

OIL ANALYSIS REPORT

Sample Rating Trend





4644M Component

Machine Id

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

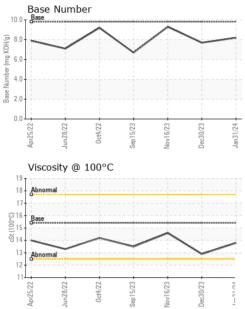
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

	MATION	method	limit/base current		history1	history2	
Sample Number		Client Info		GFL0110022	GFL0104251	GFL0059321	
Sample Date		Client Info	31 Jan 202		30 Dec 2023	16 Nov 2023	
Machine Age	hrs	Client Info		17769	17414	17109	
Oil Age	hrs	Client Info		600	17414	17109	
Oil Changed		Client Info	Changed		Changed	N/A	
Sample Status			NORMAL		ABNORMAL	NORMAL	
CONTAMINAT	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 METAL	S	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>90	8	6	4	
Chromium	ppm	ASTM D5185m	>20	<1	<1	0	
Nickel	ppm	ASTM D5185m	>2	0	<1	0	
Titanium	ppm	ASTM D5185m	>2	0	<1	0	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>20	2	2	1	
Lead	ppm	ASTM D5185m	>40	0	0	0	
Copper	ppm	ASTM D5185m	>330	<1	<1	<1	
Tin	ppm	ASTM D5185m	>15	0	<1	0	
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current	history1 3	history2 0	
	ppm ppm	ASTM D5185m					
Boron		ASTM D5185m	0	1	3	0	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	1 5	3 0	0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 5 59	3 0 45	0 0 56	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 5 59 0	3 0 45 <1	0 0 56 <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	1 5 59 0 937	3 0 45 <1 780	0 0 56 <1 941	
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	1 5 59 0 937 985	3 0 45 <1 780 808	0 0 56 <1 941 1040	
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	1 5 59 0 937 985 917	3 0 45 <1 780 808 901	0 0 56 <1 941 1040 1020	
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	1 5 59 0 937 985 917 1187	3 0 45 <1 780 808 901 1092	0 0 56 <1 941 1040 1020 1213	
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	1 5 59 0 937 985 917 1187 2882	3 0 45 <1 780 808 901 1092 2674	0 0 56 <1 941 1040 1020 1213 3208	
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 limit/base	1 5 59 0 937 985 917 1187 2882 current	3 0 45 <1 780 808 901 1092 2674 history1	0 0 56 <1 941 1040 1020 1213 3208 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 0 1010 1070 1150 1270 2060 limit/base >25	1 5 59 0 937 985 917 1187 2882 current 2	3 0 45 <1 780 808 901 1092 2674 history1 8	0 0 56 <1 941 1040 1020 1213 3208 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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	1 5 59 0 937 985 917 1187 2882 current 2 2 0	3 0 45 <1 780 808 901 1092 2674 history1 8 2	0 0 56 <1 941 1040 1020 1213 3208 history2 4 2	
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 60 0 1010 1070 1150 1270 2060 limit/base >25	1 5 59 0 937 985 917 1187 2882 <u>current</u> 2 0 3	3 0 45 <1 780 808 901 1092 2674 history1 8 2 2 2	0 0 56 <1 941 1040 1020 1213 3208 history2 4 2 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	1 5 59 0 937 985 917 1187 2882 current 2 0 3 3	3 0 45 <1 780 808 901 1092 2674 history1 8 2 2 2 2 history1	0 0 56 <1 941 1040 1020 1213 3208 history2 4 2 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i>	1 5 59 0 937 985 917 1187 2882 current 2 0 3 current 0 3	3 0 45 <1 780 808 901 1092 2674 history1 8 2 2 2 2 <i>history1</i> 0	0 0 56 <1 941 1040 1020 1213 3208 history2 4 2 1 history2 0.1	
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 20 imit/base >20	1 5 59 0 937 985 917 1187 2882 <u>current</u> 2 2 0 3 <i>current</i> 0.3 8.7	3 0 45 <1 780 808 901 1092 2674 history1 8 2 2 2 4 history1 0 3.8	0 0 56 <1 941 1040 1020 1213 3208 history2 4 2 1 history2 0.1 5.0	
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	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >6 >20	1 5 59 0 937 985 917 1187 2882 current 2 0 3 current 0.3 8.7 19.4	3 0 45 <1 780 808 901 1092 2674 history1 8 2 2 2 2 history1 0 3.8 18.1	0 0 56 <1 941 1040 1020 1213 3208 history2 4 2 1 1 <u>history2</u> 0.1 5.0 17.9	



OIL ANALYSIS REPORT

VISUAL



	Laboratory Sample No. Lab Number Unique Number Test Package	: WearCheck USA - : GFL0110022 : 06081135 r : 10863226		son Ave., Ca 1 : 06 F ed : 06 F		4 7	onmental - 410	- Michigan West 0 Van Born Rd Wayne, Ml US 48184
		Abnormal Abnorm	Sep15/23	Nov16/23	-0.8 0.0 Base Mumber (mg K0H/g) -0.0 -0.0 -0.0	Apr25/22	Sep15/23	Dec30/23
		udd 4 2 0 5 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7	Sep15/23	Dec30/23	10.0	Base Number		
		Non-ferrous Meta	Sep15/23	Nov16/23	Jan 31/24			
Sep15/23 + - Nov16/23 + -	Dec30/23 + -	30 25 20 <u>E</u> 15 10 5	\wedge		/			
\checkmark		Visc @ 100°C GRAPHS Ferrous Alloys	cSt	ASTM D445	15.4	13.8	12.9	14.6
		Free Water FLUID PROPE	scalar RTIES	*Visual method	limit/base	NEG current	NEG history1	NEG history2
Sep 15/23 Nov16/23	Dec30/23 Jan31/24	Appearance Odor Emulsified Water	scalar scalar scalar	*Visual *Visual *Visual	NORML >0.2	NORML NORML NEG	NORML NORML NEG	NORML NORML NEG
		Silt Debris Sand/Dirt	scalar scalar scalar	*Visual *Visual *Visual	NONE NONE	NONE ANONE	NONE MODER NONE	NONE NONE NONE
\checkmark		Yellow Metal Precipitate	scalar scalar	*Visual *Visual *Visual	NONE NONE	NONE NONE	NONE NONE	NONE NONE

Submitted By: seel also GFL668 - Laura Wilson