

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 412047 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

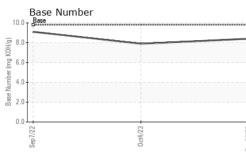
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

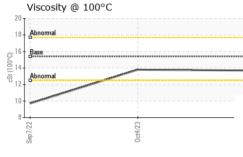
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0080372	GFL0080381	GFL0056058
Sample Date		Client Info		30 Dec 2023	04 Oct 2023	07 Sep 2022
Machine Age	hrs	Client Info		3568	3003	584
Oil Age	hrs	Client Info		565	3003	584
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	NORMAL	ATTENTION
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	0.4
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	8	10	36
Chromium	ppm	ASTM D5185m	>20	<1	<1	5
Nickel	ppm	ASTM D5185m	>5	<1	<1	3
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	2	4	14
Lead	ppm	ASTM D5185m	>40	0	0	10
Copper	ppm	ASTM D5185m	>330	1	2	24
Tin	ppm	ASTM D5185m	>15	1	<1	5
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current	history1 2	history2 234
	ppm ppm					
Boron		ASTM D5185m	0	1	2	234
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	1 0	2 0	234 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 61	2 0 61	234 0 99
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 61 <1	2 0 61 0	234 0 99 4
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 61 <1 1021	2 0 61 0 946	234 0 99 4 646
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 61 <1 1021 1134	2 0 61 0 946 1045	234 0 99 4 646 1462
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	0 0 60 0 1010 1070 1150	1 0 61 <1 1021 1134 1077	2 0 61 0 946 1045 978	234 0 99 4 646 1462 654
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	1 0 61 <1 1021 1134 1077 1300	2 0 61 0 946 1045 978 1226	234 0 99 4 646 1462 654 788
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 61 <1 1021 1134 1077 1300 3193	2 0 61 0 946 1045 978 1226 3244	234 0 99 4 646 1462 654 788 2286
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 1010 1070 1150 1270 2060	1 0 61 <1 1021 1134 1077 1300 3193 current	2 0 61 0 946 1045 978 1226 3244 history1	234 0 99 4 646 1462 654 788 2286 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 limit/base >25	1 0 61 <1 1021 1134 1077 1300 3193 current 3	2 0 61 0 946 1045 978 1226 3244 history1 4	234 0 99 4 646 1462 654 788 2286 history2 66
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	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	1 0 61 <1 1021 1134 1077 1300 3193 current 3 3 3	2 0 61 0 946 1045 978 1226 3244 history1 4 3	234 0 99 4 646 1462 654 788 2286 <u>history2</u> 66 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25	1 0 61 <1 1021 1134 1077 1300 3193 current 3 3 4	2 0 61 0 946 1045 978 1226 3244 history1 4 3 9	234 0 99 4 646 1462 654 788 2286 history2 66 4 4
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	1 0 61 <1 1021 1134 1077 1300 3193 current 3 3 4 Current	2 0 61 946 1045 978 1226 3244 history1 4 3 9 9	234 0 99 4 646 1462 654 788 2286 <b>history2</b> 66 4 4 46 <b>history2</b>
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	1 0 61 <1 1021 1134 1077 1300 3193 current 3 3 4 current 0.4	2 0 61 946 1045 978 1226 3244 history1 4 3 9 <u>history1</u> 0.3	234 0 99 4 646 1462 654 788 2286 history2 66 4 4 46 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 limit/base >25 >20 limit/base >20	1 0 61 <1 1021 1134 1077 1300 3193 <i>current</i> 3 3 4 <i>current</i> 0.4 7.0	2 0 61 0 946 1045 978 1226 3244 history1 4 3 9 history1 0.3 6.8	234 0 99 4 646 1462 654 788 2286 history2 66 4 46 46 history2 0.4 10.6
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 25 20 220 20 20 20 20 20 20 20 20 20 20 20	1 0 61 <1 1021 1134 1077 1300 3193 <b>current</b> 3 3 4 <b>current</b> 0.4 7.0 18.9	2 0 61 946 1045 978 1226 3244 history1 4 3 9 history1 0.3 6.8 18.8	234 0 99 4 646 1462 654 788 2286 <b>history2</b> 66 4 4 46 <b>history2</b> 0.4 10.6 26.4



