

# **OIL ANALYSIS REPORT**



SAMPLE INFORMATION method limit/base



Machine Id

## 413051

## 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.

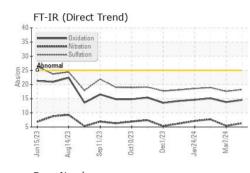
### Fluid Condition

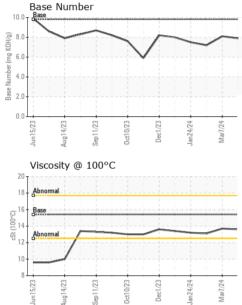
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		method	IIIIII/Dase	current	TIIStOLA	nistory2
Sample Number		Client Info		GFL0104807	GFL0104790	GFL0104941
Sample Date		Client Info		26 Mar 2024	07 Mar 2024	13 Feb 2024
Machine Age	hrs	Client Info		2074	1913	1760
Oil Age	hrs	Client Info		1913	1913	1630
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
· · · · · · · · · · · · · · · · · · ·						
CONTAMINATI	ON	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		ASTM D5185m	>100	4	4	15
Chromium	ppm ppm		>20	4	4 <1	<1
Nickel			>20	2	0	5
	ppm	ASTM D5185m ASTM D5185m	~4	0	0	0
Titanium Silver	ppm	ASTM D5185m ASTM D5185m	2	-	0	0
	ppm			<1		2
Aluminum	ppm	ASTM D5185m		2	<1	
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m		<1	1	4
Tin	ppm		>15	<1	0	<1
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 2	history1 2	history2 <1
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	2	2	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 0	2 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 53	2 0 53	<1 0 54
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 53 <1	2 0 53 <1	<1 0 54 <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	2 0 53 <1 869	2 0 53 <1 870	<1 0 54 <1 918
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 0 53 <1 869 966	2 0 53 <1 870 972	<1 0 54 <1 918 993
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 0 53 <1 869 966 1008	2 0 53 <1 870 972 984	<1 0 54 <1 918 993 954
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	2 0 53 <1 869 966 1008 1193	2 0 53 <1 870 972 984 1153	<1 0 54 <1 918 993 954 1168
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 0 53 <1 869 966 1008 1193 3453 current	2 0 53 <1 870 972 984 1153 3041 history1	<1 0 54 <1 918 993 954 1168 2702 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	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	2 0 53 <1 869 966 1008 1193 3453 current 2	2 0 53 <1 870 972 984 1153 3041 history1 3	<1 0 54 <1 918 993 954 1168 2702 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	0 0 60 0 1010 1070 1150 1270 2060	2 0 53 <1 869 966 1008 1193 3453 current	2 0 53 <1 870 972 984 1153 3041 history1	<1 0 54 <1 918 993 954 1168 2702 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>imit/base</b> >25	2 0 53 <1 869 966 1008 1193 3453 current 2 2 2 4	2 0 53 <1 870 972 984 1153 3041 <b>history1</b> 3 2 0	<1 0 54 <1 918 993 954 1168 2702 history2 6 2 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>Imit/base</b> >25	2 0 53 <1 869 966 1008 1193 3453 current 2 2 2 4	2 0 53 <1 870 972 984 1153 3041 history1 3 2 0 0 history1	<1 0 54 <1 918 993 954 1168 2702 bistory2 6 2 2 bistory2 bistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	2 0 53 <1 869 966 1008 1193 3453 <i>current</i> 2 2 4 <i>current</i> 0.2	2 0 53 <1 870 972 984 1153 3041 history1 3 2 0 history1 0.1	<1 0 54 <1 918 993 954 1168 2702 history2 6 2 2 2 history2 0.3
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	2 0 53 <1 869 966 1008 1193 3453 <i>current</i> 2 2 2 4 <i>current</i> 0.2 6.3	2 0 53 <1 870 972 984 1153 3041 history1 3 2 0 history1 0.1 5.4	<1 0 54 <1 918 993 954 1168 2702 history2 6 2 2 history2 0.3 7.7
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3	2 0 53 <1 869 966 1008 1193 3453 <i>current</i> 2 2 4 <i>current</i> 0.2	2 0 53 <1 870 972 984 1153 3041 history1 3 2 0 history1 0.1	<1 0 54 <1 918 993 954 1168 2702 history2 6 2 2 2 history2 0.3
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 220 220 220 20 20 20 20 20 20 20 20 20	2 0 53 <1 869 966 1008 1193 3453 <i>current</i> 2 2 2 4 <i>current</i> 0.2 6.3	2 0 53 <1 870 972 984 1153 3041 history1 3 2 0 history1 0.1 5.4	<1 0 54 <1 918 993 954 1168 2702 history2 6 2 2 history2 0.3 7.7
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 t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 20 3 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 53 <1 869 966 1008 1193 3453 <u>current</u> 2 2 2 4 <u>current</u> 0.2 6.3 18.2	2 0 53 <1 870 972 984 1153 3041 history1 3 2 0 history1 0.1 5.4 17.6	<1 0 54 <1 918 993 954 1168 2702 bistory2 6 2 2 0.3 7.7 18.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 3 20 20 20 20 20 20 20 20 20 20 20 20 20	2 0 53 <1 869 966 1008 1193 3453 <i>current</i> 2 2 2 4 <i>current</i> 0.2 6.3 18.2 <i>current</i>	2 0 53 <1 870 972 984 1153 3041 history1 3 2 0 0 history1 0.1 5.4 17.6 history1	<1 0 54 <1 918 993 954 1168 2702 history2 6 2 2 history2 0.3 7.7 18.9 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	13.6	13.7	13.1
GRAPHS						

Ferrous Alloys

Viscosity @ 100°C

20

18

16 cSt (100°C)

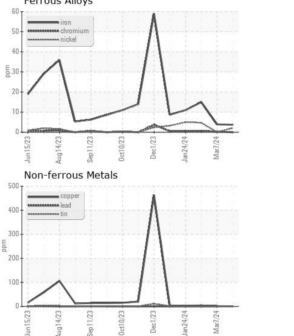
12

10

8

Jun15/23

Aug14/23



Base Number 10.0 8. (mg KOH/g) 6 ( mber 4 ( Base 0.0 Jun15/23 -Aug14/23 -Dec1/23 Mar7/24 Jan 24/24 Mar7/24 Sep11/23 Jan24/24

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 820 - Joplin Hauling Sample No. : GFL0104807 Received : 05 Apr 2024 3700 West 7th Street Lab Number : 06139565 Tested : 05 Apr 2024 Joplin, MO US 64801 Unique Number : 10964373 Diagnosed : 07 Apr 2024 - Don Baldridge Test Package : FLEET Contact: James Jarrett Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jjarrett@gflenv.com T: (417)310-2802 \* - 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) F:

Dec1/23

Sep11/23

Report Id: GFL820 [WUSCAR] 06139565 (Generated: 04/07/2024 10:04:20) Rev: 1

Submitted By: VINCE ASTI

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