

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend



# Machine Id 920048

#### 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.

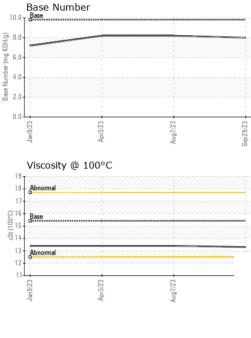
## Fluid Condition

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		GFL0084552	GFL0084557	GFL0078792
Sample Date		Client Info		29 Sep 2023	07 Aug 2023	03 Apr 2023
Machine Age	hrs	Client Info		7316	6789	6206
Oil Age	hrs	Client Info		7316	0	0
Oil Changed		Client Info		Changed	N/A	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	>110	15	15	15
Chromium	ppm	ASTM D5185m	>4	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	0	6	6
Lead	ppm	ASTM D5185m	>45	<1	0	0
Copper	ppm	ASTM D5185m	>85	1	<1	<1
Tin	ppm	ASTM D5185m	>4	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	le le		1		-	-
		method	limit/baco	ourrent	hietory1	hietory
	nnm	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	0	1	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 2	1 0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 2 61	1 0 66	0 1 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 2 61 <1	1 0 66 <1	0 1 60 <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	0 2 61 <1 863	1 0 66 <1 1134	0 1 60 <1 953
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	0 2 61 <1 863 1024	1 0 66 <1 1134 1174	0 1 60 <1 953 1028
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 2 61 <1 863 1024 972	1 0 66 <1 1134 1174 1156	0 1 60 <1 953 1028 973
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	0 2 61 <1 863 1024 972 1134	1 0 66 <1 1134 1174 1156 1462	0 1 60 <1 953 1028 973 1219
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	0 2 61 <1 863 1024 972 1134 2850	1 0 66 <1 1134 1174 1156 1462 4017	0 1 60 <1 953 1028 973 1219 3104
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	0 2 61 <1 863 1024 972 1134 2850 current	1 0 66 <1 1134 1174 1156 1462 4017 history1	0 1 60 <1 953 1028 973 1219 3104 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	0 2 61 <1 863 1024 972 1134 2850 current 4	1 0 66 <1 1134 1174 1156 1462 4017 history1 4	0 1 60 <1 953 1028 973 1219 3104 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	0 0 60 1010 1070 1150 1270 2060 imit/base >30	0 2 61 <1 863 1024 972 1134 2850 current 4 <	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7	0 1 60 <1 953 1028 973 1219 3104 history2 3 12
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >30	0 2 61 <1 863 1024 972 1134 2850 current 4 <1 17	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >30 -20	0 2 61 <1 863 1024 972 1134 2850 current 4 <1 17 current	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3 3 history1	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 4 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 >20 <b>Imit/base</b>	0 2 61 <1 863 1024 972 1134 2850 <u>current</u> 4 <1 17 <u>current</u> 0.4	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3 <u>history1</u> 0.3	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 4 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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 >20 <b>Imit/base</b>	0 2 61 <1 863 1024 972 1134 2850 current 4 <1 17 current	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3 3 history1	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 4 history2 0.4 7.9
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >30 >20 <b>Imit/base</b>	0 2 61 <1 863 1024 972 1134 2850 <u>current</u> 4 <1 17 <u>current</u> 0.4	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3 <u>history1</u> 0.3	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 4 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 <i>limit/base</i> >30 200 <i>limit/base</i> >3 >20	0 2 61 <1 863 1024 972 1134 2850 current 4 <1 17 current 0.4 7.4	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3 history1 0.3 8.0	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 4 history2 0.4 7.9
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 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	0 2 61 <1 863 1024 972 1134 2850 <u>current</u> 4 <1 17 <u>current</u> 0.4 7.4 18.6	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3 <u>history1</u> 0.3 8.0 19.6	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 4 history2 0.4 7.9 19.2
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 imit/base >30 imit/base >3 >20 imit/base >3 >20	0 2 61 <1 863 1024 972 1134 2850 current 4 <1 17 current 0.4 7.4 18.6 current	1 0 66 <1 1134 1174 1156 1462 4017 history1 4 7 3 history1 0.3 8.0 19.6 history1	0 1 60 <1 953 1028 973 1219 3104 history2 3 12 4 history2 0.4 7.9 19.2 history2



# **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
601	Aug//23 . Sep29/23 .	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
A I I	Sep2	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		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		13.3	13.4	13.4
		GRAPHS						
		Ferrous Alloys						
		25 iron						
COLUNY	77// Bn	20 - chromium						
<	τ.							
		15- Ed						
		10						
		5-						
		Jan9/23 Apr3/23		Aug7/23	Sep 29/23			
		App		Аиб	Sep2			
		Non-ferrous Meta	ls					
		10 copper						
		8 -						
		un						
		6						
		ш dd 4-						
		2						
		0						
		Jan9/23		Aug7/23	sep29/23 -			
		Apri		Aug	Sep 2			
		Viscosity @ 100°	C			Base Number		
		19 18 <b>Abnormal</b>		· · · · · · · · · · · · · · · · · · ·	10.0			
		17						
		C <sup>16</sup> Base			KOH/			
		Contraction 16 Base			0.6 /1.6 /1.0 /1.0 /1.0 /1.0 /1.0 /1.0 /1.0 /1.0			
		<sup>t</sup> <sup>5</sup> 14			qu 4.(	)		
		13 - Abnormal			ase			
		12			° 2.0	1		
		11			0.0			
		Jan9/23 Apr3/23		Aug7/23	Sep 29/23	Jan 9/23	c2/cliqA	
		Ap		Au	Sep	Γ V	Au Au	
٩	Laboratory	: WearCheck USA -		3 GFL Env	ironmental - 91			
	Sample No. Lab Number		d :160 ed :170		630 E	Industrial Driv Hartland, V		
REDITED			tician : We			US 5302		
	Unique Number	. 10090/01						
FICATE L2367	Unique Number Test Package		Diagnost		o Davio		Contac	t: David McCa