

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 911036

Fluid

Component Diesel Engine

### PETRO CANADA DURON SHP 15W40 (--- 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.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0080827	GFL0080737	GFL0067276
Sample Date		Client Info		28 Aug 2023	17 May 2023	08 Dec 2022
Machine Age	hrs	Client Info		15807	600	0
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Not Changd	Changed	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	8	2	10
Chromium	ppm	ASTM D5185m		<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	<1	<1	2
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m		4	2	2
Lead	ppm	ASTM D5185m	>40	0	0	2
Copper	ppm	ASTM D5185m	>330	<1	0	2
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
		mathad	limit/base		la la tanun d	history2
ADDITIVES		method			nistory i	riistory∠
ADDITIVES Boron	maa		0		history1 5	4
Boron	ppm mag	ASTM D5185m		20	5 0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	20 0	5 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	20	5	4
Boron Barium	ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60	20 0 67	5 0 58	4 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	20 0 67 <1	5 0 58 <1	4 0 59 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	20 0 67 <1 970	5 0 58 <1 953	4 0 59 <1 924
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	20 0 67 <1 970 1114	5 0 58 <1 953 1072	4 0 59 <1 924 1103
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	20 0 67 <1 970 1114 1000	5 0 58 <1 953 1072 1061	4 0 59 <1 924 1103 972
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	20 0 67 <1 970 1114 1000 1245	5 0 58 <1 953 1072 1061 1311	4 0 59 <1 924 1103 972 1327
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	20 0 67 <1 970 1114 1000 1245 3435	5 0 58 <1 953 1072 1061 1311 3912	4 0 59 <1 924 1103 972 1327 3259
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	20 0 67 <1 970 1114 1000 1245 3435	5 0 58 <1 953 1072 1061 1311 3912 history1	4 0 59 <1 924 1103 972 1327 3259 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	20 0 67 <1 970 1114 1000 1245 3435 current 5	5 0 58 <1 953 1072 1061 1311 3912 history1 3	4 0 59 <1 924 1103 972 1327 3259 history2 5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base	20 0 67 <1 970 1114 1000 1245 3435 <u>current</u> 5 2	5 0 58 <1 953 1072 1061 1311 3912 history1 3 1	4 0 59 <1 924 1103 972 1327 3259 history2 5 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	20 0 67 <1 970 1114 1000 1245 3435 <u>current</u> 5 2 0	5 0 58 <1 953 1072 1061 1311 3912 history1 3 1 2	4 0 59 <1 924 1103 972 1327 3259 history2 5 2 2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	20 0 67 <1 970 1114 1000 1245 3435 <u>current</u> 5 2 0 0	5 0 58 <1 953 1072 1061 1311 3912 history1 3 1 2 history1	4 0 59 <1 924 1103 972 1327 3259 history2 5 2 2 2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 1imit/base >20	20 0 67 <1 970 1114 1000 1245 3435 <u>current</u> 5 2 0 0 <u>current</u> 0.3	5 0 58 <1 953 1072 1061 1311 3912 history1 3 1 2 history1 0.2	4 0 59 <1 924 1103 972 1327 3259 history2 5 2 2 2 2 history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >4 >20	20 0 67 <1 970 1114 1000 1245 3435 <i>current</i> 5 2 0 <i>current</i> 0.3 7.5	5 0 58 <1 953 1072 1061 1311 3912 history1 3 1 2 history1 0.2 5.7	4 0 59 <1 924 1103 972 1327 3259 history2 5 2 2 2 history2 0.4 9.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 1imit/base 22 20 20 20 20 20 20 20 20 20 20 20 20	20 0 67 <1 970 1114 1000 1245 3435 <i>current</i> 5 2 0 <i>current</i> 0.3 7.5 19.7	5 0 58 <1 953 1072 1061 1311 3912 history1 3 1 2 history1 0.2 5.7 18.6	4 0 59 <1 924 1103 972 1327 3259 history2 5 2 2 2 history2 0.4 9.2 20.6 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 20 <b>imit/base</b> >4 >20	20 0 67 <1 970 1114 1000 1245 3435 <u>current</u> 5 2 0 <u>current</u> 0.3 7.5 19.7	5 0 58 <1 953 1072 1061 1311 3912 history1 3 1 2 history1 0.2 5.7 18.6 history1	4 0 59 <1 924 1103 972 1327 3259 history2 5 2 2 2 2 history2 0.4 9.2 20.6

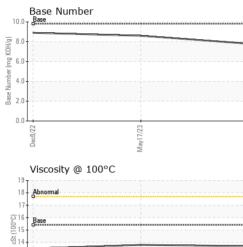


Base

13 Abnormal 12 11

Dec8/22

# **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
May17/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
May	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPI	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.8	13.5
	- GRAPHS						
	Ferrous Alloys						
/23	iron						
May17/23	8 - nickel			/			
_	6-						
	4	$\backslash$					
	2	Y					
	SEASTLANDING CONTINUES IN THE OWNER	****					
	22	/23 -		/23 +			
	Dec8/22	May17/23		Aug28/23			
	Non-ferrous Meta			4			
	10 <sub>T</sub>						
	8 - Copper						
	o T						
	6						
	L						
	u dd						
	4						
	4 2-						
	4_ 2_						
	2-	/23		1/23			
	4_ 2_	Aav17/23		ug28/23			
	2-	$\geq$		Aug28/23	Bace Number	r	
	Viscosity @ 100°	$\geq$		A	Base Number	r	
	Viscosity @ 100°	$\geq$		10.0	Base	r	
	Viscosity @ 100°	$\geq$		10.0	Base	r	
	Viscosity @ 100°	$\geq$		10.0	Base	r	
	Viscosity @ 100°	$\geq$	м <u> </u>	10.0	Base	r	
	Viscosity @ 100°	$\geq$		10.0	Base	r	
	Viscosity @ 100°	$\geq$		A	Base	r	
	Viscosity @ 100°	$\geq$		10.0			
	Viscosity @ 100°	C		40 (0)HOX But HOX BUT			22
	Viscosity @ 100°	$\geq$		10.0 (DHO) 8.0 (DHO) 6.0 (DHO) 8.0 (DHO) 8.0 (	Base	r	10,00,000 10,00,000 10,00,000 10,00,000 10,00,000 10,00,000 10,0000 10,00000000
Laboratory Sample No. Lab Number Unique Number Unique Number Sertificate L2367	Viscosity @ 100° Viscosity @ 100° <sup>19</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>10</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup> <sup>11</sup>	C EZULIAR 501 Madia Received Diagnos	d : 01 \$ ed : 01 \$ tician : We	ry, NC 27513 Sep 2023 s Davis	Base	FL Environmen 205 Flir Contact: M	

Submitted By: MARK WOMBLE

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