

## **OIL ANALYSIS REPORT**

## Area (YA144603) GFL035 2704 Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (40 QTS)

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

#### Wear

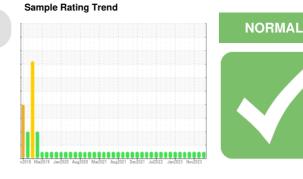
All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

## Fluid Condition

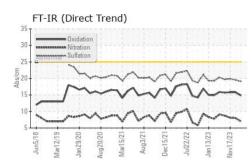
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

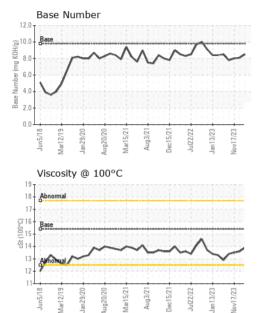


SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0116484	GFL0102334	GFL0102290
Sample Date		Client Info		22 May 2024	02 Feb 2024	17 Nov 2023
Machine Age	hrs	Client Info		0	7083	7083
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Not Changd	Not Changd	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	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 METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>165	6	4	9
Chromium	ppm	ASTM D5185m	>5	<1	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	2	1	1
Lead	ppm	ASTM D5185m	>150	<1	<1	1
Copper	ppm	ASTM D5185m	>90	<1	0	<1
Tin	ppm	ASTM D5185m	>5	0	<1	0
Vanadium	ppm	ASTM D5185m		<1	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 0	history2 4
	ppm ppm					
Boron		ASTM D5185m	0	2	0	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	0 <1	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 59	0 <1 63	4 0 64
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 59 <1	0 <1 63 <1	4 0 64 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 0 59 <1 977	0 <1 63 <1 981	4 0 64 0 945
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 59 <1 977 1184	0 <1 63 <1 981 1080	4 0 64 0 945 1130
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 59 <1 977 1184 1086	0 <1 63 <1 981 1080 1096	4 0 64 0 945 1130 1007
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 59 <1 977 1184 1086 1274	0 <1 63 <1 981 1080 1096 1294	4 0 64 0 945 1130 1007 1252
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 1010 1070 1150 1270 2060	2 0 59 <1 977 1184 1086 1274 3743	0 <1 63 <1 981 1080 1096 1294 3021	4 0 64 0 945 1130 1007 1252 3203
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	2 0 59 <1 977 1184 1086 1274 3743 current	0 <1 63 <1 981 1080 1096 1294 3021 history1	4 0 64 0 945 1130 1007 1252 3203 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> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 0 59 <1 977 1184 1086 1274 3743 <i>current</i> 4	0 <1 63 <1 981 1080 1096 1294 3021 history1 3	4 0 64 0 945 1130 1007 1252 3203 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 <b>method</b> ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base >35	2 0 59 <1 977 1184 1086 1274 3743 <u>current</u> 4 3	0 <1 63 <1 981 1080 1096 1294 3021 history1 3 2	4 0 64 0 945 1130 1007 1252 3203 history2 6 3
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 <b>limit/base</b> >35	2 0 59 <1 977 1184 1086 1274 3743 current 4 3 3 3	0 <1 63 <1 981 1080 1096 1294 3021 history1 3 2 1	4 0 64 0 945 1130 1007 1252 3203 history2 6 3 6
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 <b>limit/base</b> >35	2 0 59 <1 977 1184 1086 1274 3743 current 4 3 3 3	0 <1 63 <1 981 1080 1096 1294 3021 history1 3 2 1 history1	4 0 64 945 1130 1007 1252 3203 history2 6 3 6 3 6 <i>history2</i>
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >35 >20 limit/base	2 0 59 <1 977 1184 1086 1274 3743 <i>current</i> 4 3 3 <i>current</i> 0.2	0 <1 63 <1 981 1080 1096 1294 3021 history1 3 2 1 history1 0.3	4 0 64 945 1130 1007 1252 3203 history2 6 3 6 3 6 history2 0.4
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> >35 20 <i>limit/base</i> >7.5 >20	2 0 59 <1 977 1184 1086 1274 3743 <i>current</i> 4 3 3 <i>current</i> 0.2 7.0	0 <1 63 <1 981 1080 1096 1294 3021 history1 3 2 1 history1 0.3 8.0	4 0 64 0 945 1130 1007 1252 3203 history2 6 3 6 3 6 history2 0.4 8.1
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 <b>imit/base</b> >35 >20 <b>imit/base</b> >7.5 >20 >30	2 0 59 <1 977 1184 1086 1274 3743 <b>current</b> 4 3 3 3 <b>current</b> 0.2 7.0 19.1	0 <1 63 <1 981 1080 1096 1294 3021 history1 3 2 1 1 history1 0.3 8.0 19.5	4 0 64 0 945 1130 1007 1252 3203 history2 6 3 3 6 3 6 <b>history2</b> 0.4 8.1 19.9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAD	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7615	0 0 0 1010 1070 1150 1270 2060 <b>Iimit/base</b> >35 20 <b>Iimit/base</b> >7.5 >20 >30	2 0 59 <1 977 1184 1086 1274 3743 <i>current</i> 4 3 3 <i>current</i> 0.2 7.0 19.1	0 <1 63 <1 981 1080 1096 1294 3021 history1 3 2 1 history1 0.3 8.0 19.5 history1	4 0 64 0 945 1130 1007 1252 3203 history2 6 3 6 3 6 history2 0.4 8.1 19.9 history2



# **OIL ANALYSIS REPORT**





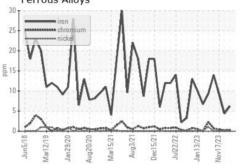
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	13.9	13.6	13.5
GRAPHS						

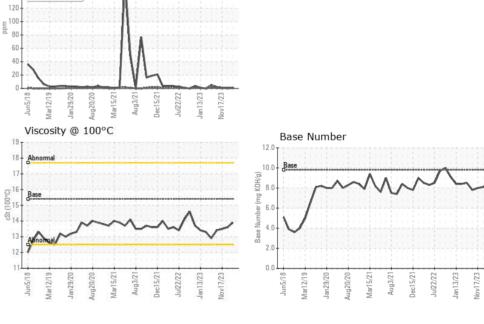
Ferrous Alloys

Non-ferrous Metals

180

160 140





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 035 - Greensboro Sample No. : GFL0116484 Received : 24 May 2024 1236 Elon Place Lab Number : 06191455 Tested : 29 May 2024 High Point, NC Unique Number : 11048207 Diagnosed : 29 May 2024 - Wes Davis 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 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Report Id: GFL035 [WUSCAR] 06191455 (Generated: 05/29/2024 01:27:22) Rev: 1

Submitted By: JORGE COSTA Page 2 of 2