

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 412008

Fluid

Component Diesel Engine

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		GFL0086609	GFL0074377	GFL0074348
Sample Date		Client Info		12 Jul 2023	06 Jun 2023	12 May 2023
Machine Age	hrs	Client Info		1755	1510	1350
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	>120	10	6	16
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	1	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	<1	2	<1
Aluminum	ppm	ASTM D5185m	>20	2	<1	3
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	25	14	98
Tin	ppm	ASTM D5185m	>15	<1	<1	2
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	<1	0
			11			biete w O
ADDITIVES		method				history2
Boron	ppm	ASTM D5185m	limit/base	current 2	history1 4	nistory2 8
	ppm ppm					
Boron		ASTM D5185m	0	2	4	8
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	4 0	8 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 63	4 0 57	8 0 68
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 63 <1	4 0 57 <1	8 0 68 <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 0 63 <1 912	4 0 57 <1 999	8 0 68 <1 962
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 0 63 <1 912 1088	4 0 57 <1 999 1102	8 0 68 <1 962 1206
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	2 0 63 <1 912 1088 1011	4 0 57 <1 999 1102 1046	8 0 68 <1 962 1206 972
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	2 0 63 <1 912 1088 1011 1216	4 0 57 <1 999 1102 1046 1431	8 0 68 <1 962 1206 972 1237
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 0 63 <1 912 1088 1011 1216 2809	4 0 57 <1 999 1102 1046 1431 4182	8 0 68 <1 962 1206 972 1237 2857
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 0 63 <1 912 1088 1011 1216 2809 current	4 0 57 <1 999 1102 1046 1431 4182 history1	8 0 68 <1 962 1206 972 1237 2857 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 method	0 0 60 1010 1070 1150 1270 2060 imit/base >25	2 0 63 <1 912 1088 1011 1216 2809 current 6	4 0 57 <1 999 1102 1046 1431 4182 history1 5	8 0 68 <1 962 1206 972 1237 2857 history2 8
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 method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 imit/base >25	2 0 63 <1 912 1088 1011 1216 2809 current 6 2	4 0 57 <1 999 1102 1046 1431 4182 history1 5 2	8 0 68 <1 962 1206 972 1237 2857 history2 8 4
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 limit/base >25 >20	2 0 63 <1 912 1088 1011 1216 2809 current 6 2 2 4	4 0 57 <1 999 1102 1046 1431 4182 history1 5 2 4	8 0 68 <1 962 1206 972 1237 2857 history2 8 4 2
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 imit/base >25	2 0 63 <1 912 1088 1011 1216 2809 current 6 2 2 4 x	4 0 57 <1 999 1102 1046 1431 4182 history1 5 2 4 4 history1	8 0 68 <1 962 1206 972 1237 2857 history2 8 4 2 2 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 1imit/base >20	2 0 63 <1 912 1088 1011 1216 2809 <i>current</i> 6 2 2 4 <i>current</i> 0.3	4 0 57 <1 999 1102 1046 1431 4182 history1 5 2 4 history1 0.2	8 0 68 <1 962 1206 972 1237 2857 history2 8 4 2 2 57 history2 0.3
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> >25 >20 <i>limit/base</i> >4 >20	2 0 63 <1 912 1088 1011 1216 2809 <i>current</i> 6 2 2 4 <i>current</i> 0.3 8.0	4 0 57 <1 999 1102 1046 1431 4182 history1 5 2 4 history1 0.2 6.1	8 0 68 <1 962 1206 972 1237 2857 history2 8 4 2 2 history2 0.3 9.1
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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20	2 0 63 <1 912 1088 1011 1216 2809 current 6 2 2 4 current 0.3 8.0 19.9	4 0 57 <1 999 1102 1046 1431 4182 history1 5 2 4 4 history1 0.2 6.1 19.5	8 0 68 <1 962 1206 972 1237 2857 history2 8 4 2 2 history2 0.3 9.1 20.8
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 D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >4 >20 >30 imit/base	2 0 63 <1 912 1088 1011 1216 2809 <i>current</i> 6 2 2 4 <i>current</i> 0.3 8.0 19.9 <i>current</i>	4 0 57 <1 999 1102 1046 1431 4182 history1 5 2 4 4 history1 0.2 6.1 19.5 history1	8 0 68 <1 962 1206 972 1237 2857 history2 8 4 2 2 history2 0.3 9.1 20.8 history2

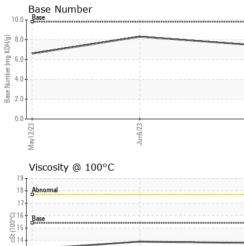


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OIL ANALYSIS REPORT

VISUAL



	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	
/23		scalar	*Visual	NORML	NORML	NORML	NORML	
Jun6/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	Free Water	scalar	*Visual	20.L	NEG	NEG	NEG	
	FLUID PROPE		method	limit/base	current	history1	history2	
	Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.9	13.3	
	GRAPHS							
	Ferrous Alloys							
53	iron							
Jun6/23	12-							
7	10							
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	//23	3/23 -		1/23 -				
	/lav12	Jun6/23		Jul12/23				
	Non-ferrous Meta	ls						
	100 T							
	copper							
	80 - sessesses tin							
	60							
	40							
	20							
	20	1-						
	0							
	May12/23	Jun6/23		Jul12/23				
	May	ηη		Jul				
	Viscosity @ 100°C	2			Base Number			
	19 T :			10.				
	18 - Abnormal							
	17			(B/H)	0			
	() 16 Base () 15 () 15			(b)HOX (b) Base Number (b)HOX	0			
	Ê 15			ber (n				
	³ 14			4.	0			
	13 Abnormal			ase 2.	0			
	12-			2.				
	11							
	May12/23	Jun6/23		Jul12/23	May12/23	Jun6/23		
	May	٦٢		Jul	May	٦r		
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Laboratory	: WearCheck USA -				3 GFL Enviro	onmental - 654 - I		
		Received Diagnos		Jul 2023 Jul 2023		118	300 Lewis Ro	
Sample No.	· 05000040			Chester, \				
Lab Number						US 238 Contact: Steven Palmo		
Lab Number Unique Numbe	r : 10561002	Diagnost		s Davis		Contact:		
Lab Number	r :10561002 e :FLEET	Diagnost	ti cian : We	s Davis			US 238 Steven Palmo pre@gflenv.co	

Contact/Location: Steven Palmore - GFL654