

# **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL

2561 Component Diesel Engine Fluid

Area (YA108270) Machine Io

PETRO CANADA DURON SHP 15W40 (9 GAL)

SAMPLE INFORMATION method

# 2014 Ju2016 Mag2016 Maz017 Jan2018 Ap2019 Maz027 Feb2022 Jan2023 Jan20

# 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

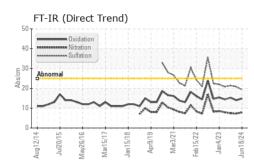
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

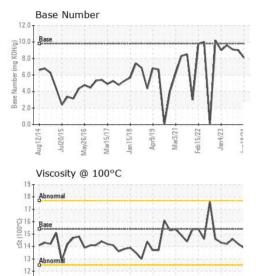
Sample Number		Client Info		GFL0116009	GFL0080559	GFL0066853
Sample Date		Client Info		18 Jun 2024	04 Oct 2023	02 Jun 2023
Machine Age	hrs	Client Info		396468	396468	396468
Oil Age	hrs	Client Info		0	396468	396468
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
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	>120	11	20	27
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	0	<1
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	<1	1
Lead	ppm	ASTM D5185m	>40	0	<1	3
Copper	ppm	ASTM D5185m	>330	0	<1	1
Tin	ppm	ASTM D5185m	>15	<1	0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		mathad	limit/base	ourropt	biotomut	history2
ADDITIVES		method	iimi/base	current	history1	nistoryz
Boron	ppm	ASTM D5185m	0	11	7	4
	ppm ppm		0		· · · · ·	
Boron		ASTM D5185m	0	11	7	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	11 0	7 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	11 0 51	7 0 60	4 0 61
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	11 0 51 <1	7 0 60 <1	4 0 61 <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	11 0 51 <1 782	7 0 60 <1 982	4 0 61 <1 999
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	11 0 51 <1 782 1390	7 0 60 <1 982 1118	4 0 61 <1 999 1101
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	11 0 51 <1 782 1390 985	7 0 60 <1 982 1118 1055	4 0 61 <1 999 1101 1057
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	11 0 51 <1 782 1390 985 1161	7 0 60 <1 982 1118 1055 1303	4 0 61 <1 999 1101 1057 1338
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	11 0 51 <1 782 1390 985 1161 3421	7 0 60 <1 982 1118 1055 1303 3161	4 0 61 <1 999 1101 1057 1338 3836
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	11 0 51 <1 782 1390 985 1161 3421 current	7 0 60 <1 982 1118 1055 1303 3161 history1	4 0 61 <1 999 1101 1057 1338 3836 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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	11 0 51 <1 782 1390 985 1161 3421 current 12	7 0 60 <1 982 1118 1055 1303 3161 history1 3	4 0 61 <1 999 1101 1057 1338 3836 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 1010 1070 1150 1270 2060 <b>limit/base</b>	11 0 51 <1 782 1390 985 1161 3421 <u>current</u> 12 4	7 0 60 <1 982 1118 1055 1303 3161 history1 3 7	4 0 61 <1 999 1101 1057 1338 3836 history2 4 1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 <b>limit/base</b> >25 >20	11 0 51 <1 782 1390 985 1161 3421 current 12 4 3	7 0 60 <1 982 1118 1055 1303 3161 history1 3 7 26	4 0 61 <1 999 1101 1057 1338 3836 history2 4 1 1
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 >20	11 0 51 <1 782 1390 985 1161 3421 <i>current</i> 12 4 3 <i>current</i>	7 0 60 <1 982 1118 1055 1303 3161 history1 3 7 26 history1	4 0 61 <1 999 1101 1057 1338 3836 history2 4 1 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 ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 1imit/base >20	11 0 51 <1 782 1390 985 1161 3421 <i>current</i> 12 4 3 <i>current</i> 0.4	7 0 60 <1 982 1118 1055 1303 3161 history1 3 7 26 history1 1.6	4 0 61 <1 999 1101 1057 1338 3836 history2 4 1 1 1 history2 1.5
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 <b>imit/base</b> >25 >20 <b>imit/base</b> >4 >20	11 0 51 <1 782 1390 985 1161 3421 <i>current</i> 12 4 3 <i>current</i> 0.4 7.8	7 0 60 <1 982 1118 1055 1303 3161 history1 3 7 26 history1 1.6 7.3	4 0 61 <1 999 1101 1057 1338 3836 history2 4 1 1 1 history2 1.5 7.4
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> >25 <b>imit/base</b> >20 <b>imit/base</b> >20	11 0 51 <1 782 1390 985 1161 3421 <i>current</i> 12 4 3 <i>current</i> 0.4 7.8 19.4	7 0 60 <1 982 1118 1055 1303 3161 history1 3 7 26 history1 1.6 7.3 20.8	4 0 61 <1 999 1101 1057 1338 3836 history2 4 1 1 history2 1.5 7.4 21.4
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 D7624	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >4 >20 30 imit/base	11 0 51 <1 782 1390 985 1161 3421 <i>current</i> 12 4 3 <i>current</i> 0.4 7.8 19.4 <i>current</i>	7 0 60 <1 982 1118 1055 1303 3161 history1 3 7 26 history1 1.6 7.3 20.8 history1	4 0 61 <1 999 1101 1057 1338 3836 history2 4 1 1 history2 1.5 7.4 21.4 history2



Aug12/14

# **OIL ANALYSIS REPORT**





Aar15/17 Ian15/18

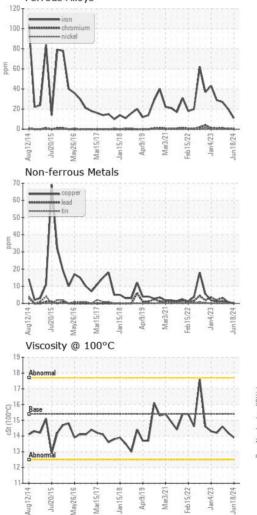
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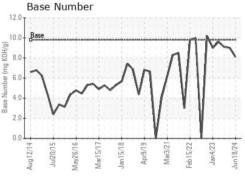
Feb15/22 Jan4/23

Aar3/71

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	14.2	14.6
GRAPHS						

Ferrous Alloys





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 018 - Fayetteville Sample No. : GFL0116009 Received : 19 Jun 2024 4621 Marracco Drive Lab Number : 06214471 Tested : 20 Jun 2024 Hope Mills, NC Unique Number : 11087335 Diagnosed : 20 Jun 2024 - Wes Davis US 28348 Test Package : FLEET Contact: Robert Carter Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. robert.carter@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (910)596-1170 

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

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