

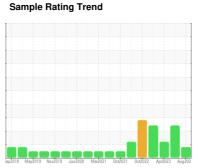
# **OIL ANALYSIS REPORT**



Machine Id 201069 Component

**Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (20 GAL)





## **DIAGNOSIS**

### Recommendation

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor. No other corrective action is recommended at this time.

### Wear

All component wear rates are normal.

## Contamination

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

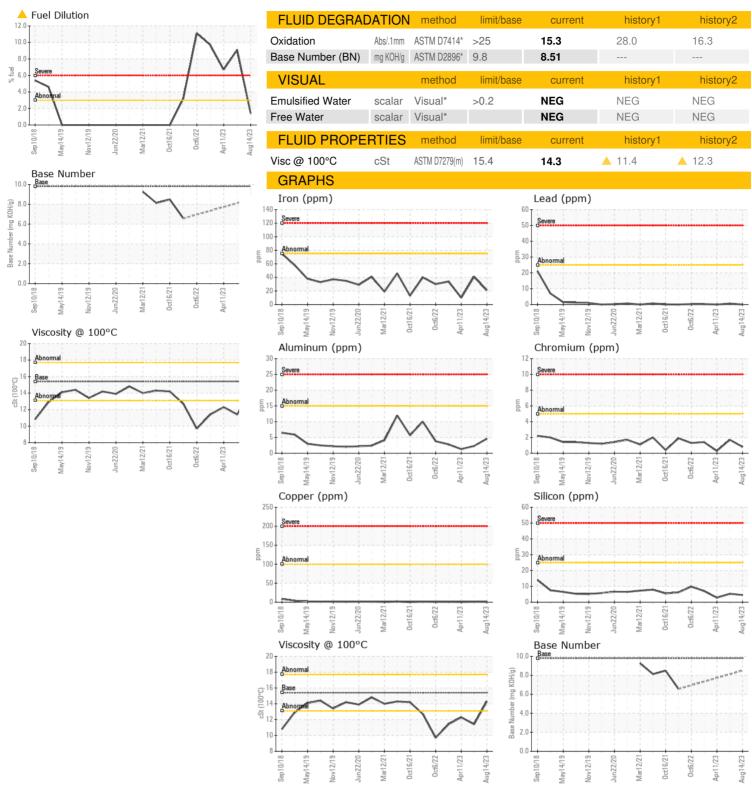
### Fluid Condition

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

Sample Number   Client Info   GFL0084326   GFL0082981   GFL007783   Gample Date   Client Info   14 Aug 2023   02 Aug 2023   11 Apr 2023   12 Aug 2023   1	N SHP 15W40 (20	) GAL)	iep2018 May2	019 Nov2019 Jun2020	Mar2021 Oct2021 Oct2022 Apr2	2023 Aug 202	
Client Info	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info	Sample Number		Client Info		GFL0084326	GFL0082981	GFL0077832
Dil Age	Sample Date		Client Info		14 Aug 2023	02 Aug 2023	11 Apr 2023
Client Info	Machine Age	hrs	Client Info		6998	15614	15018
MARGINAL   SEVERE   ABNORMAI   CONTAMINATION   method   limit/base   current   history1   history2   history2	Oil Age	hrs	Client Info		264	0	0
CONTAMINATION   method   limit/base   current   history1   history2	Oil Changed		Client Info		Changed	N/A	Changed
WEAR METALS	Sample Status				MARGINAL	SEVERE	ABNORMAL
WEAR METALS   method   limit/base   current   history1   history2	CONTAMINATI	ON	method	limit/base	current	history1	history2
Pop	Glycol		WC Method		NEG	NEG	NEG
Description	WEAR METALS	S	method	limit/base	current	history1	history2
Chromium	Iron	ppm	ASTM D5185(m)	>75	21	41	10
Fitanium	Chromium	ppm	ASTM D5185(m)	>5	<1	2	<1
Fitanium	Nickel	ppm	ASTM D5185(m)	>4	<1	<1	<1
Saliver	Titanium		. ,	>2		<1	<1
Aluminum   ppm   ASTM D5185(m)   >15   5   2   1   Lead   ppm   ASTM D5185(m)   >25   0   <1   0   Copper   ppm   ASTM D5185(m)   >100   <1   1   <1   Tin   ppm   ASTM D5185(m)   >4   0   0   0   Antimony   ppm   ASTM D5185(m)   0   0   0   OAntimony   ppm   ASTM D5185(m)   0   0   0   OAntimony   ppm   ASTM D5185(m)   0   0   0   OBeryllium   ppm   ASTM D5185(m)   0   0   0   OCadmium   ppm   ASTM D5185(m)   0   0   0   OCadmium   ppm   ASTM D5185(m)   0   0   0   OCADDITIVES   method   limit/base   current   history1   history2   OCADDITIVES   method   limit/base   limit/base	Silver						
Lead         ppm         ASTM D5185(m)         >25         0         <1         0           Copper         ppm         ASTM D5185(m)         >100         <1         1         <1           Fin         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         2         3         8           Boron         ppm         ASTM D5185(m)         0         0         0         0         0           Abdrown         ppm         ASTM D5185(m)         0         2         3         8         8           Barium         ppm         ASTM D5185(m)         0	Aluminum		. ,				
Copper	Lead		( /				
Tin	Copper		. ,	>100			<1
Antimony   ppm   ASTM D5185(m)   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Tin				0	0	0
Vanadium         ppm         ASTM D5185(m)         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         2         3         8           Barium         ppm         ASTM D5185(m)         0         0         0         0           Molybdenum         ppm         ASTM D5185(m)         0         0         0         0           Manganese         ppm         ASTM D5185(m)         1010         944         890         895           Calcium         ppm         ASTM D5185(m)         1070         1007         944         1033           Phosphorus         ppm         ASTM D5185(m)         1270         1151         1080         1118           Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         25         4         5 <t< td=""><td>Antimony</td><td></td><td>. ,</td><td></td><th>0</th><td>0</td><td>0</td></t<>	Antimony		. ,		0	0	0
Description	Vanadium		. ,			0	
