

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id **728106-18** 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.

		mathad	limit/bass	ourropt	biotorud	biotom/0
SAMPLE INFORI	WATION		limit/base	current	history1	history2
Sample Number		Client Info		GFL0104886	GFL0104945	GFL0088150
Sample Date		Client Info		07 Mar 2024	12 Feb 2024	21 Dec 2023
Machine Age	mls	Client Info		139367	1647	132799
Oil Age	mls	Client Info		0	0	132799
Oil Changed		Client Info		Not Changd	N/A	N/A
Sample Status				NORMAL	NORMAL	MARGINAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<b>2</b> .8
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	>80	17	11	4
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		0	<1	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm		>30	2	1	2
Lead	ppm	ASTM D5185m	>30	<1	0	<1
Copper	ppm		>150	<1	<1	0
Tin	ppm		>5	2	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron		method ASTM D5185m	limit/base			history2
Boron	ppm	ASTM D5185m		current 0 0	history1	
Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m	0	0 0	history1 0 0	history2 2
Boron Barium Molybdenum	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	0 0 55	history1 0	history2 2 0
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60	0 0 55 <1	history1 0 0 55	history2 2 0 59
Boron Barium Molybdenum	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 55	history1 0 0 55 <1	history2 2 0 59 <1
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	0 0 55 <1 903	history1 0 55 <1 870	history2 2 0 59 <1 1012
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	0 0 55 <1 903 1045	history1 0 55 <1 870 941	history2 2 0 59 <1 1012 1061
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 55 <1 903 1045 874	history1 0 55 <1 870 941 946	history2     2     0     59     <1     1012     1061     1117
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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 55 <1 903 1045 874 1168	history1     0     55     <1     870     941     946     1101	history2     2     0     59     <1     1012     1061     1117     1252
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 55 <1 903 1045 874 1168 3323	history1   0   0   55   <1   870   941   946   1101   2688	history2   2   0   59   <1   1012   1061   1117   1252   3292
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	0 0 60 1010 1070 1150 1270 2060	0 0 555 <1 903 1045 874 1168 3323 current	history1   0   55   <1   870   941   946   1101   2688   history1	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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>	0 0 60 1010 1070 1150 1270 2060 kimit/base	0 0 555 <1 903 1045 874 1168 3323 current 4	history1   0   0   55   <1   870   941   946   1101   2688   history1   3	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2
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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base	0 0 55 <1 903 1045 874 1168 3323 current 4 8	history1   0   0   55   <1   870   941   946   1101   2688   history1   3   8	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2   2   2   2   2   2   2   2   2   2   2   2   2   2   2   2   2
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> >20	0 0 55 <1 903 1045 874 1168 3323 current 4 8 3	history1   0   0   55   <1   870   941   946   1101   2688   history1   3   8   <1	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2   2   2   0   0
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 limit/base >20 20 limit/base	0 0 55 <1 903 1045 874 1168 3323 <u>current</u> 4 8 3 <u>current</u> 0.5	history1   0   0   55   <1   870   941   946   1101   2688   history1   3   8   <1   history1   3   0.4	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2   2   2   0   history2   0   history2   0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 220 200 200 200	0 0 55 <1 903 1045 874 1168 3323 current 4 8 3 3	history1   0   0   55   <1   870   941   946   1101   2688   history1   3   8   <1   history1   history1	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2   2   2   0   history2   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> >20 <i>limit/base</i> >20	0 0 55 <1 903 1045 874 1168 3323 current 4 8 3 2 current 0.5 11.9	history1   0   0   55   <1   870   941   946   1101   2688   history1   3   8   <1   0.4   10.1	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2   2   2   2   0   history2   0.1   6.4
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 D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	0 0 55 <1 903 1045 874 1168 3323 Current 4 8 3 3 Current 0.5 11.9 21.6 Current	history1   0   0   55   <1   870   941   946   1101   2688   history1   3   8   <1   0.4   10.1   20.3   history1	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2   2   2   0   history2   0   history2   0.1   6.4   18.6   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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 200 200 200 200 200 200 200	0 0 55 <1 903 1045 874 1168 3323 <u>current</u> 4 8 3 3 <u>current</u> 0.5 11.9 21.6	history1   0   0   55   <1   870   941   946   1101   2688   history1   3   8   <1   0.4   10.1   20.3	history2   2   0   59   <1   1012   1061   1117   1252   3292   history2   2   2   0   history2   0   history2   0.1   6.4   18.6

