

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id 929068

#### Component Diesel Engine

Fluid 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

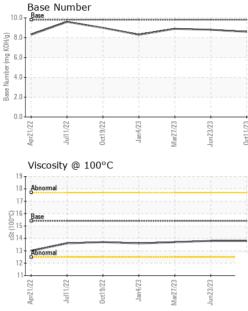
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0076938	GFL0076932	GFL0055232	
Sample Date		Client Info		11 Oct 2023	23 Jun 2023	27 Mar 2023	
Machine Age	hrs	Client Info		33854	33276	32786	
Oil Age	hrs	Client Info		578	490	488	
Oil Changed		Client Info	Changed		Changed	Changed	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINAT		method	limit/base	current	history1	history2	
Fuel		WC Method	>5		<1.0	<1.0	
			>0	<1.0 NEG	<1.0 NEG	<1.0 NEG	
Glycol		WC Method		NEG	NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>110	6	8	8	
Chromium	ppm	ASTM D5185m	>4	2	<1	<1	
Nickel	ppm	ASTM D5185m	>2	<1	0	0	
Titanium	ppm	ASTM D5185m		<1	0	0	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>25	4	<1	0	
Lead	ppm	ASTM D5185m	>45	<1	0	0	
Copper	ppm	ASTM D5185m	>85	<1	0	0	
Tin	ppm	ASTM D5185m	>4	0	0	0	
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method				history2	
ADDITIVES Boron	ppm	Method ASTM D5185m	limit/base	current 8	history1 16	history2 21	
	ppm ppm						
Boron		ASTM D5185m	0	8	16	21	
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	8 0	16 0	21 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	8 0 59	16 0 62	21 0 71	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	8 0 59 0	16 0 62 <1	21 0 71 <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	8 0 59 0 925	16 0 62 <1 969	21 0 71 <1 1063	
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	8 0 59 0 925 1073	16 0 62 <1 969 1142	21 0 71 <1 1063 1243	
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	8 0 59 0 925 1073 989	16 0 62 <1 969 1142 1056	21 0 71 <1 1063 1243 1101	
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	8 0 59 0 925 1073 989 1208	16 0 62 <1 969 1142 1056 1311	21 0 71 <1 1063 1243 1101 1416	
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	8 0 59 0 925 1073 989 1208 3406	16 0 62 <1 969 1142 1056 1311 3893	21 0 71 <1 1063 1243 1101 1416 3874	
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	8 0 59 0 925 1073 989 1208 3406 current	16 0 62 <1 969 1142 1056 1311 3893 history1	21 0 71 <1 1063 1243 1101 1416 3874 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	8 0 59 0 925 1073 989 1208 3406 current 4	16 0 62 <1 969 1142 1056 1311 3893 history1 3	21 0 71 <1 1063 1243 1101 1416 3874 history2 4	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	8 0 59 0 925 1073 989 1208 3406 <u>current</u> 4 2	16 0 62 <1 969 1142 1056 1311 3893 history1 3 2	21 0 71 <1 1063 1243 1101 1416 3874 history2 4 2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	8 0 59 0 925 1073 989 1208 3406 <u>current</u> 4 2 2	16 0 62 <1 969 1142 1056 1311 3893 history1 3 2 2 2	21 0 71 <1 1063 1243 1101 1416 3874 history2 4 2 5	
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 limit/base >30 limit/base >20	8 0 59 0 925 1073 989 1208 3406 current 4 2 2 2 2	16 0 62 <1 969 1142 1056 1311 3893 history1 3 2 2 2 history1	21 0 71 <1 1063 1243 1101 1416 3874 history2 4 2 5 5 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 limit/base >30 limit/base >20	8 0 59 0 925 1073 989 1208 3406 <u>current</u> 4 2 2 2 2 <u>current</u>	16 0 62 <1 969 1142 1056 1311 3893 history1 3 2 2 2 history1 0.2	21 0 71 <1 1063 1243 1101 1416 3874 history2 4 2 5 history2 0.2	
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 imit/base >30 220 imit/base >3 >20	8 0 59 0 925 1073 989 1208 3406 <u>current</u> 4 2 2 2 <u>current</u> 0.2 6.7	16 0 62 <1 969 1142 1056 1311 3893 history1 3 2 2 2 history1 0.2 7.4	21 0 71 <1 1063 1243 1101 1416 3874 history2 4 2 5 history2 0.2 7.3	
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 D7844	0 0 0 1010 1070 1150 1270 2060 2060 2060 2060 200 200 200 200 20	8 0 59 0 925 1073 989 1208 3406 <i>current</i> 4 2 2 2 <i>current</i> 0.2 6.7 18.7	16 0 62 <1 969 1142 1056 1311 3893 history1 3 2 2 2 history1 0.2 7.4 19.6 history1	21 0 71 <1 1063 1243 1101 1416 3874 history2 4 2 5 history2 0.2 7.3 19.2 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 <b>imit/base</b> >30 <b>imit/base</b> >3 20	8 0 59 0 925 1073 989 1208 3406 <u>current</u> 4 2 2 2 2 <u>current</u> 0.2 6.7 18.7	16 0 62 <1 969 1142 1056 1311 3893 history1 3 2 2 2 <u>history1</u> 0.2 7.4 19.6	21 0 71 <1 1063 1243 1101 1416 3874 history2 4 2 5 <u>history2</u> 0.2 7.3 19.2	



