

# **OIL ANALYSIS REPORT**

#### Sample Rating Trend

## NORMAL

# Area (72248V) 829066-101270

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.

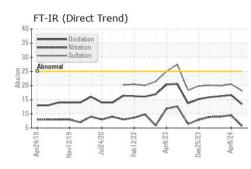
SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0117945	GFL0111945	GFL0093581
Sample Date		Client Info		23 May 2024	08 Apr 2024	07 Mar 2024
Machine Age	hrs	Client Info		67683	67526	67441
Oil Age	hrs	Client Info		0	600	550
Oil Changed		Client Info		Not Changd	Changed	Not Changd
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	>90	13	41	31
Chromium	ppm	ASTM D5185m	>20	<1	2	1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	<1	<1	<1
Silver	ppm	ASTM D5185m	>2	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	4	8	7
Lead	ppm	ASTM D5185m	>40	<1	0	0
Copper	ppm	ASTM D5185m	>330	<1	0	<1
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m	10	<1	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
	ppm					
Boron	ppm	ASTM D5185m	0	1	5	4
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	1 0	5 0	4
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 62	5 0 62	4 0 57
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 62 <1	5 0 62 <1	4 0 57 <1
Boron Barium Molybdenum	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 62 <1 1046	5 0 62 <1 978	4 0 57
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	1 0 62 <1 1046 1156	5 0 62 <1	4 0 57 <1 925 1031
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	1 0 62 <1 1046 1156 1125	5 0 62 <1 978 1156	4 0 57 <1 925
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 1150	1 0 62 <1 1046 1156	5 0 62 <1 978 1156 1116	4 0 57 <1 925 1031 1041
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	1 0 62 <1 1046 1156 1125 1322	5 0 62 <1 978 1156 1116 1354	4 0 57 <1 925 1031 1041 1269
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	1 0 62 <1 1046 1156 1125 1322 3888	5 0 62 <1 978 1156 1116 1354 3791	4 0 57 <1 925 1031 1041 1269 3076
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	1 0 62 <1 1046 1156 1125 1322 3888 current	5 0 62 <1 978 1156 1116 1354 3791 history1	4 0 57 <1 925 1031 1041 1269 3076 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	0 0 0 1010 1070 1150 1270 2060 kimit/base >25	1 0 62 <1 1046 1156 1125 1322 3888 current 8	5 0 62 <1 978 1156 1116 1354 3791 history1 5	4 0 57 <1 925 1031 1041 1269 3076 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 0 1010 1070 1150 1270 2060 kimit/base >25	1 0 62 <1 1046 1156 1125 1322 3888 current 8 2	5 0 62 <1 978 1156 1116 1354 3791 history1 5 5 5	4 0 57 <1 925 1031 1041 1269 3076 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 <b>limit/base</b> >25 >20	1 0 62 <1 1046 1156 1125 1322 3888 current 8 2 2	5 0 62 <1 978 1156 1116 1354 3791 history1 5 5 5 2	4 0 57 <1 925 1031 1041 1269 3076 history2 4 4 4 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	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 Limit/base >20	1 0 62 <1 1046 1156 1125 1322 3888 current 8 2 2 2 2	5 0 62 <1 978 1156 1116 1354 3791 history1 5 5 5 2 2 history1	4 0 57 <1 925 1031 1041 1269 3076 history2 4 4 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	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 Limit/base >20	1 0 62 <1 1046 1156 1125 1322 3888 current 8 2 2 2 2 current 0.3	5 0 62 <1 978 1156 1116 1354 3791 history1 5 5 5 2 2 history1 0.9	4 0 57 <1 925 1031 1041 1269 3076 history2 4 4 4 2 history2 0.8
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 2060 225 220 220 20 1imit/base >20	1 0 62 <1 1046 1156 1125 1322 3888 current 8 2 2 2 current 0.3 5.7	5 0 62 <1 978 1156 1116 1354 3791 history1 5 5 5 2 2 history1 0.9 9.5	4 0 57 <1 925 1031 1041 1269 3076 history2 4 4 2 history2 0.8 9.0
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 20 225 20 <u>imit/base</u> >6 >20 20	1 0 62 <1 1046 1156 1125 1322 3888 <u>current</u> 8 2 2 2 <u>current</u> 0.3 5.7 18.1	5 0 62 <1 978 1156 1116 1354 3791 <b>history1</b> 5 5 5 2 <b>history1</b> 0.9 9.5 20.5	4 0 57 <1 925 1031 1041 1269 3076 <b>history2</b> 4 4 2 <b>history2</b> 0.8 9.0 19.9
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 D7844 *ASTM D7844	0 0 0 1010 1070 1150 1270 2060 2060 225 20 220 220 20 20 20 20 20 20 20 20 20 2	1 0 62 <1 1046 1156 1125 1322 3888 <i>current</i> 8 2 2 2 <i>current</i> 0.3 5.7 18.1	5 0 62 <1 978 1156 1116 1354 3791 <b>history1</b> 5 5 5 2 2 <b>history1</b> 0.9 9.5 20.5 <b>history1</b>	4 0 57 <1 925 1031 1041 1269 3076 history2 4 4 2 history2 0.8 9.0 19.9 history2

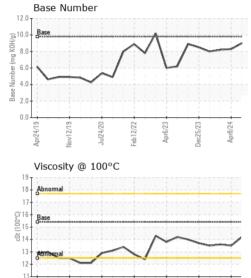


Apr24/19 -

Vov12/19

# **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	14.2	13.5	13.6
GRAPHS						

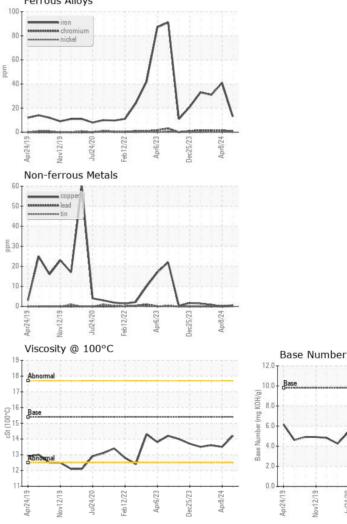
Ferrous Alloys

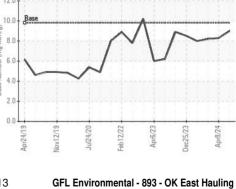
Apr8/24 .

Apr6/23

Jec25/23

eh12/27





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 893 - OK East Hauling Sample No. : GFL0117945 Received : 24 May 2024 2100 Lilly Street Lab Number : 06191571 Tested : 29 May 2024 Seminole, OK US 74868 Unique Number : 11048323 Diagnosed : 29 May 2024 - Wes Davis Test Package : FLEET Contact: Roger Barlow Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. rbarlow@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (405)204-6183 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Submitted By: Andy Smith

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