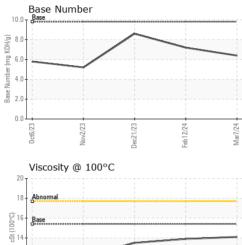


Abnorma 12 10 0ct6/23

Nov2/23

# **OIL ANALYSIS REPORT**

VISUAL



		VISUAI	L.		method	limit/bas	se cui	rent	history1	histo	ory2
		White Meta	al s	scalar	*Visual	NONE	NON	E	NONE	NONE	E
		Yellow Met	tal	scalar	*Visual	NONE	NON	E	NONE	NONE	E
		Precipitate	5	scalar	*Visual	NONE	NON	E	NONE	NONE	E
		Silt	Ş	scalar	*Visual	NONE	NON	E	NONE	NONE	E
		Debris	ş	scalar	*Visual	NONE	NON	E	NONE	NONE	E
		Sand/Dirt	Ş	scalar	*Visual	NONE	NON	E	NONE	NONE	E
	Feb12/24 - Mar7/24 -	Appearance	e s	scalar	*Visual	NORML	NOR	ML	NORML	NOR	ML
	Feb1	Odor	S	scalar	*Visual	NORML	NOR	ML	NORML	NOR	ML
		Emulsified	Water s	scalar	*Visual	>0.2	NEG		NEG	NEG	
		Free Wate	r s	scalar	*Visual		NEG		NEG	NEG	
		FLUID	PROPER	TIES	method	limit/bas	se cui	rrent	history1	histo	oryź
		Visc @ 10	0°C	cSt	ASTM D445	15.4	14.1		13.9	13.5	
		GRAPH	IS								
		Ferrous /	Alloys								
	24	40 iro	n								
	Feb12/24 мстм		romium ckel								
	LL	30									
		E 25 20 20 20 20 20 20 20 20 20 20 20 20 20									
		15									
		10-									
		5 -		-							
		0	27 27	2	5	5. 5.					
		0ct6/23	Nov2/23	Dec21/23	Feb12/24	Mar7/24					
				De	£	2					
		Non-terr	ous Metals								
			opper								
		8 -									
		6									
		шd									
		4-									
		2-									
				and division in the local division in the lo	-	and the state of the					
			53	23		24					
		0ct6/23	Nov2/23	Dec21/23	Feb 12/24	Mar7/24					
		Viscosity	@ 100°C		LL.						
	<sup>19</sup> T	@ 100 0				Base 1	Number				
	18 - Abnormal	1									
	17				(a)	8.0-			<hr/>		
		Base				Base Number (ma KOH/a)	e.0	/		-	_
		15 14				er (m	0.0				
		10				Numb	4.0				
		13 Abnormal				ase ase	2.0				
		11-					2.0				
		10	m	~	4	+	0.0				
		0ct6/23	Nov2/23	Dec21/23	Feb 12/24	Mar7/24	0ct6/23	Nov2/23	Dec21/23	Feb12/24	
		D	2	De	<u>a</u>	$\geq$	0	N.	Dei	æ	
	Laboratory	: WearCheck		Madieov	n Ave Car	/ NC 2751	3	GEL Envir	onmental - 82	20 - Jonlin H	laul
	Sample No.	: GFL010488		Recei		7, NC 2751 8 Mar 2024				20 - 30piiii H 0 West 7th	
	Lab Number			<b>Tested</b> : 28 Mar 2024				0.00	Jopli		
ORATORY	Unique Number			Diagnosed : 28 Mar 2024 - Wes Davis			\$	US 648			
	Test Package	· FI FFT								act: James .	Jarr
e L2367	s sample report,				00 007 100	0				rrett@gflen	

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Page 2 of 2