

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id 425160

#### 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.

			Aug2023	Dec2023		
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0093105	GFL0093025	
Sample Date		Client Info		14 Dec 2023	25 Aug 2023	
Machine Age	hrs	Client Info		0	0	
Oil Age	hrs	Client Info		0	0	
Oil Changed		Client Info		Changed	N/A	
Sample Status				NORMAL	NORMAL	
CONTAMINAT		method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	
Water		WC Method		<1.0 NEG	NEG	
			>0.2			
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	15	22	
Chromium	ppm	ASTM D5185m	>20	<1	<1	
Nickel	ppm	ASTM D5185m	>4	0	0	
Titanium	ppm	ASTM D5185m		<1	0	
Silver	ppm	ASTM D5185m	>3	0	0	
Aluminum	ppm	ASTM D5185m	>20	3	0	
Lead	ppm	ASTM D5185m	>40	<1	0	
Copper	ppm	ASTM D5185m	>330	2	3	
Tin	ppm	ASTM D5185m	>15	1	<1	
Vanadium	ppm	ASTM D5185m		0	0	
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES		method	limit/base	current	history1	history2
	nom					
Boron	ppm	ASTM D5185m	0	8	32	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	8 0	32 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	8 0 62	32 0 58	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	8 0 62 <1	32 0 58 <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 62 <1 1047	32 0 58 <1 889	
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 62 <1 1047 1201	32 0 58 <1 889 1386	   
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 62 <1 1047 1201 1135	32 0 58 <1 889 1386 971	   
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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 62 <1 1047 1201 1135 1294	32 0 58 <1 889 1386 971 1191	    
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	0 0 60 0 1010 1070 1150	8 0 62 <1 1047 1201 1135	32 0 58 <1 889 1386 971	   
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 62 <1 1047 1201 1135 1294	32 0 58 <1 889 1386 971 1191	    
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 62 <1 1047 1201 1135 1294 3400	32 0 58 <1 889 1386 971 1191 3785	
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	8 0 62 <1 1047 1201 1135 1294 3400 current	32 0 58 <1 889 1386 971 1191 3785 history1	     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 0 1010 1070 1150 1270 2060 <b>limit/base</b>	8 0 62 <1 1047 1201 1135 1294 3400 current 4	32 0 58 <1 889 1386 971 1191 3785 history1 6	     history2
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 0 1010 1070 1150 1270 2060 kimit/base >25	8 0 62 <1 1047 1201 1135 1294 3400 current 4 <	32 0 58 <1 889 1386 971 1191 3785 history1 6 2	     history2
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 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	8 0 62 <1 1047 1201 1135 1294 3400 current 4 <1 1	32 0 58 <1 889 1386 971 1191 3785 history1 6 2 4	     history2  
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20	8 0 62 <1 1047 1201 1135 1294 3400 current 4 <1 1 1 current	32 0 58 <1 889 1386 971 1191 3785 history1 6 2 4 history1 0.3	     history2    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 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	8 0 62 <1 1047 1201 1135 1294 3400 current 4 <1 1 current 0.4	32 0 58 <1 889 1386 971 1191 3785 history1 6 2 4 4	    history2  history2  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 20 225 20 20 3 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	8 0 62 <1 1047 1201 1135 1294 3400 <u>current</u> 4 <1 1 1 <u>current</u> 0.4 7.4 17.8	32 0 58 <1 889 1386 971 1191 3785 history1 6 2 4 4 history1 0.3 6.5 17.5	     history2  history2  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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	8 0 62 <1 1047 1201 1135 1294 3400 current 4 <1 1 current 0.4 7.4 17.8 current	32 0 58 <1 889 1386 971 1191 3785 history1 6 2 4 4 history1 0.3 6.5 17.5 history1	     history2  history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAI	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7414	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20 30 <b>imit/base</b>	8 0 62 <1 1047 1201 1135 1294 3400 current 4 <1 1 0.4 7.4 17.8 current 14.2	32 0 58 <1 889 1386 971 1191 3785 history1 6 2 4 4 history1 0.3 6.5 17.5 history1 13.3	      history2  history2  history2  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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	8 0 62 <1 1047 1201 1135 1294 3400 current 4 <1 1 current 0.4 7.4 17.8 current	32 0 58 <1 889 1386 971 1191 3785 history1 6 2 4 4 history1 0.3 6.5 17.5 history1	     history2  history2  history2  history2



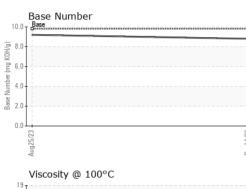
18 - Abnormal

17 -() 16 - Base 00115 -33 14 -

> 13 Abnormal 12 11 EZ/S2BnW

# **OIL ANALYSIS REPORT**

VISUAL



	VICONE		mounou	lining bacoo	Carronne	inotory i	motory
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
4/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	
Dec14/23	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
)°C	Free Water	scalar	*Visual		NEG	NEG	
				limit/booo			biotory
	FLUID PROPE Visc @ 100°C	cSt	method ASTM D445	limit/base	current 13.5	history1 13.2	history2
	GRAPHS	COL	A31101 D443	13.4	13.5	13.2	
	Ferrous Alloys						
	<sup>25</sup>						
	iron						
	20 - nickel						
	15-						
	mqq 10						
	10+						
	5-						
		******					
		*********	**********	/23			
	4ug25/23			Dec14/23			
	Non-ferrous Metal	s					
	<sup>10</sup> T						
	copper						
	o assessment tin						
	6-						
	u d						
	4						
	2						
			-110000-110000-10000-100				
	123			1/23			
	Aug25/23			Dec14/23			
	Viscosity @ 100°C						
	<sup>19</sup>			10.	Base Number		
	18 - Abnormal						
	17-			(B/F	0		
	© <sup>16</sup> Base			D P G	0		
	Base 00015 15 14			Base Number (mg KOH/g)			
	<sup>3</sup> 14			4.	0		
	13 Abnormal			2.	0		
	12-						
	11 <del>1</del>			.0 +			-23
	Aug25/23			Dec14/23	Aug25/23		Dec14/23
	4			1	~		
Laboratory	: WearCheck USA - 5				3 GFL Envi		Whiteland Hauling
Sample No. Lab Number		Recieveo Diagnos		Dec 2023 Jan 2024			MERSON AVE
TESTING LABORATORY LAB Number		Diagnos Diagnosi		s Davis		v	/HITELAND, IN US 46184
Certificate L2367 Test Package		2.2911031			Co	ontact: Christya	n Trent-Proctor
To discuss this sample report,	contact Customer Serv						or@gflenv.com
* - Denotes test methods that a							T:
Statements of conformity to spec	cifications are based on t	ne simple	acceptance of	decision rule	(JCGM 106:2012)		F:

Contact/Location: Christyan Trent-Proctor - GFL413