

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 411041 Component

Fluid

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOS	IS

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.

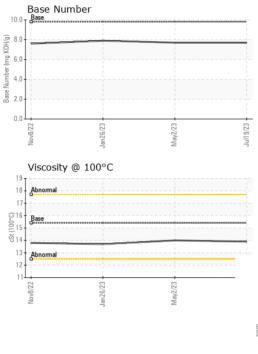
Fluid Condition

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		GFL0089490	GFL0078787	GFL0071464
Sample Date		Client Info		19 Jul 2023	02 May 2023	26 Jan 2023
Machine Age	hrs	Client Info		5780	5249	4683
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel			>3.0	<1.0	<1.0	<1.0
Glycol		WC Method	20.0	NEG	NEG	NEG
, 	<u> </u>		11.0011/000000			
WEAR METAL		method	limit/base	current	history1	history2
Iron	ppm		>120	8	9	11
Chromium	ppm	ASTM D5185m		<1	<1	<1
Nickel	ppm	ASTM D5185m		<1	1	2
Titanium	ppm	ASTM D5185m		<1	0	<1
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>20	1	2	2
Lead	ppm	ASTM D5185m		0	<1	0
Copper	ppm	ASTM D5185m		2	2	2
Tin	ppm		>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0	history1 2	history2 <1
	ppm ppm					
Boron		ASTM D5185m	0	0	2	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	2 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 65	2 0 60	<1 0 57
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 65 <1 1058 1157	2 0 60 <1	<1 0 57 <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 0 65 <1 1058	2 0 60 <1 1008	<1 0 57 <1 898
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 0 65 <1 1058 1157	2 0 60 <1 1008 1092	<1 0 57 <1 898 1044
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 0 65 <1 1058 1157 1042	2 0 60 <1 1008 1092 1027	<1 0 57 <1 898 1044 930
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	0 0 65 <1 1058 1157 1042 1303	2 0 60 <1 1008 1092 1027 1324	<1 0 57 <1 898 1044 930 1145
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 0 65 <1 1058 1157 1042 1303 3328	2 0 60 <1 1008 1092 1027 1324 3481	<1 0 57 <1 898 1044 930 1145 2555
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 0 1010 1070 1150 1270 2060	0 0 65 <1 1058 1157 1042 1303 3328 current	2 0 60 <1 1008 1092 1027 1324 3481 history1	<1 0 57 <1 898 1044 930 1145 2555 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 Limit/base >25	0 0 65 <1 1058 1157 1042 1303 3328 current 3	2 0 60 <1 1008 1092 1027 1324 3481 <u>history1</u> 4	<1 0 57 <1 898 1044 930 1145 2555 history2 4
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 method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Limit/base >25	0 0 65 <1 1058 1157 1042 1303 3328 Current 3 5	2 0 60 <1 1008 1092 1027 1324 3481 history1 4 3	<1 0 57 <1 898 1044 930 1145 2555 history2 4 1
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 limit/base >25 >20	0 0 65 <1 1058 1157 1042 1303 3328 current 3 5 0	2 0 60 <1 1008 1092 1027 1324 3481 history1 4 3 2 history1	<1 0 57 <1 898 1044 930 1145 2555 history2 4 1 3 3 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 Limit/base >20	0 0 65 <1 1058 1157 1042 1303 3328 <u>current</u> 3 5 0 <u>current</u>	2 0 60 <1 1008 1092 1027 1324 3481 history1 4 3 2 history1 0.6	<1 0 57 <1 898 1044 930 1145 2555 history2 4 1 3 history2 0.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	0 0 65 <1 1058 1157 1042 1303 3328 current 3 5 0 current 0.5 8.1	2 0 60 <1 1008 1092 1027 1324 3481 history1 4 3 2 history1	<1 0 57 <1 898 1044 930 1145 2555 history2 4 1 3 3 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 imit/base >20 20 20	0 0 65 <1 1058 1157 1042 1303 3328 <u>current</u> 3 5 0 <u>current</u>	2 0 60 <1 1008 1092 1027 1324 3481 history1 4 3 2 history1 0.6 8.8 20.5	<1 0 57 <1 898 1044 930 1145 2555 history2 4 1 3 3 history2 0.5 8.9 20.0
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	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 220 220 220 230 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 65 <1 1058 1157 1042 1303 3328 Current 3 5 0 Current 0.5 8.1 19.4 Current	2 0 60 <1 1008 1092 1027 1324 3481 history1 4 3 2 history1 0.6 8.8 20.5 history1	<1 0 57 <1 898 1044 930 1145 2555 history2 4 1 3 history2 0.5 8.9 20.0 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 20 20 20 20 20 20 20 20 20 20 20	0 0 65 <1 1058 1157 1042 1303 3328 current 3 5 0 current 0.5 8.1 19.4	2 0 60 <1 1008 1092 1027 1324 3481 history1 4 3 2 history1 0.6 8.8 20.5	<1 0 57 <1 898 1044 930 1145 2555 history2 4 1 3 3 history2 0.5 8.9 20.0



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	
6	May2/23 Jul19/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
:	Juli	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
		Free Water	scalar	*Visual		NEG	NEG	NEG	
		FLUID PROP	ERTIES	method	limit/base	current	history1	history2	
		Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.0	13.7	
		GRAPHS							
		Ferrous Alloys							
	//23	10 - iron							
c	May2/23	nickel			1				
		8-							
		Ed 6-							
		4							
		2							
					45438885F				
		23 +		/23	23				
		Nov8/22 Jan26/23		May2/23	Jul19/23				
		Non-ferrous Met	als						
		10 T							
		copper							
		°							
		6-							
		u dd							
		2							
		ALSO PROVIDENT AND A REAL PROV	*****************						
		Nov8/22		May2/23 -	Jul19/23 4				
		7		M	Jul				
		Viscosity @ 100	°C		10.0	Base Number			
		18 - Abnormal		1					
		17			(^B /H				
		Colle Base			9.0 g				
		016 Base 15 53 14			lber (r				
					0.8 Base Number (mg KOH/g)	1			
		13 Abnormal			^{2.0}				
		12-							
		11		2/23	0.0	3/22	5/23 -	ŝ	
		Nov8/22 Jan 26/23		May2/23	Jul19/23	Nov8/22	Jan 26/23 Mav2/23		
	Laboratory Sample No. Lab Number Unique Number					23 630 E Industrial Driv 23 Hartland, V			
ertificate L2367	Test Package		Diagnos		o Davio		Contac		

Contact/Location: David McCall - GFL918