

## **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id 427030 Component Diesel Engi Fluid PETRO CAN

Component Diesel Engine Fluid

### PETRO CANADA DURON SHP 15W40 (--- LTR)

SAMPLE INFORMATION method

### 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.

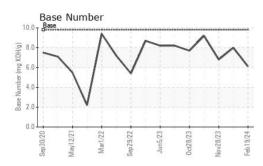
#### Fluid Condition

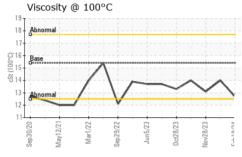
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM		method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0101310	GFL0112763	GFL0101348
Sample Date		Client Info		19 Feb 2024	13 Feb 2024	28 Nov 2023
Machine Age	hrs	Client Info		19274	19232	18641
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
-						
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	\$	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	10	4	5
Chromium	ppm	ASTM D5185m	>20	<1	<1	0
Nickel	ppm	ASTM D5185m	>5	3	<1	0
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	2	1
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	2	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	Method ASTM D5185m	limit/base	current 2	history1 3	history2 <1
	ppm ppm					
Boron		ASTM D5185m	0	2	3	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	2 <1	3 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 <1 59	3 0 56	<1 0 59
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 <1 59 <1	3 0 56 <1	<1 0 59 0
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 <1 59 <1 868	3 0 56 <1 885	<1 0 59 0 999
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	2 <1 59 <1 868 984	3 0 56 <1 885 982	<1 0 59 0 999 1061
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	2 <1 59 <1 868 984 963	3 0 56 <1 885 982 992	<1 0 59 0 999 1061 1031
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm 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	2 <1 59 <1 868 984 963 1143	3 0 56 <1 885 982 992 1190	<1 0 59 0 999 1061 1031 1266
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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 0 1010 1070 1150 1270 2060	2 <1 59 <1 868 984 963 1143 2865	3 0 56 <1 885 982 992 1190 2804	<1 0 59 0 999 1061 1031 1266 2852
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 0 1010 1070 1150 1270 2060	2 <1 59 <1 868 984 963 1143 2865 current	3 0 56 <1 885 982 992 1190 2804 history1	<1 0 59 0 999 1061 1031 1266 2852 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 <b>method</b>	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	2 <1 59 <1 868 984 963 1143 2865 current 6	3 0 56 <1 885 982 992 1190 2804 history1 4	<1 0 59 0 999 1061 1031 1266 2852 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 ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b>	2 <1 59 <1 868 984 963 1143 2865 current 6 2	3 0 56 <1 885 982 992 1190 2804 history1 4 2	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4
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 2060 225 >25 >20 imit/base	2 <1 59 <1 868 984 963 1143 2865 current 6 2 3	3 0 56 <1 885 982 992 1190 2804 history1 4 2 2 <1 history1	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4 4 0
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 2060 225 >25 >20 <u>limit/base</u> >20	2 <1 59 <1 868 984 963 1143 2865 <i>current</i> 6 2 3 <i>current</i> 0.3	3 0 56 <1 885 982 992 1190 2804 history1 4 2 <1 history1 0.5	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4 4 0 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 TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	2 <1 59 <1 868 984 963 1143 2865 <i>current</i> 6 2 3 <i>current</i> 0.3 9.8	3 0 56 <1 885 982 992 1190 2804 history1 4 2 2 <1 history1 0.5 8.2	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4 4 0 bistory2 0.2 8.5
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 25 20 225 20 20 20 20 20 20 20 20 20 20 20 20 20	2 <1 59 <1 868 984 963 1143 2865 <b>current</b> 6 2 3 <b>current</b> 0.3 9.8 20.1	3 0 56 <1 885 982 992 1190 2804 history1 4 2 2 <1 4 2 <1 history1 0.5 8.2 19.4	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4 4 0 bistory2 0.2 8.5 19.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 imit/base >20	2 <1 59 <1 868 984 963 1143 2865 current 6 2 3 current 0.3 9.8 20.1 current	3 0 56 <1 885 982 992 1190 2804 history1 4 2 2 <1 history1 0.5 8.2 19.4 history1	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4 4 0 bistory2 0.2 8.5 19.8 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE Oxidation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7414	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25 <b>imit/base</b> >4 >20 30 <b>imit/base</b>	2 <1 59 <1 868 984 963 1143 2865 <u>current</u> 6 2 3 <u>current</u> 0.3 9.8 20.1 <u>current</u> 17.6	3 0 56 <1 885 982 992 1190 2804 history1 4 2 2 <1 4 2 <1 0.5 8.2 19.4 history1 15.4	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4 4 0 0 history2 0.2 8.5 19.8 history2 16.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *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	2 <1 59 <1 868 984 963 1143 2865 current 6 2 3 current 0.3 9.8 20.1 current	3 0 56 <1 885 982 992 1190 2804 history1 4 2 2 <1 history1 0.5 8.2 19.4 history1	<1 0 59 0 999 1061 1031 1266 2852 history2 4 4 4 0 0 history2 0.2 8.5 19.8 history2



# **OIL ANALYSIS REPORT**





VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	12.7	14.0	13.1
GRAPHS						

Ferrous Alloys 50 40 30 20 10 0. Feb 19/24 -Mav12/21 Mar1/22 Sep 29/22 Non-ferrous Metals 10 lead Feb19/24 en79/77 /av/ Viscosity @ 100°C Base Number 19 10.0 18 17 8. (mg KOH/g) ()-16 ()-00 ()-15 ()-15 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-16 ()-15) Ba 6 ( umber 4 ( ase 13 12 11-0.0 Feb19/24. Mar1/22 -Sep30/20 Sep29/22 0ct28/23 Feb 19/24 Vov28/23 May12/21 Mav12/21 Mar1/22 0ct28/23 Sep30/20 Sep 29/22 Vov28/23 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Laboratory GFL Environmental - 654 - Richmond Hauling Sample No. : GFL0101310 Received : 27 Feb 2024 11800 Lewis Road Lab Number : 06102310 Tested : 28 Feb 2024 Chester, VA Unique Number : 10900540 Diagnosed : 28 Feb 2024 - Wes Davis US 23831 Test Package : FLEET Contact: Jimmy Mayes To discuss this sample report, contact Customer Service at 1-800-237-1369. jmayes@gflenv.com

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

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

Certificate L2367

Submitted By: TECHNICIAN ACCOUNT

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