

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 412010

Fluid

Component
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

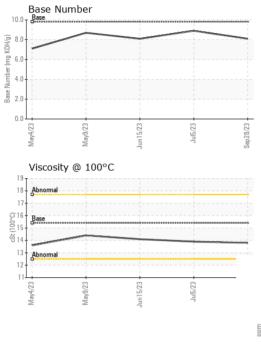
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method				history2
Sample Number		Client Info		GFL0086535	GFL0086592	GFL0086521
Sample Date		Client Info		28 Sep 2023	05 Jul 2023	15 Jun 2023
Machine Age	hrs	Client Info	3289		3289	3169
Oil Age	hrs	Client Info	2991		3111	0
Oil Changed		Client Info	N/A		N/A	Not Changd
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel			>3.0	<1.0	<1.0	<1.0
Glycol		WC Method	20.0	NEG	NEG	NEG
				NEG		
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	8	5	4
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	3	<1	<1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	2	2
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	3	2	0
Tin	ppm	ASTM D5185m	>15	<1	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
		mathad	limit/base		In the term of the	history2
		methoa			nistory i	TIIStOLYZ
ADDITIVES Boron	maa	method ASTM D5185m			history1 3	
Boron	ppm mag	ASTM D5185m	0	<1	3	5
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	<1 0	3 0	5 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	<1 0 67	3 0 62	5 0 64
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	<1 0 67 <1	3 0 62 <1	5 0 64 <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 0 67 <1 1082	3 0 62 <1 1015	5 0 64 <1 1031
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 0 67 <1 1082 1113	3 0 62 <1 1015 1093	5 0 64 <1 1031 1143
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 0 67 <1 1082 1113 1132	3 0 62 <1 1015 1093 1087	5 0 64 <1 1031 1143 1123
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	<1 0 67 <1 1082 1113 1132 1413	3 0 62 <1 1015 1093 1087 1337	5 0 64 <1 1031 1143 1123 1377
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 0 67 <1 1082 1113 1132 1413 3469	3 0 62 <1 1015 1093 1087 1337 3865	5 0 64 <1 1031 1143 1123 1377 4024
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	<1 0 67 <1 1082 1113 1132 1413 3469 current	3 0 62 <1 1015 1093 1087 1337 3865 history1	5 0 64 <1 1031 1143 1123 1377 4024 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	<1 0 67 <1 1082 1113 1132 1413 3469 current 8	3 0 62 <1 1015 1093 1087 1337 3865 history1 4	5 0 64 <1 1031 1143 1123 1377 4024 history2 5
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	<1 0 67 <1 1082 1113 1132 1413 3469 current 8 4	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	<1 0 67 <1 1082 1113 1132 1413 3469 current 8	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2 5	5 0 64 <1 1031 1143 1123 1377 4024 history2 5
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	<1 0 67 <1 1082 1113 1132 1413 3469 current 8 4	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 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 >20	<1 0 67 <1 1082 1113 1132 1413 3469 current 8 4 7	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2 5	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 2 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 2060 225 >25 >20 Limit/base >20	<1 0 67 <1 1082 1113 1132 1413 3469 current 8 4 7 Current	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2 5 5 history1	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 2 2 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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 Limit/base >20	<1 0 67 <1 1082 1113 1132 1413 3469 current 8 4 7 current 0.4	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2 5 history1 0.3	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 2 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 <i>limit/base</i> >25 >20 <i>limit/base</i> >20	<1 0 67 <1 1082 1113 1132 1413 3469 current 8 4 7 current 0.4 7.0	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2 5 history1 0.3 6.5	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 2 2 1 history2 0.2 6.0
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 ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 220 20 20 20 20 20 20 20 20 20 20 20	<1 0 67 <1 1082 1113 1132 1413 3469 Current 8 4 7 Current 0.4 7.0 19.3 Current	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2 5 <u>history1</u> 0.3 6.5 19.2 history1	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 2 1 history2 0.2 6.0 19.1 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 imit/base >25 imit/base >4 >20	<1 0 67 <1 1082 1113 1132 1413 3469 <u>current</u> 8 4 7 <u>current</u> 0.4 7.0 19.3	3 0 62 <1 1015 1093 1087 1337 3865 history1 4 2 5 <u>history1</u> 0.3 6.5 19.2	5 0 64 <1 1031 1143 1123 1377 4024 history2 5 2 1 history2 0.2 6.0 19.1



OIL ANALYSIS REPORT

VISUAL



C C R E D I T E D	Laboratory Sample No. Lab Number Unique Number Test Package	: GFL0086535 : <mark>05966033</mark>	A - 501 Madis Received Diagnose Diagnost	i : 02 (: 02 Oct 2023 : 03 Oct 2023			onmental - 654 - Richmond Hauling 11800 Lewis Road Chester, VA US 23831 Contact: Jimmy Mayes jmayes@gflenv.com		
		Base (1-001) 15 14 13 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 11 12 12	Junt5/23	Jul5/23+	(0,0 4,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1	May4/23	Junt5/23	Jul5/23	San 28.73	
		Viscosity @ 10	0°C		10.0	Base Number				
		2 EZIP/eM	Jun 15,23	Jul5/23	Sep 28/23					
		8 6 4								
		0 EZ/6/eW Non-ferrous Me	etals	Jul5/23	Sep 28/23					
		ша в 6 4 2		/	/					
Jun15/23 +	Jul5/23 +	GRAPHS Ferrous Alloys								
		FLUID PRO Visc @ 100°C	cSt	method ASTM D445	limit/base 15.4	current 13.8	history1 13.9	histor 14.1	y∠	
		Free Water	scalar	*Visual *Visual	>0.2	NEG NEG	NEG NEG	NEG NEG		
Jun15/23	Jul5/23 Sep28/23	Appearance Odor Emulsified Water	scalar scalar	*Visual *Visual	NORML		NORML	NORM		
	m m	Debris Sand/Dirt	scalar scalar	*Visual *Visual	NONE	NONE	NONE	NONE		
		Precipitate Silt	scalar scalar	*Visual *Visual	NONE	NONE NONE	NONE NONE	NONE		
		Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE		

Submitted By: TECHNICIAN ACCOUNT