

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 913026

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.

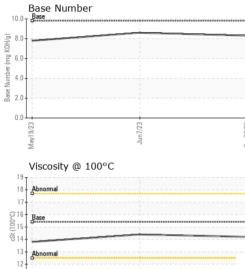
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0086547	GFL0074356	GFL0074343
Sample Date		Client Info		27 Sep 2023	07 Jun 2023	19 May 2023
Machine Age	hrs	Client Info		2605	1843	1693
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Not Changd	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		17	7	22
Chromium	ppm	ASTM D5185m		<1	<1	1
Nickel	ppm	ASTM D5185m		3	<1	4
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m		0	0	<1
Aluminum		ASTM D5185m		2	0	3
Lead	ppm ppm	ASTM D5185m	>20	2 <1	<1	1
		ASTM D5185m		2	4	22
Copper Tin	ppm		>330	2	4 <1	2
Vanadium	ppm	ASTM D5185m	>10	0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	<1
	ppm	ASTIVI DOTODIII		0	-	< 1
						biotory ()
ADDITIVES		method	iimii/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	o current	4	3
	ppm ppm		0		4 2	
Boron Barium Molybdenum		ASTM D5185m	0	0	4	3
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	4 2	3 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 62	4 2 63	3 0 62
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 62 <1	4 2 63 <1	3 0 62 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 62 <1 913	4 2 63 <1 915	3 0 62 1 975
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	0 0 62 <1 913 1060	4 2 63 <1 915 1079	3 0 62 1 975 1077
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	0 0 62 <1 913 1060 1002	4 2 63 <1 915 1079 1041	3 0 62 1 975 1077 985
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	0 0 62 <1 913 1060 1002 1243	4 2 63 <1 915 1079 1041 1234	3 0 62 1 975 1077 985 1216
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	0 0 62 <1 913 1060 1002 1243 3162	4 2 63 <1 915 1079 1041 1234 3463	3 0 62 1 975 1077 985 1216 2862
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	0 0 62 <1 913 1060 1002 1243 3162 current	4 2 63 <1 915 1079 1041 1234 3463 history1	3 0 62 1 975 1077 985 1216 2862 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	0 0 62 <1 913 1060 1002 1243 3162 current 5	4 2 63 <1 915 1079 1041 1234 3463 history1 3	3 0 62 1 975 1077 985 1216 2862 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 0 1010 1070 1150 1270 2060 kimit/base >25	0 0 62 <1 913 1060 1002 1243 3162 <u>current</u> 5 4	4 2 63 <1 915 1079 1041 1234 3463 history1 3 2	3 0 62 1 975 1077 985 1216 2862 history2 5 5
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	0 0 62 <1 913 1060 1002 1243 3162 current 5 4 2	4 2 63 <1 915 1079 1041 1234 3463 history1 3 2 1	3 0 62 1 975 1077 985 1216 2862 history2 5 5 5 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 <u>limit/base</u> >20	0 0 62 <1 913 1060 1002 1243 3162 current 5 4 2 2 current 0.7	4 2 63 <1 915 1079 1041 1234 3463 history1 3 2 1 1 history1 0.4	3 0 62 1 975 1077 985 1216 2862 history2 5 5 5 2 2 history2 0.7
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 <u>limit/base</u> >20	0 0 62 <1 913 1060 1002 1243 3162 current 5 4 2 2 current	4 2 63 <1 915 1079 1041 1234 3463 history1 3 2 1 1 history1	3 0 62 1 975 1077 985 1216 2862 history2 5 5 5 2 2 history2
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	0 0 62 <1 913 1060 1002 1243 3162 <u>current</u> 5 4 2 2 <u>current</u> 0.7 7.6	4 2 63 <1 915 1079 1041 1234 3463 history1 3 2 1 3 2 1 history1 0.4 5.7	3 0 62 1 975 1077 985 1216 2862 history2 5 5 5 2 2 history2 0.7 8.4
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 2260 225 220 220 1imit/base >20 >20 >30 20 30	0 0 62 <1 913 1060 1002 1243 3162 <i>current</i> 5 4 2 <i>current</i> 0.7 7.6 19.9 <i>current</i>	4 2 63 <1 915 1079 1041 1234 3463 history1 3 2 1 history1 0.4 5.7 19.2 history1	3 0 62 1 975 1077 985 1216 2862 history2 5 5 5 2 <i>history2</i> 0.7 8.4 20.7 <i>history2</i>
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 20 225 20 <b>imit/base</b> >4 20 20	0 0 62 <1 913 1060 1002 1243 3162 <u>current</u> 5 4 2 2 <u>current</u> 0.7 7.6 19.9	4 2 63 <1 915 1079 1041 1234 3463 history1 3 2 1 history1 0.4 5.7 19.2	3 0 62 1 975 1077 985 1216 2862 <b>history2</b> 5 5 5 2 <b>bistory2</b> 0.7 8.4 20.7



11 May19/23

# **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
//23	/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Jun7/23	Sep 27/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual	20.L	NEG	NEG	NEG
				VISUAI		ITEG		
		FLUID PROPE		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.4	13.8
		GRAPHS						
		Ferrous Alloys						
		iron						
Jun7/23		20 - chromium						
7					/			
		15		/				
		۵ 10						
			$\searrow$					
		5-						
					and a second sec			
		123+0	/23 -		/23			
		May19/23	Jun7/23		Sep27/23			
		—			\$			
		Non-ferrous Meta	IS					
		copper						
		20 - timestante lead						
		15 I						
		mag						
		mag						
		mag						
			23		53			
					ep27/23			
		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Juni723		Sep27/23			
		Viscosity @ 100°0				Base Number		
		Uld 10 5 0 6 6 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 7 7 7 7 7 7 7 7 7 7 7 7			5017123 Sep21723			
		UID 10 5 0 CZC61/Are W Viscosity @ 100°C 19 18 Abnomal			10.0	Base		
		Uld 10 5 0 C226 K/Are Wiscosity @ 100°C			10.0	Base		
		Uld 10 5 0 C226 K/Are Wiscosity @ 100°C			10.0	Base		
		Uld 10 5 0 C226 K/Are Wiscosity @ 100°C			10.0	Base		
		UID 10 5 0 CZC61/Are W Viscosity @ 100°C 19 18 Abnomal			10.0	Base		
		Uld 10 5 0 0 0 0 0 0 0 0 0 0 0 0 0			10.0 8.0 (0)(4)(0) (0)(4)(0) (0)(4)(0) (0)(4)(0)(4)(0)(4)(0)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)	Base		
		Udd 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10			10.0	Base		
		Udd 10 5 0 10 10 5 0 10 10 10 10 10 10 10 10 10			10.0 (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,HO) (0,H	Base		
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		Ulicological and a second seco	C EZ/Lunc	d : 29 S ed : 29 S	0.0 8.0 0.6 0.0 8 <sup>9366</sup> Mumber (und KOH(0) 2.0 0.0 0.0 8 <sup>9366</sup> S	EZ/61/keW	<b>ronmental - 654 - 1</b> 118	Richmond Haul 300 Lewis Ro Chester, US 238 t: Jimmy May

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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