

# **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 913027 Component

Diesel Engine

### PETRO CANADA DURON SHP 15W40 (11 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

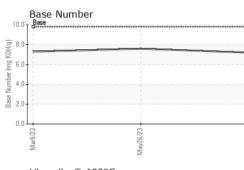
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

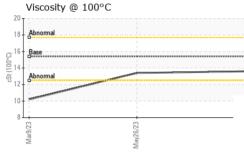
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0076927	GFL0052979	GFL0055233
Sample Date		Client Info		21 Aug 2023	26 May 2023	09 Mar 2023
Machine Age	hrs	Client Info		1631	1077	573
Oil Age	hrs	Client Info		554	504	573
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.4
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	13	14	43
Chromium	ppm	ASTM D5185m	>20	<1	0	2
Nickel	ppm	ASTM D5185m	>5	1	2	▲ 19
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	<1	<1	1
Aluminum	ppm	ASTM D5185m	>20	4	4	9
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	53	131	145
Tin	ppm		>15	1	<1	4
Vanadium	ppm	ASTM D5185m	210	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
	ррш			-	-	-
ADDITIVES						
		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	6	34	214
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0	6 0	34 0	214 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	6 0 61	34 0 63	214 0 103
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	6 0 61 <1	34 0 63 <1	214 0 103 4
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	6 0 61 <1 1009	34 0 63 <1 894	214 0 103 4 671
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	6 0 61 <1 1009 1214	34 0 63 <1 894 1163	214 0 103 4 671 1333
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	6 0 61 <1 1009 1214 1040	34 0 63 <1 894 1163 903	214 0 103 4 671 1333 650
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	6 0 61 <1 1009 1214 1040 1335	34 0 63 <1 894 1163 903 1136	214 0 103 4 671 1333 650 791
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	6 0 61 <1 1009 1214 1040	34 0 63 <1 894 1163 903	214 0 103 4 671 1333 650
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	6 0 61 <1 1009 1214 1040 1335	34 0 63 <1 894 1163 903 1136	214 0 103 4 671 1333 650 791
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 0 1010 1070 1150 1270 2060	6 0 61 <1 1009 1214 1040 1335 3313	34 0 63 <1 894 1163 903 1136 3176	214 0 103 4 671 1333 650 791 2594
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	6 0 61 <1 1009 1214 1040 1335 3313 current	34 0 63 <1 894 1163 903 1136 3176 history1	214 0 103 4 671 1333 650 791 2594 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 <b>method</b> ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	6 0 61 <1 1009 1214 1040 1335 3313 current 5	34 0 63 <1 894 1163 903 1136 3176 history1 8	214 0 103 4 671 1333 650 791 2594 history2 ▲ 68
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 <b>method</b> ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	6 0 61 <1 1009 1214 1040 1335 3313 current 5 8	34 0 63 <1 894 1163 903 1136 3176 history1 8 4	214 0 103 4 671 1333 650 791 2594 history2 ▲ 68 1
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	6 0 61 <1 1009 1214 1040 1335 3313 current 5 8 1	34 0 63 <1 894 1163 903 1136 3176 history1 8 4 2	214 0 103 4 671 1333 650 791 2594 history2 ▲ 68 1 1 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	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 Limit/base >20	6 0 61 <1 1009 1214 1040 1335 3313 current 5 8 1 1	34 0 63 <1 894 1163 903 1136 3176 history1 8 4 2 2 history1	214 0 103 4 671 1333 650 791 2594 history2 68 1 1 13 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	6 0 61 <1 1009 1214 1040 1335 3313 <u>current</u> 5 8 1 1 <u>current</u> 0.5	34 0 63 <1 894 1163 903 1136 3176 history1 8 4 2 <u>history1</u> 0.5	214 0 103 4 671 1333 650 791 2594 history2 68 1 13 13 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 TS 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	6 0 61 <1 1009 1214 1040 1335 3313 current 5 8 1 1 current 0.5 7.9	34 0 63 <1 894 1163 903 1136 3176 history1 8 4 2 history1 0.5 8.2	214 0 103 4 671 1333 650 791 2594 ► 68 1 13 ► 68 1 13 ► 13 ► 14 ► 13 ► 15 ► 13 ► 13 ■ 13 ► 13 ■ 13 ■ 13 ■ 13 ■ 13 ■ 13 ■ 13 ■ 13 ■
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 25 20 220 20 20 20 20 20 20 20 20 20 20 20	6 0 61 <1 1009 1214 1040 1335 3313 current 5 8 1 1 current 0.5 7.9 19.5	34 0 63 <1 894 1163 903 1136 3176 history1 8 4 2 <u>history1</u> 0.5 8.2 20.4	214 0 103 4 671 1333 650 791 2594 ► 68 1 13 ► 68 1 13 ► 68 1 13 ► 68 1 13 ► 68 ► 1 13 ► 68 ► 1 ► 13 ► 14 ► 13 ► 14 ► 13 ► 14 ► 14 ► 14 ► 15 ► 15
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 D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 220 220 220 230 20 20 20 20 20 20 20 20 20 20 20 20 20	6 0 61 <1 1009 1214 1040 1335 3313 current 5 8 1 0.5 7.9 19.5 current	34 0 63 <1 894 1163 903 1136 3176 history1 8 4 2 history1 0.5 8.2 20.4 history1	214 0 103 4 671 1333 650 791 2594 history2 68 1 13 13 history2 0.4 9.5 24.1 history2



# **OIL ANALYSIS REPORT**

VISUAL





		VISUAL		method	limit/base	current	nistory i	nistory2
		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
/23		Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
May26/23	2	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
2		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	20.2	NEG	NEG	NEG
		FLUID PROPE		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.4	10.2
		GRAPHS						
	4	Ferrous Alloys						
23		iron						
May26/23	3	35 - nickel						
N.	3	30						
	5 <sup>2</sup>	25						
	ld 2							
		15	-					
		5						
		Mar9/23	6/23+		1/23 -			
		Mart	May26/23		Aug21/23			
		Non-ferrous Meta						
	16	<sup>50</sup> T						
	14	to - copper	-					
	12	20 - tin						
	10	0 0						
	bbu	30 -						
	6	50 -						
	4	10						
	2	20						
		0	en.		<u> </u>			
		Mar9/23	May26/23		Aug21/23			
					Au			
	1	Viscosity @ 100°	C		10.0	Base Number		
		8 - Abnormal			10.0		, <b>и и и и и и и и и и и и и и и и</b>       	
		17- 16- Proc			(B) 8.0	)-		
		Dase			Ś			
	cSt (100°C)	14-			0.6 80 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.			
		0			4.0			
		12			ase			
		11			°° 2.0	1		
	1	9			0.0			
		r9/23	6/23		21/23	r9/23	:6/23	
		Ma	May2		Aug2	Ma	May2	
,		: WearCheck USA - : GFL0076927	501 Madia Received Diagnose	d : 25 /	ry, NC 27513 Aug 2023 Aug 2023	GFL Env	و - vironmental - 9 17 <sup>.</sup>	<b>000 - Antiç</b> 15 Delegli Antiç

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