Cadmium         ppm         ASTM D5185(m)         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         0         2         3         8           Barium         ppm         ASTM D5185(m)         0         0         0         0           Molybdenum         ppm         ASTM D5185(m)         0         56         55         56           Manganese         ppm         ASTM D5185(m)         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185(m)         1010         944         890         895           Calcium         ppm         ASTM D5185(m)         1070         1007         944         1033           Phosphorus         ppm         ASTM D5185(m)         1270         1151         1080         1118           Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         >25         4         5         3           Soliucon         ppm         ASTM D5185(m)						0	0
Soron   ppm   ASTM D5185(m)   0   2   3   8	Cadmium		1				
Description	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185(m)         60         56         55         56           Manganese         ppm         ASTM D5185(m)         0         <1         <1         <1           Magnesium         ppm         ASTM D5185(m)         1010         944         890         895           Calcium         ppm         ASTM D5185(m)         1070         1007         944         1033           Phosphorus         ppm         ASTM D5185(m)         1150         1021         953         1022           Zinc         ppm         ASTM D5185(m)         1270         1151         1080         1118           Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         <1         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         4         5         3           Godium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %	Boron	ppm	ASTM D5185(m)	0	2	3	8
Manganese         ppm         ASTM D5185(m)         0         <1         <1         <1           Magnesium         ppm         ASTM D5185(m)         1010         944         890         895           Calcium         ppm         ASTM D5185(m)         1070         1007         944         1033           Phosphorus         ppm         ASTM D5185(m)         1150         1021         953         1022           Zinc         ppm         ASTM D5185(m)         1270         1151         1080         1118           Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         20         2         1         <1	Barium	ppm	ASTM D5185(m)	0	0	0	0
Magnesium         ppm         ASTM D5185(m)         1010         944         890         895           Calcium         ppm         ASTM D5185(m)         1070         1007         944         1033           Phosphorus         ppm         ASTM D5185(m)         1150         1021         953         1022           Zinc         ppm         ASTM D5185(m)         1270         1151         1080         1118           Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         200         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         22         4         5         3           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         4         5         3           Sodium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         1.4         9.1         6.7           INFRA-RED         method	Molybdenum	ppm	ASTM D5185(m)	60	56	55	56
Calcium         ppm         ASTM D5185(m)         1070         1007         944         1033           Phosphorus         ppm         ASTM D5185(m)         1150         1021         953         1022           Zinc         ppm         ASTM D5185(m)         1270         1151         1080         1118           Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         <1	Manganese	ppm	ASTM D5185(m)	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185(m)         1150         1021         953         1022           Zinc         ppm         ASTM D5185(m)         1270         1151         1080         1118           Bulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         4         5         3           Sodium         ppm         ASTM D5185(m)         >20         2         8         4           Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         1.4         9.1         6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20	Magnesium	ppm	ASTM D5185(m)	1010	944	890	895