# **OIL ANALYSIS REPORT**

VISUAL



		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		
Jan 4/23 - Jan 4/23 -	3/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML		
Uct1 9/22 Jan4,/23 Mar27/23	Jun23/23 0ct11/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
°C		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	15.4	13.8	13.8	13.7		
		GRAPHS								
		Ferrous Alloys								
1/23 -	1/23 -	iron								
Uct1 5/22 Jan 4/23 Mar27/23	Jun23/23	20- nickel								
		15								
		m dd	$\backslash$							
		10-								
		5 -								
		and an			and and a second se					
		Apr21/22 - Jul11/22 - Oct19/22 -	Jan4/23 -	7/23 -	0ct11/23 -					
		Apr2 Jul1 Oct1	Jan	Mar27/23 Jun23/23	0ct1					
		Non-ferrous Meta	ls							
		25 copper								
		20 - sessesses lead								
		15								
		10								
		5								
			Charles in the local division of the local d							
			23-	23	53					
		Apr21/22 - Jul11/22 - Oct19/22 -	Jan4/23	Mar27/23 Jun23/23	0ct11/23					
		Viscosity @ 100°C	2	~ 7						
		<sup>19</sup>	-		10.0 T	Base Number				
		18 - Abnormal								
		17			(B)H					
		Base			9 6.0 -					
		G 16 Base 15 3 14			(b,0.0 (b,0.0 (b,0.0 (b,0.0 (b,0.0 (b,0.0) (b,					
		12			4.0- N 85					
		13 Abnormal	1	1 1	<u>2.0</u>					
		11			0.0					
		Apr21/22 Jul11/22 Oct19/22	Jan4/23	Mar27/23 Jun23/23		Apr21/22 Jul11/22 Oct19/22	Jan4/23	Jun23/23 0ct11/23		
		Apr2 Jul1 Oct1	Jar	Mará Jun2	0ct1	Apri Jull Oct1	Jan4/23 Mar27/23	Jun2 Oct1		
1 L	Laboratory	· WearCheck LIGA	501 Madia		ny NC 27512	CEI Envi	ronmental - 020	- Mosinee 40		
	Laboratory Sample No.		Received	01 Madison Ave., Cary, Received : 17 Oct				onmental - 930 - Mosinee HC 1372 State Highway 34		
ACCREDITED	Lab Number	: 05981809	Diagnose	ed : 18 (	Oct 2023			IOSINEE, WI		
TESTING LABORATORY	Unique Number		Diagnost	ician : We	s Davis		<b>a</b> .	US 54455		
Certificate L2367	Test Package	E : FLEET contact Customer Serv	vice at 1-8	00-237-1360	)		Contact: Kirk Koss			
		are outside of the ISO 1					T: (7	'15)571-2784		
		cifications are based on t				CGM 106:2012)	, v	, F:		