

## **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 913046

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

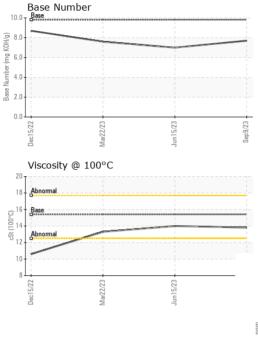
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	MATION	method	limit/base	current history1 histo		history2
Sample Number		Client Info	GFL0092634		GFL0082527	GFL0075192
Sample Date		Client Info		09 Sep 2023	15 Jun 2023	22 Mar 2023
Machine Age	hrs	Client Info		2449	1853	1236
Oil Age	hrs	Client Info		600	603	604
Oil Changed		Client Info		Changed	Changed	Changed
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
	0		11 1. 0			
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	18	22	26
Chromium	ppm	ASTM D5185m		<1	<1	1
Nickel	ppm	ASTM D5185m	>5	1	5	10
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	2
Lead	ppm	ASTM D5185m	>40	0	0	2
Copper	ppm	ASTM D5185m	>330	9	40	249
Tin	ppm	ASTM D5185m	>15	1	1	2
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
		ام م مالح میں	limit/base			biotom/0
ADDITIVES		method	iimii/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	current 1	history1 0	7
	ppm ppm					
Boron		ASTM D5185m	0	1	0	7
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	1 0	0 4	7 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 64	0 4 58	7 0 66
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 64 <1	0 4 58 <1	7 0 66 2
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 64 <1 1069	0 4 58 <1 881	7 0 66 2 956
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 64 <1 1069 1163	0 4 58 <1 881 979	7 0 66 2 956 1166
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 64 <1 1069 1163 1058	0 4 58 <1 881 979 858	7 0 66 2 956 1166 950
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 64 <1 1069 1163 1058 1349	0 4 58 <1 881 979 858 1145	7 0 66 2 956 1166 950 1245
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	1 0 64 <1 1069 1163 1058 1349 3344	0 4 58 <1 881 979 858 1145 2578	7 0 66 2 956 1166 950 1245 2743
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	1 0 64 <1 1069 1163 1058 1349 3344 current	0 4 58 <1 881 979 858 1145 2578 history1	7 0 66 2 956 1166 950 1245 2743 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	1 0 64 <1 1069 1163 1058 1349 3344 current 5	0 4 58 <1 881 979 858 1145 2578 history1 3	7 0 66 2 956 1166 950 1245 2743 history2 8
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	1 0 64 <1 1069 1163 1058 1349 3344 <u>current</u> 5 4	0 4 58 <1 881 979 858 1145 2578 history1 3 4	7 0 66 2 956 1166 950 1245 2743 <b>history2</b> 8 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 <b>limit/base</b> >25	1 0 64 <1 1069 1163 1058 1349 3344 current 5 4 1 1	0 4 58 <1 881 979 858 1145 2578 history1 3 4 1 1	7 0 66 2 956 1166 950 1245 2743 history2 8 3 0 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >20	1 0 64 <1 1069 1163 1058 1349 3344 current 5 4 1 1 current 0.3	0 4 58 <1 881 979 858 1145 2578 history1 3 4 1 1 history1 0.8	7 0 66 2 956 1166 950 1245 2743 history2 8 3 0 history2 0.7
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 <b>limit/base</b> >25	1 0 64 <1 1069 1163 1058 1349 3344 current 5 4 1 1	0 4 58 <1 881 979 858 1145 2578 history1 3 4 1 1	7 0 66 2 956 1166 950 1245 2743 history2 8 3 0 0 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	1 0 64 <1 1069 1163 1058 1349 3344 <i>current</i> 5 4 1 <i>current</i> 0.3 10.0	0 4 58 <1 881 979 858 1145 2578 history1 3 4 1 1 history1 0.8 9.1	7 0 66 2 956 1166 950 1245 2743 history2 8 3 0 history2 0.7 9.3
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	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	1 0 64 <1 1069 1163 1058 1349 3344 <i>current</i> 5 4 1 <i>current</i> 0.3 10.0 24.3 <i>current</i>	0 4 58 <1 881 979 858 1145 2578 history1 3 4 1 1 history1 0.8 9.1 21.5 history1	7 0 66 2 956 1166 950 1245 2743 history2 8 3 0 history2 0.7 9.3 20.7 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 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 64 <1 1069 1163 1058 1349 3344 <u>current</u> 5 4 1 1 <u>current</u> 0.3 10.0 24.3	0 4 58 <1 881 979 858 1145 2578 history1 3 4 1 1 0.8 9.1 21.5	7 0 66 2 956 1166 950 1245 2743 <b>history2</b> 8 3 0 <b>history2</b> 0.7 9.3 20.7



# **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
5/23	Sep 9/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
lin 15/23	Sep	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		method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445		13.8	14.0	13.3
		GRAPHS	001	7.0111 0440	10.4	10.0	14.0	10.0
		Ferrous Alloys						
		<sup>60</sup> T						
		50 - chromium						
-	5	40						
		E 30						
		20						
		10-						
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		53		23	53			
		Dec15/22 Mar22/23		Jun 15/23	Sep 9/23			
		□ ≥ Non-ferrous Meta		7				
		copper						
		200 - tin	\					
		150	$\mathbf{\lambda}$					
		Edd						
		100						
		50 -		$\mathbf{N}$				
		50						
		0 Li		~				
		Dec15/22 Mar22/23		Jun 15/23	Sep 9/23			
				Jur	3			
		Viscosity @ 100°C				Base Number		
		19 18 <b>Abnormal</b>			10.0		<u>}</u>	
	17							
	16 Base			0.8 0.3 Base Number (mg KOH/d)				
		0,15			2 6.0	)		
	다.15 00114 で313 Abnormal			l per (				
		Abnormal			4.(	)+		
		11			2.0	)		
		10						
		10			0.0		n m	2
		9		23	53	-		
		9		n 15/23 -	ep9/23	c15/2	n15/2	
		Dec15/22		Jun15/23 -	Sep 9/23	Dec15/22	Jun 15/23	
	l aboratory	Dec15/22	501 Madie		Sep 9/23			
4	Laboratory Sample No.	: WearCheck USA -		son Ave., Ca	ry, NC 2751:		ronmental - 947 -	· WB Horicon I
NAB	Laboratory Sample No. Lab Number	: WearCheck USA - : GFL0092634	501 Madis <b>Receivec</b> Diagnose	son Ave., Ca	Sep 9/23		ronmental - 947 -	• WB Horicon I 96 County Rd
	Sample No. Lab Number Unique Number	: WearCheck USA - 5 : GFL0092634 : 05958037	Received	son Ave., Ca 1 : 21 : ed : 22 :	ry, NC 2751: Sep 2023		<b>ronmental - 947 -</b> N729	WB Horicon I 6 County Rd Horicon, <sup>v</sup> US 530
	Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 5 : GFL0092634 : 05958037	Receivec Diagnose Diagnost	son Ave., Ca 1 : 21 s ed : 22 s ician : We	ry, NC 27513 Sep 2023 Sep 2023 s Davis		ronmental - 947 - N729 Conta	

Contact/Location: See also GFL935 - Tim Kieffer - GFL947