

OIL ANALYSIS REPORT

Sample Rating Trend





Component Diesel Engine

Fluid 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

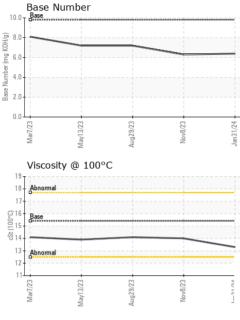
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0105479	GFL0094130	GFL0089454
Sample Date		Client Info		31 Jan 2024	08 Nov 2023	29 Aug 2023
Machine Age	mls	Client Info		330286	321849	311407
Oil Age	mls	Client Info		330286	321849	311407
Oil Changed		Client Info		Changed	N/A	Changed
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	>100	13	13	12
Chromium	ppm		>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m ASTM D5185m	>3 >20	0 1	1	<1
Lead	ppm		>20	2	3	2
	ppm	ASTM D5185m ASTM D5185m		2 <1	0	0
Copper Tin	ppm	ASTM D5185m	>330	<1	<1	0
Vanadium	ppm	ASTM D5185m	>10	< 1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
Caumum	ppm	AGTIVI DJTOJITI		U	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 0		history2 0
	ppm ppm				history1	
Boron		ASTM D5185m	0	0	history1 <1	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	0 0	history1 <1 0	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	0 0 56	history1 <1 0 44	0 0 46
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	0 0 56 <1	history1 <1 0 44 <1	0 0 46 <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 56 <1 30	history1 <1 0 44 <1 11 2507 1074	0 0 46 <1 9 2492 1076
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 56 <1 30 2570	history1 <1 0 44 <1 11 2507	0 0 46 <1 9 2492
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 56 <1 30 2570 1179	history1 <1 0 44 <1 11 2507 1074	0 0 46 <1 9 2492 1076
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 56 <1 30 2570 1179 1370	history1 <1 0 44 <1 11 2507 1074 1300	0 0 46 <1 9 2492 1076 1305
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	0 0 56 <1 30 2570 1179 1370 3510 current 7	history1 <1 0 44 <1 11 2507 1074 1300 3133	0 0 46 <1 9 2492 1076 1305 3765 history2 6
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	0 0 56 <1 30 2570 1179 1370 3510 current	history1 <1 0 44 <1 11 2507 1074 1300 3133 history1	0 0 46 <1 9 2492 1076 1305 3765 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 0 1010 1070 1150 1270 2060 limit/base	0 0 56 <1 30 2570 1179 1370 3510 current 7	<1 0 44 <1 11 2507 1074 1300 3133 history1 6	0 0 46 <1 9 2492 1076 1305 3765 history2 6
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	0 0 60 0 1010 1070 1150 1270 2060 limit/base	0 0 56 <1 30 2570 1179 1370 3510 Current 7 2	<1 0 44 <1 11 2507 1074 1300 3133 history1 6 <1	0 0 46 <1 9 2492 1076 1305 3765 history2 6 0
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 >20	0 0 56 <1 30 2570 1179 1370 3510 current 7 2 2 <1	<1 0 44 <1 11 2507 1074 1300 3133 history1 6 <1 1	0 0 46 <1 9 2492 1076 1305 3765 history2 6 0 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 0 1010 1070 1150 1270 2060 2060 225 >25	0 0 56 <1 30 2570 1179 1370 3510 current 7 2 <1 2 <1	<1 0 44 <1 11 2507 1074 1300 3133 history1 6 <1 1 history1	0 0 46 <1 9 2492 1076 1305 3765 history2 6 0 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 limit/base >25 >20 limit/base >3	0 0 56 <1 30 2570 1179 1370 3510 current 7 2 <1 2 <1 0.3	<1 0 44 <1 11 2507 1074 1300 3133 history1 6 <1 1 0 0 0.2	0 0 46 <1 9 2492 1076 1305 3765 history2 6 0 1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >3 >20	0 0 56 <1 30 2570 1179 1370 3510 current 7 2 <1 2 <1 0.3 8.3	history1 <1 0 44 <1 11 2507 1074 1300 3133 history1 6 <1 1 0.2 8.5	0 0 46 <1 9 2492 1076 1305 3765 history2 6 0 1 history2 0.1 6.8
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 D7624 *ASTM D7615	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 3 3 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 56 <1 30 2570 1179 1370 3510 Current 7 2 <1 Current 0.3 8.3 19.3	<1 0 44 <1 11 2507 1074 1300 3133 history1 6 <1 1 0.2 8.5 19.5 history1	0 0 46 <1 9 2492 1076 1305 3765 history2 6 0 1 1 history2 0.1 6.8 16.6 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 3 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	0 0 56 <1 30 2570 1179 1370 3510 <u>current</u> 7 2 <1 7 2 <1 0.3 8.3 19.3	<1 0 44 <1 11 2507 1074 1300 3133 history1 6 <1 1 0.2 8.5 19.5	0 0 46 <1 9 2492 1076 1305 3765 history2 6 0 1 1 history2 0.1 6.8 16.6



