>ppm</td><td>ASTM D5185m</td><td>&gt;3</td><td>0</td><td>0</td><td>&lt;1</td></t<>	Silver	ppm	ASTM D5185m	>3	0	0	<1
Copper	Aluminum	ppm	ASTM D5185m	>30	2	2	5
Fin	_ead	ppm	ASTM D5185m	>30	<1	1	<1
Fin	Copper		ASTM D5185m	>150	<1	3	4
Anadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         3         1         4           Barium         ppm         ASTM D5185m         0         0         0         6           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         864         813         869           Calcium         ppm         ASTM D5185m         1070         972         894         1030           Phosphorus         ppm         ASTM D5185m         1270         1160         1034         1140           Sulfur         ppm         ASTM D5185m         2060         2816         2212         3215           CONTAMINANTS         method         limit/base         current         history1	• •				<1		0
Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         3         1         4           Barium         ppm         ASTM D5185m         0         0         0         6           Molybdenum         ppm         ASTM D5185m         60         57         55         60           Magnesium         ppm         ASTM D5185m         0         <1	/anadium					0	0
Boron	Cadmium					0	<1
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         57         55         60           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	3	1	4
Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         864         813         869           Calcium         ppm         ASTM D5185m         1070         972         894         1030           Phosphorus         ppm         ASTM D5185m         1150         981         784         985           Zinc         ppm         ASTM D5185m         1270         1160         1034         1140           Sulfur         ppm         ASTM D5185m         2060         2816         2212         3215           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         5         9         7           Sodium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D5185m         >3	Barium	ppm	ASTM D5185m	0	0	0	6
Magnesium         ppm         ASTM D5185m         1010         864         813         869           Calcium         ppm         ASTM D5185m         1070         972         894         1030           Phosphorus         ppm         ASTM D5185m         1150         981         784         985           Zinc         ppm         ASTM D5185m         1270         1160         1034         1140           Sulfur         ppm         ASTM D5185m         2060         2816         2212         3215           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         5         9         7           Sodium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D5844         >3	Molybdenum	ppm	ASTM D5185m	60	57	55	60
Calcium         ppm         ASTM D5185m         1070         972         894         1030           Phosphorus         ppm         ASTM D5185m         1150         981         784         985           Zinc         ppm         ASTM D5185m         1270         1160         1034         1140           Sulfur         ppm         ASTM D5185m         2060         2816         2212         3215           CONTAMINANTS         method         limit/base         current         history1         history2           Goldium         ppm         ASTM D5185m         >20         5         9         7           Goldium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D3524         >5         3.3         14.3         <1.0	Manganese	ppm	ASTM D5185m	0	<1	0	<1
Phosphorus         ppm         ASTM D5185m         1150         981         784         985           Zinc         ppm         ASTM D5185m         1270         1160         1034         1140           Sulfur         ppm         ASTM D5185m         2060         2816         2212         3215           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         5         9         7           Sodium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D7844         >3         0.8         1.	Magnesium	ppm	ASTM D5185m	1010	864	813	869
Zinc         ppm         ASTM D5185m         1270         1160         1034         1140           Sulfur         ppm         ASTM D5185m         2060         2816         2212         3215           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         5         9         7           Sodium         ppm         ASTM D5185m         20         3         2         3           Foull         %         ASTM D5185m         >20         3         2         3           Footassium         ppm         ASTM D5185m         >20         3         3 <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1070</td> <td>972</td> <td>894</td> <td>1030</td>	Calcium	ppm	ASTM D5185m	1070	972	894	1030
Sulfur         ppm         ASTM D5185m         2060         2816         2212         3215           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         5         9         7           Sodium         ppm         ASTM D5185m         1         0         0           Potassium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D524         >5         A3.3         14.3         <1.0	Phosphorus	ppm	ASTM D5185m	1150	981	784	985
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >20         5         9         7           Sodium         ppm         ASTM D5185m         1         0         0           Potassium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D3524         >5         ▲ 3.3         14.3         <1.0	Zinc	ppm	ASTM D5185m	1270	1160	1034	1140
Soliticon         ppm         ASTM D5185m         >20         5         9         7           Sodium         ppm         ASTM D5185m         1         0         0           Potassium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D3524         >5         ▲ 3.3         14.3         <1.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         1.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.2         13.9         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         27.8         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4	Sulfur	ppm	ASTM D5185m	2060	2816	2212	3215
Sodium         ppm         ASTM D5185m         1         0         0           Potassium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D3524         >5         ▲ 3.3         14.3         <1.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         1.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.2         13.9         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         27.8         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         3         2         3           Fuel         %         ASTM D3524         >5         ▲ 3.3         ■ 14.3         <1.0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         1.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.2         13.9         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         27.8         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4	Silicon	ppm	ASTM D5185m	>20	5	9	7
Fuel	Sodium	ppm	ASTM D5185m		1	0	0
INFRA-RED	Potassium	ppm	ASTM D5185m	>20	3	2	3
Soot %         %         *ASTM D7844         >3         0.8         1.2         0.6           Nitration         Abs/cm         *ASTM D7624         >20         9.2         13.9         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         27.8         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4	Fuel	%	ASTM D3524	>5	<b>△</b> 3.3	<b>1</b> 4.3	<1.0
Nitration         Abs/cm         *ASTM D7624         >20         9.2         13.9         7.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         27.8         19.5           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         9.2         13.9         7.1           Sulfation         Abs/.1mm         *ASTM D7615         >30         19.7         27.8         19.5           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4	Soot %	%	*ASTM D7844	>3	8.0	1.2	0.6
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         27.8         19.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4							
Oxidation         Abs/.1mm         *ASTM D7414         >25         17.4         30.3         14.4							
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	17.4	30.3	14.4

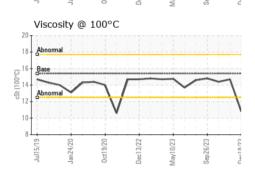


0.0

# **OIL ANALYSIS REPORT**



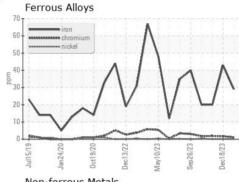


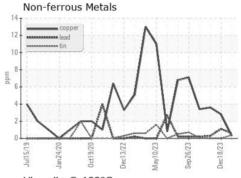


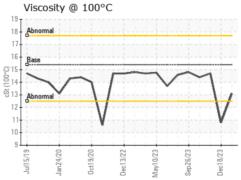
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

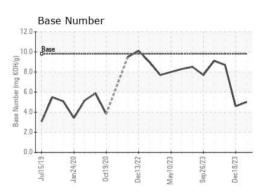
FLUID PROPE	ERIJE9	method	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.1	<b>△</b> 10.8	14.7

# **GRAPHS**











Laboratory Sample No. Lab Number **Unique Number** 

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0109820 : 06077970

: 10860061

Recieved Diagnosed

: 02 Feb 2024 : 05 Feb 2024 Diagnostician : Wes Davis

Test Package : FLEET ( Additional Tests: PercentFuel ) 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.

GFL Environmental - 836 - Kansas City Hauling

7801 East Truman Road Kansas City, MO US 64126

Contact: Robert Hart rhart@gflenv.com T: (580)461-1509

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)