

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 601M Component

Fluid

Diesel Engine PETRO CANADA DURON SHP 15W40 (9 GAL)

SAMPLE INFORMATION method

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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

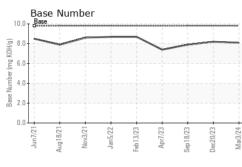
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

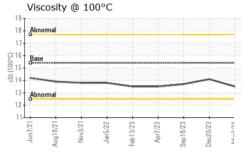
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Sample Number		Client Info		GFL0115018	GFL0097684	GFL0087259
Sample Date		Client Info		03 Mar 2024	20 Dec 2023	18 Sep 2023
Machine Age	hrs	Client Info		17419	16816	16204
Oil Age	hrs	Client Info		603	612	563
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
			P		In the tax work	la la tarma O
CONTAMINATI	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	20	2	4
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>5	0	0	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	4	2	2
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method				history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 4	history2 <1
	ppm ppm					
Boron Barium	ppm	ASTM D5185m	0	2	4	<1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0	4 0	<1 0
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 56 0	4 0 60 <1	<1 0 59 <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 56 0 915	4 0 60 <1 1006	<1 0 59 <1 845
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 0 56 0 915 1036	4 0 60 <1 1006 1134	<1 0 59 <1 845 1034
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 ASTM D5185m	0 0 60 0 1010 1070 1150	2 0 56 0 915 1036 947	4 0 60 <1 1006 1134 1146	<1 0 59 <1 845 1034 993
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 0 56 0 915 1036 947 1186	4 0 60 <1 1006 1134 1146 1303	<1 0 59 <1 845 1034 993 1195
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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 56 0 915 1036 947 1186 2982	4 0 60 <1 1006 1134 1146 1303 3507	<1 0 59 <1 845 1034 993 1195 3490
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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 56 0 915 1036 947 1186 2982 current	4 0 60 <1 1006 1134 1146 1303 3507 history1	<1 0 59 <1 845 1034 993 1195 3490 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	2 0 56 0 915 1036 947 1186 2982	4 0 60 <1 1006 1134 1146 1303 3507	<1 0 59 <1 845 1034 993 1195 3490
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 56 0 915 1036 947 1186 2982 current	4 0 60 <1 1006 1134 1146 1303 3507 history1	<1 0 59 <1 845 1034 993 1195 3490 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 56 0 915 1036 947 1186 2982 current 8	4 0 60 <1 1006 1134 1146 1303 3507 history1 3	<1 0 59 <1 845 1034 993 1195 3490 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 method ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	2 0 56 0 915 1036 947 1186 2982 current 8 8	4 0 60 <1 1006 1134 1146 1303 3507 history1 3 <1	<1 0 59 <1 845 1034 993 1195 3490 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 >25	2 0 56 0 915 1036 947 1186 2982 current 8 8 8 3	4 0 60 <1 1006 1134 1146 1303 3507 history1 3 <1 0	<1 0 59 <1 845 1034 993 1195 3490 history2 3 <1 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	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	2 0 56 0 915 1036 947 1186 2982 <u>current</u> 8 8 3 3 <u>current</u>	4 0 60 <1 1006 1134 1146 1303 3507 history1 3 <1 0 history1	<1 0 59 <1 845 1034 993 1195 3490 history2 3 <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 ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	2 0 56 0 915 1036 947 1186 2982 current 8 8 8 3 3	4 0 60 <1 1006 1134 1146 1303 3507 history1 3 <1 0 history1 0.1	<1 0 59 <1 845 1034 993 1195 3490 history2 3 <1 1 1 history2 0.2
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 limit/base >25 >20 limit/base >20	2 0 56 0 915 1036 947 1186 2982 <i>current</i> 8 8 8 3 <i>current</i> 0.2 6.5	4 0 60 <1 1006 1134 1146 1303 3507 history1 3 <1 0 history1 0.1 5.1	<1 0 59 <1 845 1034 993 1195 3490 history2 3 <11 1 history2 0.2 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 D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	2 0 56 0 915 1036 947 1186 2982 current 8 8 8 3 Current 0.2 6.5 18.3	4 0 60 <1 1006 1134 1146 1303 3507 history1 3 <1 0 history1 0.1 5.1 17.7 history1	<1 0 59 <1 845 1034 993 1195 3490 history2 3 <11 1 history2 0.2 6.6 18.4 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 limit/base >25 limit/base >4 >20 >30	2 0 56 0 915 1036 947 1186 2982 <u>current</u> 8 8 8 3 3 <u>current</u> 0.2 6.5 18.3	4 0 60 <1 1006 1134 1146 1303 3507 history1 3 <1 0 history1 0.1 5.1 17.7	<1 0 59 <1 845 1034 993 1195 3490 history2 3 <1 1 history2 0.2 6.6 18.4



OIL ANALYSIS REPORT

VISUAL





		White Metal Yellow Metal Precipitate Silt	scalar '	*Visual *Visual *Visual *Visual	NONE NONE NONE	NONE NONE NONE NONE	NONE NONE NONE NONE	NONE NONE NONE NONE		
		Debris		*Visual	NONE	NONE	NONE	NONE		
		Sand/Dirt		*Visual	NONE	NONE	NONE	NONE		
723 -	/23 -			*Visual	NORML	NORML	NORML	NORML		
Jan5/22 Feb13/23 Anr7/23	Sep 18/23 Dec2 0/23	Appearance Odor		*Visual	NORML	NORML	NORML	NORML		
		Emulsified Water		*Visual	>0.2	NEG	NEG	NEG		
°C		Free Water		*Visual		NEG	NEG	NEG		
		FLUID PROP		method	limit/base	current	history1	history2		
		- Visc @ 100°C	cSt /	ASTM D445	15.4	13.5	14.1	13.7		
		GRAPHS								
		Ferrous Alloys								
Jan5/22 - Feb 13/23 -	Sap 18/23 - Dec20/23 - Dec20/23 -	Non-ferrous Met	LL_	Sep18/23	Mar3/24 4					
		2 0 17 17 17 10 17 10 17 10 10 10 10 10 10 10 10 10 10	C	Bep18/23	10.0 (b)HCX Deu) aquinny Bases 2.0- 0.0					
		Jun7/21 Aug18/21 Nov3/21	Feb13/23 Apr7/23	Sep18/23 Dec20/23	Mar3/24	Jun7/21 Aug18/21 Nov3/21	Jan5/22 Feb13/23 Apr7/23	Sep 18/23 Dec20/23 Mar3/24		
* - Denotes	Unique Nun Test Pack this sample re test methods	ry : WearCheck USA - 5	01 Madison Receive Tested Diagno vice at 1-800 17025 scop	Ave., Cary, ed : 07 : 07 osed : 07 0-237-1369 e of accredi	NC 27513 Mar 2024 Mar 2024 Mar 2024 - We	GFL Envi	FL Environmental - 405 - Arbor Hill 7400 Napier R NORTHVILLE, M US 4816 Contact: Anthony Hopkin ahopkins@gflenv.cor T			