

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 4665M Component

Fluid

Diesel Engine

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

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.

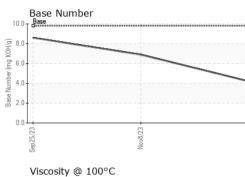
Fluid Condition

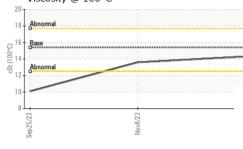
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0059169	GFL0059161	GFL0085049
Sample Date		Client Info		09 Nov 2023	08 Nov 2023	25 Sep 2023
Machine Age	mls	Client Info		123461	123560	17391
Oil Age	mls	Client Info		123461	123560	17391
Oil Changed		Client Info		Changed	Changed	N/A
Sample Status				NORMAL	NORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	1.3
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>80	61	31	57
Chromium	ppm	ASTM D5185m	>5	2	<1	3
Nickel	ppm	ASTM D5185m	>2	<1	<1	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>3	<1	<1	<1
Aluminum	ppm	ASTM D5185m	>30	2	2	54
Lead	ppm	ASTM D5185m	>30	<1	<1	5
Copper	ppm		>150	3	2	34
Tin	ppm	ASTM D5185m	>5	0	0	4
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	1-1-		11 11 11	-		histow 0
		method	limit/hase		history1	nisiorvz
	ppm	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	5	0	31
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	5 6	0 6	31 5
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	5 6 60	0 6 62	31 5 48
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	5 6 60 <1	0 6 62 <1	31 5 48 6
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	5 6 60 <1 848	0 6 62 <1 891	31 5 48 6 588
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	5 6 60 <1 848 1050	0 6 62 <1 891 1074	31 5 48 6 588 1600
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	5 6 60 <1 848 1050 949	0 6 62 <1 891 1074 1009	31 5 48 6 588 1600 755
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	5 6 60 <1 848 1050 949 1130	0 6 62 <1 891 1074 1009 1188	31 5 48 6 588 1600 755 954
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	5 6 60 <1 848 1050 949 1130 3012	0 6 62 <1 891 1074 1009 1188 3167	31 5 48 6 588 1600 755 954 2231
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 limit/base	5 6 60 <1 848 1050 949 1130 3012 current	0 6 62 <1 891 1074 1009 1188 3167 history1	31 5 48 6 588 1600 755 954 2231 history2
Boron Barium Molybdenum Manganese Magnesium Calcium 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 method	0 0 60 0 1010 1070 1150 1270 2060	5 6 60 <1 848 1050 949 1130 3012 current 7	0 6 62 <1 891 1074 1009 1188 3167 history1 4	31 5 48 6 588 1600 755 954 2231 history2 ▲ 44
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m 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 >20	5 6 60 <1 848 1050 949 1130 3012 current 7 5	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0	31 5 48 6 588 1600 755 954 2231 history2 ▲ 44 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	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 limit/base	5 6 60 <1 848 1050 949 1130 3012 current 7	0 6 62 <1 891 1074 1009 1188 3167 history1 4	31 5 48 6 588 1600 755 954 2231 history2 ▲ 44
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	5 6 60 <1 848 1050 949 1130 3012 current 7 5	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0	31 5 48 6 588 1600 755 954 2231 ► 44 9 44 9 167 ► 167
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	5 6 60 <1 848 1050 949 1130 3012 <u>current</u> 7 5 3 3 <u>current</u> 1.2	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0 9	31 5 48 6 588 1600 755 954 2231
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 >20 limit/base >3	5 6 60 <1 848 1050 949 1130 3012 current 7 5 3 3	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0 9 9	31 5 48 6 588 1600 755 954 2231 ► 44 9 44 9 167 ► 167
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 60 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >3 >20	5 6 60 <1 848 1050 949 1130 3012 <u>current</u> 7 5 3 3 <u>current</u> 1.2	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0 9 <u>history1</u> 0.6	31 5 48 6 588 1600 755 954 2231
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 60 0 1010 1070 1150 1270 2060 limit/base >20 limit/base >3 >20	5 6 60 <1 848 1050 949 1130 3012 <i>current</i> 7 5 3 <i>current</i> 1.2 15.1	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0 9 <u>history1</u> 0.6 10.0	31 5 48 6 588 1600 755 954 2231 history2 ▲ 44 9 167 history2 0.4 8.2
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 1010 1070 1150 1270 2060 limit/base >20 limit/base >20 limit/base >20	5 6 60 <1 848 1050 949 1130 3012 <u>current</u> 7 5 3 <u>current</u> 1.2 15.1 29.3	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0 9 <u>history1</u> 0.6 10.0 21.4	31 5 48 6 588 1600 755 954 2231 2231 kistory2 44 9 167 history2 0.4 8.2 19.6
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	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >30 imit/base >30	5 6 60 <1 848 1050 949 1130 3012 <i>current</i> 7 5 3 <i>current</i> 1.2 15.1 29.3 <i>current</i>	0 6 62 <1 891 1074 1009 1188 3167 history1 4 0 9 history1 0.6 10.0 21.4 history1	31 5 48 6 588 1600 755 954 2231 history2 ▲ 44 9 167 history2 0.4 8.2 19.6 history2



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White Metal Yellow Metal Precipitate Silt Debris	scalar scalar scalar scalar	*Visual	NONE NONE NONE	NONE NONE NONE	NONE NONE NONE	NONE NONE	
Precipitate Silt Debris	scalar	*Visual					
Precipitate Silt Debris		*Visual					
Debris	scalar					NONE	
		*Visual	NONE	NONE	NONE	NONE	
	scalar	*Visual	NONE	NONE	NONE	NONE	
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE	
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
² Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
Free Water	scalar	*Visual		NEG	NEG	NEG	
			limit/base	current	history1	history2	
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	Free Water FLUID PROP Visc @ 100°C GRAPHS Ferrous Alloys 70 40 50 50 50 50 50 50 50 50 50 5	Free Water scalar FLUID PROPERTIES Visc @ 100°C cSt GRAPHS Ferrous Alloys 70 70 70 70 70 70 70 70 70 70	Free Water scalar *Visual FLUID PROPERTIES method Visc @ 100°C cSt ASTM D445 GRAPHS Ferrous Alloys Non-ferrous Metals	Free Water scalar 'Visual FLUID PROPERTIES method imit/base Visc @ 100°C cSt ASTM D445 15.4 GRAPHS Ferrous Alloys 000 000 000 000 000 000 000 0	<figure> Free Water scalar *Visual NEG FLUID PROPERTIES method imit/base current Visc @ 100°C cSt ASTM D445 15.4 14.3 GRAPHS Ferrous Alloys Official offici</figure>	Free Water scalar Visual NEG NEG FLUID PROPERTIES method imit/base current history1 Visc @ 100°C cSt ASTM D445 15.4 14.3 13.6 GRAPHS Forrous Alloys On-ferrous Metals On-ferrous metal On-	

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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