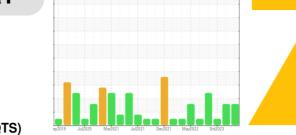


# **OIL ANALYSIS REPORT**

Sample Rating Trend



**WEAR** 

Component Diesel Engine Fluid PETRO CANADA DURON SHP 15W40 (32 QTS)

(YA152770) GFL035

SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0116467	GFL0116430	GFL0071631
Sample Date		Client Info		25 Apr 2024	01 Apr 2024	27 Oct 2023
Machine Age	hrs	Client Info		17020	17020	17020
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				ABNORMAL	ABNORMAL	NORMAL
CONTAMINATI	ON	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	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	<b>9</b> 2	126	56
Chromium	ppm	ASTM D5185m		▲ 5	▲ 7	4
Nickel		ASTM D5185m	>4	<1	2	<1
Titanium	ppm ppm	ASTM D5185m		<1	<1	<1
Silver		ASTM D5185m	>2	< 1 0	0	<1
	ppm			-		
Aluminum	ppm	ASTM D5185m		7	9	8
Lead	ppm	ASTM D5185m	>25	2	2	2
Copper	ppm	ASTM D5185m		6	8	7
Tin	ppm	ASTM D5185m	>4	2	1	2
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
				ounone	motory	
Boron	ppm	ASTM D5185m	0	3	2	7
	ppm ppm		0			
Barium		ASTM D5185m	0	3	2	7
Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	0 0 60	3 0	2 <1	7
Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 66	2 <1 67	7 4 66
Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 66 <1	2 <1 67 1	7 4 66 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 0 66 <1 1026	2 <1 67 1 998	7 4 66 <1 889
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	3 0 66 <1 1026 1263	2 <1 67 1 998 1266	7 4 66 <1 889 1036
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	0 0 60 0 1010 1070 1150	3 0 66 <1 1026 1263 1138	2 <1 67 1 998 1266 1100	7 4 66 <1 889 1036 1112
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	3 0 66 <1 1026 1263 1138 1404	2 <1 67 1 998 1266 1100 1390	7 4 66 <1 889 1036 1112 1212
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 1010 1070 1150 1270 2060	3 0 66 <1 1026 1263 1138 1404 3720	2 <1 67 1 998 1266 1100 1390 3517	7 4 66 <1 889 1036 1112 1212 2689
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	3 0 66 <1 1026 1263 1138 1404 3720 current	2 <1 67 1 998 1266 1100 1390 3517 history1	7 4 66 <1 889 1036 1112 1212 2689 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >25	3 0 66 <1 1026 1263 1138 1404 3720 current 18	2 <1 67 1 998 1266 1100 1390 3517 history1 23	7 4 66 <1 889 1036 1112 1212 2689 history2 19
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 >25	3 0 66 <1 1026 1263 1138 1404 3720 current 18 6	2 <1 67 1 998 1266 1100 1390 3517 history1 23 8	7 4 66 <1 889 1036 1112 1212 2689 history2 19 7
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	3 0 66 <1 1026 1263 1138 1404 3720 current 18 6 <1	2 <1 67 1 998 1266 1100 1390 3517 history1 23 8 2	7 4 66 <1 889 1036 1112 1212 2689 history2 19 7 2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm <b>TS</b> ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25	3 0 66 <1 1026 1263 1138 1404 3720 current 18 6 <1 <1	2 <1 67 1 998 1266 1100 1390 3517 history1 23 8 2 2 history1	7 4 66 <1 889 1036 1112 1212 2689 history2 19 7 2 history2
Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 20 limit/base >20	3 0 66 <1 1026 1263 1138 1404 3720 current 18 6 <1 2 current 18	2 <1 67 1 998 1266 1100 1390 3517 history1 23 8 2 2 history1 1.5	7 4 66 <1 889 1036 1112 1212 2689 history2 19 7 2 history2 1.4
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 limit/base >25 20 limit/base >20	3 0 66 <1 1026 1263 1138 1404 3720 current 18 6 <1 18 6 <1 1.1 9.9	2 <1 67 1 998 1266 1100 1390 3517 history1 23 8 2 2 8 2 1.5 12.6	7 4 66 <1 889 1036 1112 1212 2689 history2 19 7 2 history2 1.4 1.4 10.4
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 limit/base >25 20 200 limit/base >6 >20 >30	3 0 66 <1 1026 1263 1138 1404 3720 current 18 6 <1 current 1.1 9.9 22.0	2 <1 67 1 998 1266 1100 1390 3517 history1 23 8 2 2 history1 1.5 12.6 24.5	7 4 66 <1 889 1036 1112 1212 2689 history2 19 7 2 history2 1.4 1.4 10.4 21.7

## DIAGNOSIS

Recommendation

No corrective action is recommended at this time. Resample at the next service interval to monitor.

Area

12061

### 🔺 Wear

Cylinder, crank, or cam shaft wear is indicated. All other component wear rates are normal.

#### Contamination

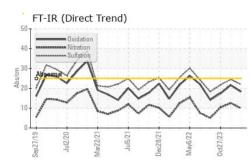
There is no indication of any contamination in the oil.

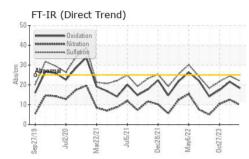
#### Fluid Condition

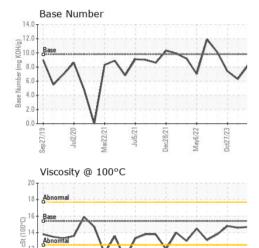
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.



# **OIL ANALYSIS REPORT**





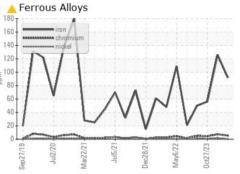


A

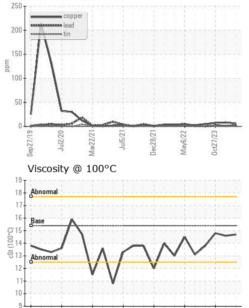
8 Sep27/19 -

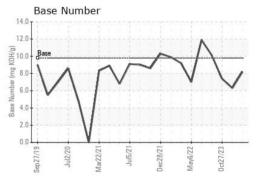
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	14.7	14.6	14.8
СРАРИС						

GRAPHS









Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 035 - Greensboro Sample No. : GFL0116467 Received : 26 Apr 2024 1236 Elon Place Lab Number : 06161149 Tested : 26 Apr 2024 High Point, NC Unique Number : 10996572 Diagnosed : 29 Apr 2024 - Don Baldridge US 27263 Test Package : FLEET Contact: JORGE COSTA Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. jorge.costa@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (336)668-3712 F:

Jec28/21

May6/22

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

/ar22/21

lul2/20

Sep27/19

Report Id: GFL035 [WUSCAR] 06161149 (Generated: 04/29/2024 13:25:13) Rev: 1

Mav6/22

Jec28/21

Mar22/21

15/2

0ct27/23

Submitted By: JORGE COSTA Page 2 of 2