

OIL ANALYSIS REPORT

Sample Rating Trend





Component

Diesel Engine

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

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.

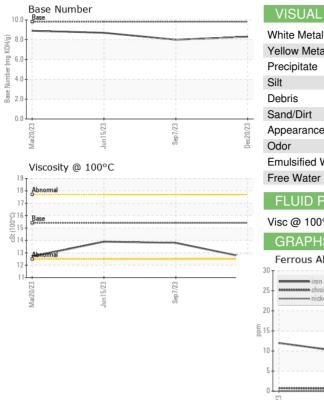
Fluid Condition

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

,		Mar202	3 Jun2023	Sep2023 D		
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0103379	GFL0066041	GFL0066101
Sample Date		Client Info		20 Dec 2023	07 Sep 2023	15 Jun 2023
Machine Age	mls	Client Info		0	0	0
Oil Age	mls	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	20	27	10
Chromium	ppm	ASTM D5185m	>5	1	2	<1
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	2	3	0
Lead	ppm	ASTM D5185m	>30	0	3	0
Copper	ppm	ASTM D5185m	>150	0	<1	<1
Tin	ppm	ASTM D5185m	>5	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base	current 2	history1 19	history2 27
	ppm ppm	ASTM D5185m				
Boron Barium	ppm	ASTM D5185m	0	2	19	27
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0	2 4	19 0	27 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 4 60	19 0 66	27 0 51
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 4 60 0	19 0 66 <1	27 0 51 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 4 60 0 904	19 0 66 <1 844	27 0 51 <1 816
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 4 60 0 904 1070	19 0 66 <1 844 1124	27 0 51 <1 816 1248
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 4 60 0 904 1070 933	19 0 66 <1 844 1124 955	27 0 51 <1 816 1248 959
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 4 60 0 904 1070 933 1179	19 0 66 <1 844 1124 955 1145	27 0 51 <1 816 1248 959 1158
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 4 60 0 904 1070 933 1179 2826	19 0 66 <1 844 1124 955 1145 3141	27 0 51 <1 816 1248 959 1158 3504
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	2 4 60 0 904 1070 933 1179 2826 current	19 0 66 <1 844 1124 955 1145 3141 history1	27 0 51 <1 816 1248 959 1158 3504 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 0 1010 1070 1150 1270 2060 kimit/base >20	2 4 60 0 904 1070 933 1179 2826 current 0	19 0 66 <1 844 1124 955 1145 3141 history1 5	27 0 51 <1 816 1248 959 1158 3504 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 kimit/base >20	2 4 60 0 904 1070 933 1179 2826 <u>current</u> 0 0	19 0 66 <1 844 1124 955 1145 3141 history1 5 <<1	27 0 51 <1 816 1248 959 1158 3504 history2 3 1
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 >20	2 4 60 0 904 1070 933 1179 2826 <u>current</u> 0 0 0	19 0 66 <1 844 1124 955 1145 3141 history1 5 <1 2	27 0 51 <1 816 1248 959 1158 3504 history2 3 1 1 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >20 Sumt/base	2 4 60 0 904 1070 933 1179 2826 <u>current</u> 0 0 0 0 <u>current</u> 2	19 0 66 <1 844 1124 955 1145 3141 history1 5 <1 2 history1	27 0 51 <1 816 1248 959 1158 3504 history2 3 1 1 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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 20 limit/base	2 4 60 904 1070 933 1179 2826 <u>current</u> 0 0 0 0	19 0 66 <1 844 1124 955 1145 3141 <u>history1</u> 5 <1 2 <u>history1</u> 2.5	27 0 51 <1 816 1248 959 1158 3504 history2 3 1 1 1 history2 1.2
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> >20 <i>limit/base</i> >3 >20	2 4 60 0 904 1070 933 1179 2826 <i>current</i> 0 0 0 0 <i>current</i> 2 8.1	19 0 66 <1 844 1124 955 1145 3141 history1 5 <1 2 + istory1 2.5 8.1	27 0 51 <1 816 1248 959 1158 3504 history2 3 1 1 1 history2 1.2 6.6
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 2060 2060 200 200 200 200 200 200	2 4 60 0 904 1070 933 1179 2826 Current 0 0 0 0 0 Current 2 8.1 21.1 Current	19 0 66 <1 844 1124 955 1145 3141 history1 5 <1 2 history1 2.5 8.1 22.5 k .1	27 0 51 <1 816 1248 959 1158 3504 history2 3 1 1 1 history2 1.2 6.6 20.4 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 200 200 200 320 320 33 200 230	2 4 60 0 904 1070 933 1179 2826 <u>current</u> 0 0 0 0 0 0 2 8.1 2 1.1	19 0 66 <1 844 1124 955 1145 3141 history1 5 <1 2 history1 2.5 8.1 22.5	27 0 51 <1 816 1248 959 1158 3504 history2 3 1 1 1 history2 1.2 6.6 20.4



OIL ANALYSIS REPORT



TIME LADOATORY	Laboratory Sample No. Lab Number Unique Number Test Package	: GFL0103379 : 06048556 · : 10809164	Recieved Diagnosed	501 Madison Ave., Cary, NC 27513 Recieved : 02 Jan 2024 Diagnosed : 03 Jan 2024 Diagnostician : Wes Davis <i>ice at 1-800-237-1369.</i>			GFL Environmental - 904 - Chippewa Falls HC 11888 & 11863 30th Avenue Chippewa Falls, W US 54729 Contact: Andy Kane			
		12 12 11 11 11 11 12 12 12 12 12 12 12 1	č	Sep //23	0.0	Mar20/23 + Jun 15/23 +	Sep1/23	De:20/23		
		12			(0,0.0 6,0.0 0,0.00000000					
		Base 15 3 14			B/HOX Bul) 6.0 -					
		18 - Abnormal								
		Viscosity @ 100 ⁴	°C		10.0 т	Base Number				
		Mar20/23 Jun 15/23	6 7	Sep 1/1.23	Dec20/23					
			all and the state of the state		3					
		2		A second se						
		E C								
		8 - second lead								
		10 copper								
		Ron-ferrous Met		Sep // 23	Dec20/23					
		/23 /23 /23 /23			/23					
		10	, 							
		<u>ة</u> 15	/							
C	Sep 1/23	25 - exercision chromium 20 -	/		_					
		Serrous Alloys		~						
		GRAPHS								
		Visc @ 100°C		ASTM D445		12.6	13.8	13.9		
		Free Water FLUID PROP		*Visual method	limit/base	NEG current	NEG history1	NEG history2		
		Emulsified Water		Visual	>0.2	NEG	NEG	NEG		
6	Sep 1//23 Dec20/23	Odor		*Visual	NORML	NORML	NORML	NORML		
ŝ	/23 + -	_ Sand/Dirt Appearance		*Visual *Visual	NONE NORML	NONE NORML	NONE	NONE NORML		
		Debris		*Visual	NONE	NONE	NONE	NONE		
		Silt	scalar '	Visual	NONE	NONE	NONE	NONE		
		Precipitate		*Visual	NONE NONE	NONE	NONE NONE	NONE		
		Yellow Metal	scalar '	Visual		NONE		NONE		

Submitted By: See also GFL904,A,B,C, 927, 938 - Andy Kane