# **OIL ANALYSIS REPORT**

VISUAL





	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
0ct4/23		scalar	*Visual	NORML	NORML	NORML	NORML
0ct4/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPE	ERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.8	▲ 9.7
	GRAPHS						
	Ferrous Alloys						
	40 35						
0ct4/23	30 - nickel						
	25						
	틆 20						
	15						
	10-	-					
	5						
	0						
	Sep7/22	0ct4/23		Dec30/23			
				De			
	Non-ferrous Meta	115					
	20						
	copper						
	A						
	20 - Lead 15 - Lead						
	20 - copper internet lead						
	20 - Lead 15 - Lead						
	20 15-	<u> </u>					
	20 15 10						
	20 15 10 5 0			23			
	20 15 10 5 0	Det4/23		ec30/23			
	20 lead 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			Dec30/23			
	20 15 10 5 0				Base Number		
	20 10 10 10 10 10 10 10 10 10 1			10.0	Base		
	20 15 0 0 0 0 0 0 0 0 0 0 0 0 0			10.0	Base		
	20 15 10 5 0 10 5 0 10 10 10 10 10 10 10 10 10			10.0	Base		
	20 15 10 5 0 10 5 0 10 10 10 10 10 10 10 10 10			10.0	Base		
	20 15 10 5 0 15 0 15 0 15 0 15 0 10 5 0 15 0 10 15 0 10 15 0 10 15 0 10 10 15 10 10 10 10 10 10 10 10 10 10			10.0	Base		
	20 15 10 5 0 10 5 0 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10			10.0	Base		
	20 15 10 5 0 15 0 15 0 15 0 15 0 10 15 0 10 10 15 0 10 15 0 10 15 0 10 10 15 10 10 10 10 10 10 10 10 10 10				Base		
	20 15 10 5 0 12 10 5 0 12 10 5 0 12 10 10 10 10 10 10 10 10 10 10	c		(0, 80.0 (0, HO) Bull Jack 4.0 88.0 (0, HO) Bull Jack 4.0 888 2.0 0.0	Base		
	20 15 10 5 0 12 10 5 0 12 10 5 0 12 10 10 10 10 10 10 10 10 10 10	c		(0, 80.0 (0, HO) Bull Jack 4.0 88.0 (0, HO) Bull Jack 4.0 888 2.0 0.0	Base	ct4/23	
	20 15 10 5 0 10 5 0 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10			0.0 (0)HOX 6.0 uuu Jaquung seeg 2.0	Base	Oct4/23	
laboratory	20 15 10 0 15 0 10 0 15 0 10 1	C C C C C C C C C C C C C C C C C C C		0.0 8.0 6.0 9.0 8 <sup>989</sup> 800 8 900 900 900 900 900 900 900 900 9	Base 		32 - Muskass I
Laboratory Samole No.	Viscosity @ 100°	C EZHPO 501 Madis		10.0 (0)HOX Bul) Jaquing area (0)HOX Bul) Jaquing area (0) (0)HOX Bul) Jaquing area (0,0)	Base 	vironmental - 9	
Laboratory Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100° Contractions of the second se	C C C C C C C C C C C C C C C C C C C	d : 23 .	0.0 8.0 6.0 9.0 8 <sup>989</sup> 800 8 900 900 900 900 900 900 900 900 9	Base 	vironmental - 9	6400 College (
Sample No. Lab Number Unique Numbe	Viscosity @ 100° Viscosity @ 100° Viscosity @ 100° WearCheck USA - : GFL0080372 : 06068234 er : 10844911	C EZHPBO 501 Madia Recieved	d : 23 . ed : 24 .	10.0 (0)HOX But Jack 4.0 (0)HOX But Jack 4.0 (0)HOX But Jack 4.0 (0.0 (0,0) (0	Base 	vironmental - 9 W144 St	<b>32 - Muskego H</b> 6400 College C Muskego, V US 5315
Sample No. Lab Number	Viscosity @ 100° Viscosity @ 100°	501 Madia Recieved Diagnost	d : 23 ed : 24 tician : We	10.0 (0,400) But 4.0 (0,400) B	Base 	vironmental - 9 W144 Si Contact: E	6400 College ( Muskego, V



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Submitted By: BECKY FLETCHER

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