Zinc         ppm         ASTM D5185(m)         1270         1151         1080         1118           Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         4         5         3           Sodium         ppm         ASTM D5185(m)         2         8         4           Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         1.4         9.1         6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Calcium	ppm	ASTM D5185(m)	1070	1007	944	1033
Sulfur         ppm         ASTM D5185(m)         2060         2457         2168         2528           Lithium         ppm         ASTM D5185(m)         2060         2457         2168         2528           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         4         5         3           Sodium         ppm         ASTM D5185(m)         2         8         4           Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         1.4         9.1         6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Phosphorus	ppm	ASTM D5185(m)	1150	1021	953	1022
Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         4         5         3           Sodium         ppm         ASTM D5185(m)         2         8         4           Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         1.4         9.1         6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Zinc	ppm	ASTM D5185(m)	1270	1151	1080	1118
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >25         4         5         3           Sodium         ppm         ASTM D5185(m)         2         8         4           Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         ▲ 1.4         ● 9.1         ▲ 6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Sulfur	ppm	ASTM D5185(m)	2060	2457	2168	2528
Soliticon         ppm         ASTM D5185(m)         >25         4         5         3           Sodium         ppm         ASTM D5185(m)         2         8         4           Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         1.4         9.1         6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium         ppm         ASTM D5185(m)         2         8         4           Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         ▲ 1.4         ● 9.1         ▲ 6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185(m)         >20         2         3         1           Fuel         %         ASTM D7593*         >3.0         ▲ 1.4         ● 9.1         ▲ 6.7           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Silicon	ppm	ASTM D5185(m)	>25	4	5	3
Fuel % ASTM D7593* >3.0 ▲ 1.4 ● 9.1 ▲ 6.7  INFRA-RED method limit/base current history1 history2  Soot % ASTM D7844* >6 0.6 0.5 0  Nitration Abs/cm ASTM D7624* >20 7.7 11.8 8.1	Sodium	ppm	ASTM D5185(m)		2	8	4
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Potassium	ppm	ASTM D5185(m)	>20	2	3	1
Soot %         %         ASTM D7844*         >6         0.6         0.5         0           Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Fuel	%	ASTM D7593*	>3.0	<u></u> 1.4	9.1	<b>△</b> 6.7
Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         ASTM D7624*         >20         7.7         11.8         8.1	Soot %	%	ASTM D7844*	>6	0.6	0.5	0
	Nitration	Abs/cm	ASTM D7624*	>20			8.1
	Sulfation	Abs/.1mm					



# **OIL ANALYSIS REPORT**





CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No. Lab Number Unique Number

: GFL0084326

: 02577353 : 5630413

To discuss this sample report, contact Customer Service at 1-800-268-2131.

Received : 22 Aug 2023 Diagnosed

: 23 Aug 2023 Diagnostician : Wes Davis

Test Package : MOB 2 ( Additional Tests: PercentFuel )

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 GFL Environmental - 550 - Rocky View County 220 Carmek Blvd Rocky View County, AB **CA T1X 1X1** 

Contact: GFL Calgary calgarymaintenance@gflenv.com

T:

Test denoted (\*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Validity of results and interpretation are based on the sample and information as supplied.

Submitted By: Shane Cater

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