OIL ANALYSIS REPORT

VISUAL



	Non-ferrous Meta	Aug29/23	Nov823	10.0 bz/1cuer bz/1cuer bz/1cuer bz/1cuer bz/1cuer bz/1cuer		Aug29/23	Nov8/23
	10 8 10 10 10 10 10 10 10 10 10 10	Aug29/23	Nov8123	10.0 (0,HO) 00 (0,HO) (0,HO) 00 (0,HO) (0,HO) 00 (0,HO) (0,HO) 00 (0,HO) (0,HO) 00 (0,HO) 00 (0,	Base		
	10 8 6 4 2 0 CZ/EL/aw Viscosity @ 100° 19 18 Abnomal 17	Aug29/23	Nov023	10.0	Base		
	10 8 6 4 2 0 CZ/EL/aw Viscosity @ 100° 19 18 Abnomal 17	Aug29/23	Novê 23	10.0	Base		
	10 8 6 10 10 10 10 10 10 10 10 10 10	Aug29/23	Nov6/23	10.0			
	Viscosity @ 100°	Aug29/23	Nov8/23				
	10 8 6 6 6 6 6 6 6 6 6 6 6 6 6	Aug29/23	Nov8.23	47/1 Euro			
	10 8 6 6 4 2 0		E220x	124			
	a copper b copper	als					
	a copper b copper	als					
	a copper b copper	als					
	10 copper	als					
	10 copper	als					
	Non-ferrous Meta	als					
	×		Nc	Jar			
	ay13/23 + 0 0	Aug29/23	Nov8/23	Jan31/24			
	2						
	6						
	10 <u>E</u> 8						
(C) [C]	12						
	16 imp1		1				
	GRAPHS						
	Visc @ 100°C	cSt			13.3	14.0	14.1
				limit/base			history2
				>0.2			NEG NEG
Jan3	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
1/24	Appearance	scalar	*Visual	NORML		NORML	NONE NORML
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
		scalar	*Visual	NONE	NONE	NONE	NONE NONE
	Jan 31/24	Debris Sand/Dirt Appearance Odor Emulsified Water Free Water FLUID PROPE Visc @ 100°C GRAPHS Ferrous Alloys	Yellow Metal scalar Precipitate scalar Silt scalar Debris scalar Sand/Dirt scalar Appearance scalar Odor scalar Emulsified Water scalar Free Water scalar State scalar State scalar State scalar Scalar Scalar Scalar Scalar Scalar Scalar Scalar Free Water scalar Scalar	Yellow Metal scalar *Visual Precipitate scalar *Visual Silt scalar *Visual Debris scalar *Visual Sand/Dirt scalar *Visual Appearance scalar *Visual Odor scalar *Visual Emulsified Water scalar *Visual Free Water scalar *Visual *Vi	Yellow Metal scalar *Visual NONE Precipitate scalar *Visual NONE Silt scalar *Visual NONE Debris scalar *Visual NONE Debris scalar *Visual NONE Debris scalar *Visual NONE Sand/Dirt scalar *Visual NONE Appearance scalar *Visual NORML Odor scalar *Visual NORML Emulsified Water scalar *Visual >0.2 Free Water scalar *Visual >0.2 Free Water scalar *Visual >0.2 Free Water scalar *Visual >0.2 Ferrous @ 100°C cSt ASTM D445 15.4 GRAPHS Ferrous Alloys Image: Communicipation of the state of the	Yellow Metal scalar *Visual NONE NONE Precipitate scalar *Visual NONE NONE NONE Silt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE Sand/Dirt scalar *Visual NONE NONE Appearance scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Odor scalar *Visual NORML NORML Emulsified Water scalar *Visual >0.2 NEG Free Water scalar *Visual >0.2 NEG Free Water scalar *Visual NORML NEG Mission @ 100°C cSt ASTM D445 15.4 13.3 GRAPHS Ferrous Alloys Imminum Imminum Imminum Imminum Imminum prodet Imminum Imminum Imminum Imminum Imminum Imminum Imminum Imminum Imminum <td>Yellow Metal scalar *Visual NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE Silt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NEG NEG Free Water scalar *Visual NEG NEG Free Water scalar *Visual NARML NORML Visc @ 100°C cSt ASTM D445 15.4 13.3 14.0 CGRAPHS Ferrous Alloys</td>	Yellow Metal scalar *Visual NONE NONE NONE Precipitate scalar *Visual NONE NONE NONE Silt scalar *Visual NONE NONE NONE Debris scalar *Visual NONE NONE NONE Sand/Dirt scalar *Visual NONE NONE NONE Appearance scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Odor scalar *Visual NORML NORML NORML Emulsified Water scalar *Visual >0.2 NEG NEG Free Water scalar *Visual NEG NEG Free Water scalar *Visual NEG NEG Free Water scalar *Visual NARML NORML Visc @ 100°C cSt ASTM D445 15.4 13.3 14.0 CGRAPHS Ferrous Alloys

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Submitted By: TECHNICIAN ACCOUNT