

# **OIL ANALYSIS REPORT**

Sample Rating Trend

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## NORMAL



#### Diesel Engine Fluid

## PETRO CANADA DURON SHP 15W40 (36 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.

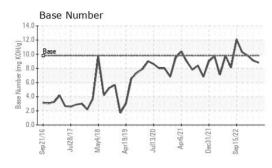
### Fluid Condition

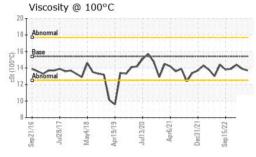
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0103799	GFL0076975	GFL0064957
Sample Date		Client Info		07 Dec 2023	01 Jun 2023	10 Mar 2023
Machine Age	hrs	Client Info		23489	0	16141
Oil Age	hrs	Client Info		688	600	600
Oil Changed		Client Info		Changed	Not Changd	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	>75	28	19	10
Chromium	ppm	ASTM D5185m	>5	<1	1	<1
Nickel	ppm	ASTM D5185m	>4	1	2	<1
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	7	6	3
Lead	ppm	ASTM D5185m	>25	<1	0	<1
Copper	ppm	ASTM D5185m	>100	2	1	<1
Tin	ppm	ASTM D5185m	>4	0	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm		limit/base 0	current 4	history1 7	history2 9
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	4	7 0 60	9 0 58
Boron Barium Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	0	4 0	7 0	9 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 0 55	7 0 60 <1 959	9 0 58
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 55 <1 852 1015	7 0 60 <1 959 1082	9 0 58 1 901 1083
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	4 0 55 <1 852 1015 974	7 0 60 <1 959 1082 1051	9 0 58 1 901 1083 978
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	4 0 55 <1 852 1015 974 1217	7 0 60 <1 959 1082 1051 1315	9 0 58 1 901 1083 978 1262
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	0 0 60 0 1010 1070 1150	4 0 55 <1 852 1015 974	7 0 60 <1 959 1082 1051	9 0 58 1 901 1083 978 1262 3461
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	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	4 0 55 <1 852 1015 974 1217 2408 current	7 0 60 <1 959 1082 1051 1315 3849 history1	9 0 58 1 901 1083 978 1262 3461 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 60 1010 1070 1150 1270 2060	4 0 555 <1 852 1015 974 1217 2408 current 6	7 0 60 <1 959 1082 1051 1315 3849 history1 5	9 0 58 1 901 1083 978 1262 3461 <b>history2</b> 9
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 60 1010 1070 1150 1270 2060 kimit/base	4 0 55 <1 852 1015 974 1217 2408 current 6 3	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8	9 0 58 1 901 1083 978 1262 3461 <b>history2</b> 9 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 ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 kimit/base	4 0 555 <1 852 1015 974 1217 2408 current 6	7 0 60 <1 959 1082 1051 1315 3849 history1 5	9 0 58 1 901 1083 978 1262 3461 <b>history2</b> 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20	4 0 55 <1 852 1015 974 1217 2408 current 6 3 2 2	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8 4 4	9 0 58 1 901 1083 978 1262 3461 history2 9 3 2 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 ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	4 0 55 <1 852 1015 974 1217 2408 <u>current</u> 6 3 2 2 <u>current</u> 1.4	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8 4 4 history1 0.8	9 0 58 1 901 1083 978 1262 3461 <b>history2</b> 9 3 2 9 3 2 <b>history2</b> 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 >20 <i>limit/base</i> >6 >20	4 0 55 <1 852 1015 974 1217 2408 <i>current</i> 6 3 2 2 <i>current</i> 1.4 8.7	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8 4 4 history1 0.8 7.7	9 0 58 1 901 1083 978 1262 3461 history2 9 3 4 2 9 3 2 2 history2 0.1 4.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	4 0 55 <1 852 1015 974 1217 2408 <u>current</u> 6 3 2 2 <u>current</u> 1.4	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8 4 4 history1 0.8	9 0 58 1 901 1083 978 1262 3461 history2 9 3 2 9 3 2 history2 0.1
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> >25 >20 <i>limit/base</i> >6 >20	4 0 55 <1 852 1015 974 1217 2408 <i>current</i> 6 3 2 2 <i>current</i> 1.4 8.7	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8 4 4 history1 0.8 7.7	9 0 58 1 901 1083 978 1262 3461 history2 9 3 4 2 9 3 2 2 history2 0.1 4.8
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 20 <b>imit/base</b> >6 >20	4 0 55 <1 852 1015 974 1217 2408 <u>current</u> 6 3 2 2 <u>current</u> 1.4 8.7 20.8	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8 4 4 history1 0.8 7.7 20.1	9 0 58 1 901 1083 978 1262 3461 <b>history2</b> 9 3 2 <b>history2</b> 0.1 4.8 17.4
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 TS ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >6 >20 >20 >30	4 0 55 <1 852 1015 974 1217 2408 <i>current</i> 6 3 2 <i>current</i> 1.4 8.7 20.8 <i>current</i>	7 0 60 <1 959 1082 1051 1315 3849 history1 5 8 4 4 history1 0.8 7.7 20.1 history1	9 0 58 1 901 1083 978 1262 3461 <b>history2</b> 9 3 2 <b>history2</b> 0.1 4.8 17.4 <b>history2</b>



# **OIL ANALYSIS REPORT**



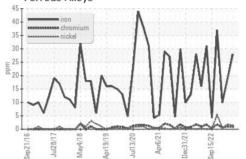


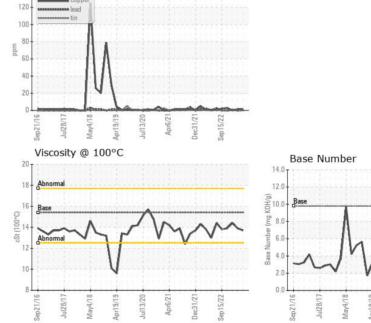
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	13.7	13.9	14.4
GRAPHS						

Ferrous Alloys

Non-ferrous Metals

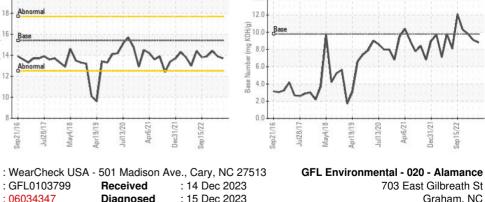
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: 14 Dec 2023

: 15 Dec 2023



Graham, NC US 27253 Contact: richard.belcher@gflenv.com T: (800)207-6618 F: (336)229-0526



Test Package : FLEET Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. \* - 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)

Received

Diagnosed

Diagnostician : Wes Davis

: GFL0103799

: 06034347 : 10789576

Laboratory

Sample No.

Lab Number

Unique Number