

# **OIL ANALYSIS REPORT**

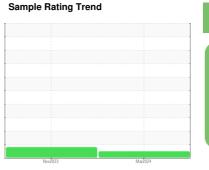
# NORMAL



Machine Id 933040 Component

**Natural Gas Engine** 

PETRO CANADA DURON SHP 15W40 (21 QTS)





## 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

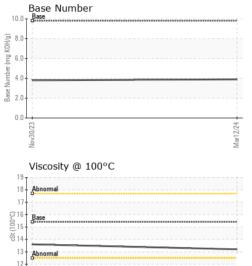
## **Fluid Condition**

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

•	N SHP 15W40 (2	1 QTS)		Nov2023	Mar2024		
Sample Date   Client Info   12 Mar 2024   30 Nov 2023	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         1764         1201            Oil Age         hrs         Client Info         563         1201            Oil Changed         Client Info         Not Changed            Sample Status         NoRMAL         ABNORMAL            CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         40         106            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         40         106            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         40         1            Silver         ppm         ASTM D5185m	Sample Number		Client Info		GFL0103429	GFL0074629	
Oil Age         hrs         Client Info         563         1201           Oil Changed         Client Info         Not Changed         Changed           Sample Status         NORMAL         ABNORMAL            CONTAMINATION         Imititoty         Imititotyse         Current         history1         history2           Water         WC Method         >0.1         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         40         106            Iron         ppm         ASTM D5185m         >50         40         106            Iron         ppm         ASTM D5185m         >50         4         106            Iron         ppm         ASTM D5185m         >50         4         1         3            Iron         ppm         ASTM D5185m         >50         <1	Sample Date		Client Info		12 Mar 2024	30 Nov 2023	
Contamped   Client Info   Not Changed   Cha	Machine Age	hrs	Client Info		1764	1201	
NORMAL   ABNORMAL	Oil Age	hrs	Client Info		563	1201	
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >0.1         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         40         106            Chromium         ppm         ASTM D5185m         >50         4         106            Nickel         ppm         ASTM D5185m         >5         2         3            Nickel         ppm         ASTM D5185m         >5         0         <1	Oil Changed		Client Info		Not Changd	Changed	
Water         WC Method         >0.1         NEG         NEG            WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         40         ▲ 106            Chromium         ppm         ASTM D5185m         >50         2         3            Nickel         ppm         ASTM D5185m         >4         <1         3            Titanium         ppm         ASTM D5185m         >5         0         <1            Alluminum         ppm         ASTM D5185m         >3         0         <1            Alluminum         ppm         ASTM D5185m         >20         <1         2            Lead         ppm         ASTM D5185m         >40         <1         2            Copper         ppm         ASTM D5185m         >40         <1         2            Copper         ppm         ASTM D5185m         0         0         0            Calcium         ppm         ASTM D5185m         0         <1         3	Sample Status				NORMAL	ABNORMAL	
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
Description	Water		WC Method	>0.1	NEG	NEG	
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>50	40	<u> </u>	
Silver	Chromium	ppm	ASTM D5185m	>5	2	3	
Silver	Nickel	ppm	ASTM D5185m	>4	<1	3	
Aluminum	Titanium	ppm	ASTM D5185m	>5	0	<1	
Aluminum	Silver	ppm	ASTM D5185m	>3	0	<1	
Lead	Aluminum	ppm	ASTM D5185m	>25	7	23	
Tin	Lead	ppm	ASTM D5185m	>40	<1	2	
Vanadium	Copper	ppm	ASTM D5185m	>150	3	17	
Vanadium         ppm         ASTM D5185m         0         0            Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         3            Barium         ppm         ASTM D5185m         0         0         4            Molybdenum         ppm         ASTM D5185m         60         71         65            Manganese         ppm         ASTM D5185m         0         2         15            Magnesium         ppm         ASTM D5185m         1010         965         820            Calcium         ppm         ASTM D5185m         1070         1262         1132            Phosphorus         ppm         ASTM D5185m         1270         1307         1037            Zinc         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1		ppm	ASTM D5185m	>4	0	2	
ADDITIVES	Vanadium		ASTM D5185m		0	0	
Boron   ppm   ASTM D5185m   0   0   4	Cadmium		ASTM D5185m		0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         71         65            Manganese         ppm         ASTM D5185m         0         2         15            Magnesium         ppm         ASTM D5185m         1010         965         820            Calcium         ppm         ASTM D5185m         1070         1262         1132            Phosphorus         ppm         ASTM D5185m         1150         973         791            Zinc         ppm         ASTM D5185m         1270         1307         1037            Sulfur         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624	Boron	ppm	ASTM D5185m	0	<1	3	
Manganese         ppm         ASTM D5185m         0         2         15            Magnesium         ppm         ASTM D5185m         1010         965         820            Calcium         ppm         ASTM D5185m         1070         1262         1132            Phosphorus         ppm         ASTM D5185m         1150         973         791            Zinc         ppm         ASTM D5185m         1270         1307         1037            Sulfur         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         >20         10         68            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D762	Barium	ppm	ASTM D5185m	0	0	4	
Magnesium         ppm         ASTM D5185m         1010         965         820            Calcium         ppm         ASTM D5185m         1070         1262         1132            Phosphorus         ppm         ASTM D5185m         1150         973         791            Zinc         ppm         ASTM D5185m         1270         1307         1037            Sulfur         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         >20         10         68            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D741	Molybdenum	ppm	ASTM D5185m	60	71	65	
Calcium         ppm         ASTM D5185m         1070         1262         1132            Phosphorus         ppm         ASTM D5185m         1150         973         791            Zinc         ppm         ASTM D5185m         1270         1307         1037            Sulfur         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         *ASTM D7414         >25	Manganese	ppm	ASTM D5185m	0	2	15	
Phosphorus         ppm         ASTM D5185m         1150         973         791            Zinc         ppm         ASTM D5185m         1270         1307         1037            Sulfur         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 </td <td>Magnesium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1010</td> <td>965</td> <td>820</td> <td></td>	Magnesium	ppm	ASTM D5185m	1010	965	820	
Zinc         ppm         ASTM D5185m         1270         1307         1037            Sulfur         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25	Calcium	ppm	ASTM D5185m	1070	1262	1132	
Sulfur         ppm         ASTM D5185m         2060         3239         3320            CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	Phosphorus	ppm	ASTM D5185m	1150	973	791	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	Zinc	ppm	ASTM D5185m	1270	1307	1037	
Silicon         ppm         ASTM D5185m         >25         8         22            Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	Sulfur	ppm	ASTM D5185m	2060	3239	3320	
Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         6         5            Potassium         ppm         ASTM D5185m         >20         10         68            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	Silicon	ppm	ASTM D5185m	>25	8	22	
INFRA-RED	Sodium		ASTM D5185m		6	5	
Soot %         %         *ASTM D7844         0         0            Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	Potassium		ASTM D5185m	>20	10	68	
Nitration         Abs/cm         *ASTM D7624         >20         10.4         12.2            Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	Soot %	%	*ASTM D7844		0	0	
Sulfation         Abs/.1mm         *ASTM D7415         >30         21.5         24.8            FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.0         22.2	Nitration	Abs/cm	*ASTM D7624	>20	10.4	12.2	
Oxidation							
	FLUID DEGRA	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	16.0	22.2	



