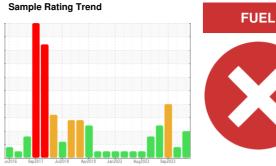


# **OIL ANALYSIS REPORT**

Machine Id 1149 Component

**Diesel Engine** 

PETRO CANADA DURON XL SYN BLEND 15W40 (22 LTR)



### **DIAGNOSIS**

#### Recommendation

We advise that you check the fuel injection system. The oil change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

#### ▲ Contamination

There is a high amount of fuel present in the oil. Tests confirm the presence of fuel in the oil.

#### **Fluid Condition**

The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

Sample Number   Client Info   GFL0112394   GFL0091572   GFL0091625   Gample Date   Client Info   O4 Mar 2024   18 Oct 2023   20 Sep 202   20 Aachine Age   kms   Client Info   O 0   0   10761   Changed	5W40 (22 LTR)	)	un2016 Se	p2017 Jul2018 Apr2	2019 Jan2022 Aug2022 S	ep2023	
Client Info	SAMPLE INFOR	RMATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0112394	GFL0091572	GFL009162
Dit Age	Sample Date		Client Info		04 Mar 2024	18 Oct 2023	20 Sep 2023
Client Info	Machine Age	kms	Client Info		406000	21425	345414
Several   Sev	Oil Age	kms	Client Info		0	0	10761
Mater	Oil Changed		Client Info		Changed	Changed	Changed
Water         WC Method         >0.2         NEG         NEG         NEG           Biycol         WC Method         Ilmit/base         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history1           ron         ppm         ASTM D5185(m)         >127         72         36         123           Chromium         ppm         ASTM D5185(m)         >30         <1         <1         <1           Citranium         ppm         ASTM D5185(m)         >2         0         0         0           Siliver         ppm         ASTM D5185(m)         >2         0         <1         <1           Aluminum         ppm         ASTM D5185(m)         >2         0         <1         <1           Aluminum         ppm         ASTM D5185(m)         >2         0         <1         <1           Aluminum         ppm         ASTM D5185(m)         >2         2         1         <1         <1           Aluminum         ppm         ASTM D5185(m)         >2         <1         <1         <1         <1           Charrimory         ppm         ASTM D5185(m)         >0<	Sample Status				SEVERE	ABNORMAL	SEVERE
WEAR METALS	CONTAMINAT	ΓΙΟΝ	method	limit/base	current	history1	history2
WEAR METALS         method         limit/base         current         history1         history2           ron         ppm         ASTM D5185(m)         >127         72         36         123           Chromium         ppm         ASTM D5185(m)         >30         2         -1         3           Nickel         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         >2         0         -1         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Conn	Glycol		WC Method		NEG	NEG	NEG
Description	WEAR METAL	_S	method	limit/base	current	history1	history2
ASTM D5185(m)   >30	ron	ppm	ASTM D5185(m)	>127	72	36	123
ASTM D5185(m)   >2	Chromium	ppm	ASTM D5185(m)	>3	2	<1	3
Silver	Nickel	ppm	ASTM D5185(m)	>30	<1	<1	<1
Aluminum ppm ASTM D5185(m) >59 30 5 14  Lead ppm ASTM D5185(m) >29 2 1 9  Copper ppm ASTM D5185(m) >29 2 1 9  Copper ppm ASTM D5185(m) >2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Γitanium	ppm	ASTM D5185(m)	>2	0	0	0
Lead         ppm         ASTM D5185(m)         >29         2         1         9           Copper         ppm         ASTM D5185(m)         >135         <1         <1         1           Cin         ppm         ASTM D5185(m)         >2         <1         0         <1           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Candium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         1         2         3         3           Barium         ppm         ASTM D5185(m)         1         0         0         <1         Mistory1           Barium         ppm         ASTM D5185(m)         1         0         0         <1         1         0         <1         1         0         <1         1         0         <1         1         0         <1         1         0         <1         1         0         <1         1         0         <1         1         0         <1	Silver	ppm	ASTM D5185(m)	>2	0	<1	<1
Copper	Aluminum	ppm	ASTM D5185(m)	>59	30	5	14
Antimony   ppm   ASTM D5185(m)   >2   <1   0   0   0   0	Lead	ppm	ASTM D5185(m)	>29	2	1	9
Antimony   ppm   ASTM D5185(m)   >2   <1   0   0   0   0	Copper	ppm	ASTM D5185(m)	>135	<1	<1	1
