

## **OIL ANALYSIS REPORT**

Sample Rating Trend



## Machine Id 412060

#### 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.

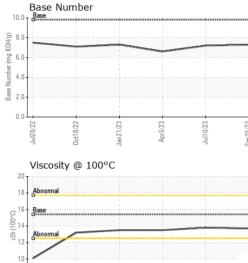
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0082520	GFL0082506	GFL0075191
Sample Date		Client Info		25 Sep 2023	10 Jul 2023	03 Apr 2023
Machine Age	hrs	Client Info		3594	3073	2454
Oil Age	hrs	Client Info		610	611	607
Oil Changed		Client Info		Changed	Changed	Changed
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	9	15	10
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>4	2	<1	<1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	2	<1
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	3	6	6
Tin	ppm	ASTM D5185m	>15	<1	1	0
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	I- I-		line it /le e e e	-	la facta a su at	history 0
	nnm		limit/base		history1	history2
Boron	ppm	ASTM D5185m	0	2	0	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 <1	0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 <1 62	0 0 64	0 0 52
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 <1 62 <1	0 0 64 <1	0 0 52 <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	2 <1 62 <1 962	0 0 64 <1 1043	0 0 52 <1 826
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	2 <1 62 <1 962 1061	0 0 64 <1 1043 1202	0 0 52 <1 826 911
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 1010 1070 1150	2 <1 62 <1 962 1061 1003	0 0 64 <1 1043 1202 1042	0 0 52 <1 826 911 828
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	2 <1 62 <1 962 1061 1003 1233	0 0 64 <1 1043 1202 1042 1315	0 0 52 <1 826 911 828 1063
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 0 1010 1070 1150 1270 2060	2 <1 62 <1 962 1061 1003	0 0 64 <1 1043 1202 1042 1315 3176	0 0 52 <1 826 911 828 1063 2491
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	2 <1 62 <1 962 1061 1003 1233 2700 current	0 0 64 <1 1043 1202 1042 1315 3176 history1	0 0 52 <1 826 911 828 1063 2491 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 <b>method</b>	0 0 60 0 1010 1070 1150 1270 2060	2 <1 62 <1 962 1061 1003 1233 2700 current 6	0 0 64 <1 1043 1202 1042 1315 3176 history1 6	0 0 52 <1 826 911 828 1063 2491 history2 3
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>	2 <1 62 <1 962 1061 1003 1233 2700 current 6 4	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6	0 0 52 <1 826 911 828 1063 2491 history2 3 2
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 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	2 <1 62 <1 962 1061 1003 1233 2700 current 6	0 0 64 <1 1043 1202 1042 1315 3176 history1 6	0 0 52 <1 826 911 828 1063 2491 history2 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	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	2 <1 62 <1 962 1061 1003 1233 2700 current 6 4 8 8	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6 1 1 history1	0 0 52 <1 826 911 828 1063 2491 history2 3 2 2 <1 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 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	2 <1 62 <1 962 1061 1003 1233 2700 current 6 4 8 <i>current</i> 0.5	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6 6 1 1 history1 0.5	0 0 52 <1 826 911 828 1063 2491 history2 3 2 <1 history2 0.4
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 2060 225 >25	2 <1 62 <1 962 1061 1003 1233 2700 current 6 4 8 8	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6 1 1 history1	0 0 52 <1 826 911 828 1063 2491 history2 3 2 2 <1 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 >25 >20 limit/base >3	2 <1 62 <1 962 1061 1003 1233 2700 current 6 4 8 <i>current</i> 0.5	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6 6 1 1 history1 0.5	0 0 52 <1 826 911 828 1063 2491 history2 3 2 <1 history2 0.4
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 >25 >20 imit/base >3 >20	2 <1 62 <1 962 1061 1003 1233 2700 current 6 4 8 <i>current</i> 0.5 8.1	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6 6 1 1 history1 0.5 8.8	0 0 52 <1 826 911 828 1063 2491 history2 3 2 2 <1 history2 0.4 7.8
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 <b>imit/base</b> >3 >20 >30	2 <1 62 <1 962 1061 1003 1233 2700 current 6 4 8 <u>current</u> 0.5 8.1 19.5	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6 6 1 1 history1 0.5 8.8 20.5	0 0 52 <1 826 911 828 1063 2491 history2 3 2 2 <1 history2 0.4 7.8 17.9
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	ASTM D5185m ASTM D7844 *ASTM D7624	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 220 33 220 330 20 330	2 <1 62 <1 962 1061 1003 1233 2700 Current 6 4 8 Current 0.5 8.1 19.5 Current	0 0 64 <1 1043 1202 1042 1315 3176 history1 6 6 6 1 1 history1 0.5 8.8 20.5 history1	0 0 52 <1 826 911 828 1063 2491 history2 3 2 491 history2 0.4 7.8 17.9 history2



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Oct18/22

# **OIL ANALYSIS REPORT**



			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			
Jan 21/23 Apr3/23	Jul10/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML			
	Ap	Jul	B Odor	scalar	*Visual	NORML	NORML	NORML	NORML		
			Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG		
	1	1	Free Water	scalar	*Visual		NEG	NEG	NEG		
			FLUID PROF	PERTIES	method	limit/base	current	history1	history2		
			Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.8	13.5		
			GRAPHS								
			Ferrous Alloys								
			45 40		I I						
	Apr3/23	Jul10/23	35								
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			Jul28/22 - 0ct18/22 -	Jan 21/23 - Apr3/23	Jul10/23 -	Sep25/23 .					
			Jul2 0ct1	Jan2	Jult	Sep 2					
			Non-ferrous Me	tals							
			140 T		·						
			120 - copper								
			100								
			80								
			40								
			20-								
				n n	2	3					
			Jul28/22 0ct18/22	Jan 21/23 Apr3/23	Jul10/23	Sep 25/23					
				7	٦ ۲	Se					
			Viscosity @ 100			10.0	Base Number				
			18 - Abnormal		· · · · · · · · · · · · · · · · · · ·						
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			다 15 - 00 14 양 13 - Abnormal	_		liber (r					
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		Laboratory	: WearCheck USA	- 501 Madi	son Ave Ca	rv. NC 2751	3 GFL Env	ironmental - 947 -	WB Horicon H		
	D	Sample No.		: WearCheck USA - 501 Madison Ave., Cary, : GFL0082520 <b>Received</b> : 29 Sep							
REDIT	Lab Number			Diagnos	agnosed : 02 Oct 2023				Horicon, V		
TING LABORATI	TORY	Unique Num		Diagnost	t <b>ician</b> : We	s Davis			US 5303		
tificate L2	2367	Test Packa			ce at 1-800-237-1369.				act: Tim Kieff		
									er@gflenv.co		



Submitted By: TECHNICIAN ACCOUNT