

### **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id 425080-43

#### 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

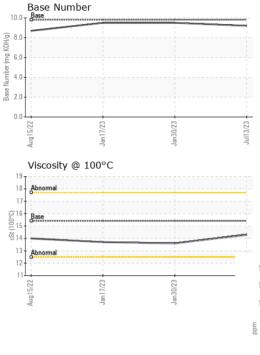
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0087811	GFL0070616	GFL0070535
Sample Date		Client Info		13 Jul 2023	30 Jan 2023	17 Jan 2023
Machine Age	hrs	Client Info		32126	31847	31931
Oil Age	hrs	Client Info		279	1200	31931
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<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	>100	20	70	32
Chromium	ppm	ASTM D5185m	>20	1	2	2
Nickel	ppm	ASTM D5185m	>4	0	<1	<1
Titanium	ppm	ASTM D5185m	0	<1	<1	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	5	7
Lead	ppm	ASTM D5185m	>40	0	1	0
Copper	ppm	ASTM D5185m		5	6	6
Tin	ppm	ASTM D5185m	>15	0	<1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm		limit/base	current 25	history1 323	history2 358
	ppm ppm		0			
Boron		ASTM D5185m	0	25	323	358
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	25 0	323 0	358 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	25 0 64	323 0 117	358 0 120
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	25 0 64 <1	323 0 117 1	358 0 120 <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	25 0 64 <1 994	323 0 117 1 661	358 0 120 <1 660
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	25 0 64 <1 994 1131	323 0 117 1 661 1494	358 0 120 <1 660 1415
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	25 0 64 <1 994 1131 1085	323 0 117 1 661 1494 664	358 0 120 <1 660 1415 660
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	25 0 64 <1 994 1131 1085 1336	323 0 117 1 661 1494 664 827	358 0 120 <1 660 1415 660 798
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	25 0 64 <1 994 1131 1085 1336 3913	323 0 117 1 661 1494 664 827 2602	358 0 120 <1 660 1415 660 798 2788
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	25 0 64 <1 994 1131 1085 1336 3913 current	323 0 117 1 661 1494 664 827 2602 history1	358 0 120 <1 660 1415 660 798 2788 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 kimit/base >25	25 0 64 <1 994 1131 1085 1336 3913 current 8	323 0 117 1 661 1494 664 827 2602 history1 19	358 0 120 <1 660 1415 660 798 2788 2788 history2 19
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 60 1010 1070 1150 1270 2060 limit/base >25	25 0 64 <1 994 1131 1085 1336 3913 current 8 <	323 0 117 1 661 1494 664 827 2602 history1 19 3	358 0 120 <1 660 1415 660 798 2788 2788 history2 19 0
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 <b>limit/base</b> >25	25 0 64 <1 994 1131 1085 1336 3913 current 8 <1 0	323 0 117 1 661 1494 664 827 2602 history1 19 3 2	358 0 120 <1 660 1415 660 798 2788 history2 19 0 0
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	25 0 64 <1 994 1131 1085 1336 3913 current 8 <1 0	323 0 117 1 661 1494 664 827 2602 history1 19 3 2 2 history1	358 0 120 <1 660 1415 660 798 2788 2788 history2 19 0 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 <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	25 0 64 <1 994 1131 1085 1336 3913 current 8 <1 0 current 0.5	323 0 1117 1 661 1494 664 827 2602 history1 19 3 2 2 history1 0.7	358 0 120 <1 660 1415 660 798 2788 2788 history2 19 0 0 0 history2 0.7
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20	25 0 64 <1 994 1131 1085 1336 3913 current 8 <1 0 current 0.5 5.3	323 0 1117 1 661 1494 664 827 2602 history1 19 3 2 2 history1 0.7 6.2	358 0 120 <1 660 1415 660 798 2788 history2 19 0 0 0 history2 0.7 6.1
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	25 0 64 <1 994 1131 1085 1336 3913 current 8 <1 0 current 0.5 5.3 18.1	323 0 117 1 661 1494 664 827 2602 history1 19 3 2 history1 0.7 6.2 23.2	358 0 120 <1 660 1415 660 798 2788 <b>history2</b> 19 0 0 0 <b>history2</b> 0.7 6.1 23.4
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >3 >20	25 0 64 <1 994 1131 1085 1336 3913 current 8 <1 0 current 0.5 5.3 18.1	323 0 117 1 661 1494 664 827 2602 history1 19 3 2 history1 0.7 6.2 23.2	358 0 120 <1 660 1415 660 798 2788 history 19 0 0 0 history 0.7 6.1 23.4



## **OIL ANALYSIS REPORT**

VISUAL



Certificate L2367	Laboratory Sample No. Lab Number Unique Number Test Package		501 Madisor Received Diagnosed Diagnostici	: 20 Jul 202 : 20 Jul 202	3 3	13 <b>GFL Environmental - 166 - Phenix City</b> 18 Old Brickyard Rd Phenix City, AL US 36869 Contact: DEAN PEACE JR dean.peace@gflenv.com			
		13 Abnormal 12 11 12 11 12 12 12 12 12 12 12 12 12			Aug15/22	Jan 17/23	Jan 30/23		
		2 16 00 15 73 14			(B)(H) (B)(H)(B)(B)(B)(B)(B)(B)(B)(B)(B)(B)(B)(B)(B)				
		Viscosity @ 100°	C		Base Numb	er			
		Aug15/22	COCU						
		udd 4							
		8 copper 8 lead							
		0 12252 Non-ferrous Meta	62005 mer	Jul13/23					
		140 120 100 80							
		GRAPHS Ferrous Alloys							
		FLUID PROPE Visc @ 100°C		method limit/ STM D445 15.4	base current 14.3	history1 13.6	history2 13.7		
°C		Free Water	scalar *\	/isual	NEG	NEG	NEG		
	Jan <i>3</i> 0/23 Jul13/23	Odor Emulsified Water	scalar *\	/isual NORM /isual >0.2		NORML	NORML		
ŝ	//23	Sand/Dirt	scalar *\	/isual NONE /isual NORM	NONE	NONE	NONE		
		Silt	scalar *\	/isual NONE /isual NONE	NONE	NONE	NONE		
		White Metal Yellow Metal Precipitate		/isual NONE /isual NONE		NONE	NONE NONE NONE		

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Submitted By: LOGAN PEACE

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