Antimony   ppm   ASTM D5185(m)   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	 Γin	ppm	ASTM D5185(m)	>2	<1	0	<1
Anadium         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)         1         2         3         3           Boron         ppm         ASTM D5185(m)         1         0         0         <1           Manganese         ppm         ASTM D5185(m)         1         <1         0         <1         <1           Magnesium         ppm         ASTM D5185(m)         1010         819         884         770           Phosphorus         ppm         ASTM D5185(m)         1150         920         944         827	Antimony		. ,		0	0	0
December   December	/anadium				0	0	0
Cadmium         ppm         ASTM D5185(m)         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         1         2         3         3           Barium         ppm         ASTM D5185(m)         1         0         0         <1           Molybdenum         ppm         ASTM D5185(m)         1         0         0         <1           Manganese         ppm         ASTM D5185(m)         1         <1         0         <1           Magnesium         ppm         ASTM D5185(m)         1010         819         884         770           Calcium         ppm         ASTM D5185(m)         1070         977         993         887           Phosphorus         ppm         ASTM D5185(m)         1270         1052         1117         968           Bulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         >18         5         4         6           Goldium         ppm         ASTM D5185(m)         >20	Beryllium		. ,		0	0	0
Soron   ppm   ASTM D5185(m)   1   2   3   3   3   3   3   3   3   3   3	Cadmium		. ,		0	0	0
Description	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185(m)         60         52         55         51           Manganese         ppm         ASTM D5185(m)         1         <1         0         <1           Magnesium         ppm         ASTM D5185(m)         1010         819         884         770           Calcium         ppm         ASTM D5185(m)         1070         977         993         887           Phosphorus         ppm         ASTM D5185(m)         1150         920         944         827           Zinc         ppm         ASTM D5185(m)         1270         1052         1117         968           Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         <1         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >1         1         2           Potassium         ppm         ASTM D5185(m)         >20         <1         0         <1           Fuel         %         ASTM D7593*	Boron	ppm	ASTM D5185(m)	1	2	3	3
Manganese         ppm         ASTM D5185(m)         1         <1         0         <1           Magnesium         ppm         ASTM D5185(m)         1010         819         884         770           Calcium         ppm         ASTM D5185(m)         1070         977         993         887           Phosphorus         ppm         ASTM D5185(m)         1150         920         944         827           Zinc         ppm         ASTM D5185(m)         1270         1052         1117         968           Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         20         <1	Barium	ppm	ASTM D5185(m)	1	0	0	<1
Magnesium         ppm         ASTM D5185(m)         1010         819         884         770           Calcium         ppm         ASTM D5185(m)         1070         977         993         887           Phosphorus         ppm         ASTM D5185(m)         1150         920         944         827           Zinc         ppm         ASTM D5185(m)         1270         1052         1117         968           Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         20         <1	Molybdenum	ppm	ASTM D5185(m)	60	52	55	51
Calcium         ppm         ASTM D5185(m)         1070         977         993         887           Phosphorus         ppm         ASTM D5185(m)         1150         920         944         827           Zinc         ppm         ASTM D5185(m)         1270         1052         1117         968           Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         <1	Manganese	ppm	ASTM D5185(m)	1	<1	0	<1