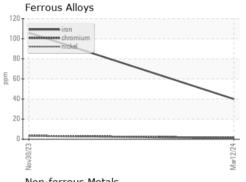
# **OIL ANALYSIS REPORT**

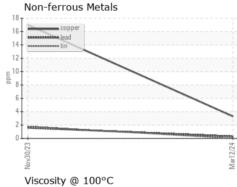


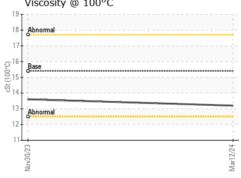
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
Precipitate	scalar	*Visual	NONE	NONE	NONE	
Silt	scalar	*Visual	NONE	NONE	NONE	
Debris	scalar	*Visual	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
Appearance	scalar	*Visual	NORML	NORML	NORML	
Odor	scalar	*Visual	NORML	NORML	NORML	
<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG	NEG	
Free Water	scalar	*Visual		NEG	NEG	

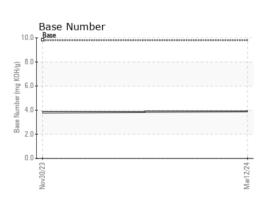
FLUID PROPI		method			riistory i	History2
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	13.6	

## **GRAPHS**













Laboratory Sample No.

Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0103429 Lab Number : 06120498

Unique Number : 10929331

Received : 18 Mar 2024 **Tested** Diagnosed

: 19 Mar 2024 : 19 Mar 2024 - Wes Davis

GFL Environmental - 095 - Atlanta West

2699 Cochran Industrial Blvd Douglasville, GA US 30127-1332

Contact: Darrell Welch darrell.welch@gflenv.com

T: (800)207-6618

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)

Report Id: GFL095 [WUSCAR] 06120498 (Generated: 03/19/2024 11:36:28) Rev: 1

Submitted By: Darrell Welch