Phosphorus         ppm         ASTM D5185(m)         1150         920         944         827           Zinc         ppm         ASTM D5185(m)         1270         1052         1117         968           Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         <1         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >18         5         4         6           Godium         ppm         ASTM D5185(m)         >20         <1         0         <1           Fuel         %         ASTM D7593*         >2.0         6.8         4.5         8.5           INFRA-RED         method         limit/base         current         history1         history2           Goot %         %         ASTM D7844*         >3         2.6         1.9         5.1           Nitration         Abs/cm         ASTM D7624*         >20         13.8         9.5         18.2	Magnesium	ppm	ASTM D5185(m)	1010	819	884	770
Zinc         ppm         ASTM D5185(m)         1270         1052         1117         968           Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         <1	Calcium	ppm	ASTM D5185(m)	1070	977	993	887
Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >18         5         4         6           Sodium         ppm         ASTM D5185(m)         1         1         2           Potassium         ppm         ASTM D5185(m)         >20         <1	Phosphorus	ppm	ASTM D5185(m)	1150	920	944	827
Sulfur         ppm         ASTM D5185(m)         2060         2417         2418         2050           Lithium         ppm         ASTM D5185(m)         <1         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185(m)         >18         5         4         6           Sodium         ppm         ASTM D5185(m)         >20         <1	Zinc	ppm	ASTM D5185(m)	1270	1052	1117	968
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >18         5         4         6           Sodium         ppm         ASTM D5185(m)         1         1         2           Potassium         ppm         ASTM D5185(m)         >20         <1	Sulfur		ASTM D5185(m)	2060	2417	2418	2050
Solicon   ppm   ASTM D5185(m)   >18   5   4   6	_ithium					<1	
Sodium         ppm         ASTM D5185(m)         1         1         2           Potassium         ppm         ASTM D5185(m)         >20         <1         0         <1           Fuel         %         ASTM D7593*         >2.0         ▲ 6.8         ▲ 4.5         ▲ 8.5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >3         2.6         1.9         ▲ 5.1           Vitration         Abs/cm         ASTM D7624*         >20         13.8         9.5         18.2	CONTAMINA	NTS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185(m)         >20         <1         0         <1           Fuel         %         ASTM D7593*         >2.0         ▲ 6.8         ▲ 4.5         ▲ 8.5           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >3         2.6         1.9         ▲ 5.1           Nitration         Abs/cm         ASTM D7624*         >20         13.8         9.5         18.2	Silicon	ppm	ASTM D5185(m)	>18	5	4	6
Fuel % ASTM D7593* >2.0 ▲ 6.8 ▲ 4.5 ▲ 8.5  INFRA-RED method limit/base current history1 history2  Soot % ASTM D7844* >3 2.6 1.9 ▲ 5.1  Nitration Abs/cm ASTM D7624* >20 13.8 9.5 18.2	Sodium	ppm	ASTM D5185(m)		1	1	2
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         ASTM D7844*         >3         2.6         1.9         ▲ 5.1           Vitration         Abs/cm         ASTM D7624*         >20         13.8         9.5         18.2	Potassium	ppm	ASTM D5185(m)	>20	<1	0	<1
Soot %         %         ASTM D7844*         >3         2.6         1.9         ▲ 5.1           Nitration         Abs/cm         ASTM D7624*         >20         13.8         9.5         18.2	Fuel	%	ASTM D7593*	>2.0	<b>▲</b> 6.8	<b>△</b> 4.5	▲ 8.5
Vitration         Abs/cm         ASTM D7624*         >20         13.8         9.5         18.2	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	ASTM D7844*	>3	2.6	1.9	▲ 5.1
Sulfation         Abs/.1mm         ASTM D7415*         >30         27.0         24.0         38.0	Vitration	Abs/cm	ASTM D7624*	>20	13.8	9.5	18.2
	Sulfation	Abs/.1mm	ASTM D7415*	>30	27.0	24.0	38.0



## **OIL ANALYSIS REPORT**





CALA ISO 17025:2017 Accredited

Laboratory Sample No.

: GFL0112394 Lab Number : 02621348

Unique Number : 5746467

**Tested** 

: 13 Mar 2024 Diagnosed

: 13 Mar 2024 - Wes Davis Test Package: MOB 2 (Additional Tests: PercentFuel)

Received

: 12 Mar 2024

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

: 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

F: (403)369-6163

Submitted By: GFL Calgary

T: