

## **OIL ANALYSIS REPORT**



#### Machine Id **2716** Component **Diesel Engine** Fluid **PETRO CANADA DURON SHP 15W40 (40 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 INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0098932	GFL0098914	GFL0099018
Sample Date		Client Info		14 May 2024	25 Apr 2024	29 Mar 2024
Machine Age	hrs	Client Info		13964	13836	13652
Oil Age	hrs	Client Info		13964	8732	8732
Oil Changed		Client Info		N/A	N/A	N/A
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	8	17	16
Chromium	ppm	ASTM D5185m	>5	0	<1	1
Nickel	ppm	ASTM D5185m	>4	0	0	1
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	4	2	2
Lead	ppm	ASTM D5185m	>150	<1	0	2
Copper	ppm	ASTM D5185m	>90	<1	0	1
Tin	ppm	ASTM D5185m	>5	<1	<1	2
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	1
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 1	history1 <1	<1
	ppm ppm		0			
Boron		ASTM D5185m	0 0 60	1	<1 0 56	<1 0 57
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	1 0	<1 0	<1 0 57 1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 53 <1 866	<1 0 56 <1 874	<1 0 57 1 853
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 53 <1 866 984	<1 0 56 <1 874 1202	<1 0 57 1 853 1230
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	1 0 53 <1 866 984 966	<1 0 56 <1 874 1202 1032	<1 0 57 1 853 1230 1110
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	1 0 53 <1 866 984 966 1142	<1 0 56 <1 874 1202 1032 1213	<1 0 57 1 853 1230 1110 1219
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 1270 2060	1 0 53 <1 866 984 966	<1 0 56 <1 874 1202 1032	<1 0 57 1 853 1230 1110
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 0 1010 1070 1150 1270	1 0 53 <1 866 984 966 1142	<1 0 56 <1 874 1202 1032 1213	<1 0 57 1 853 1230 1110 1219
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>	0 0 60 0 1010 1070 1150 1270 2060	1 0 53 <1 866 984 966 1142 3278 current 8	<1 0 56 <1 874 1202 1032 1213 3255 history1 4	<1 0 57 1 853 1230 1110 1219 3419 history2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	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 ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >35	1 0 53 <1 866 984 966 1142 3278 current 8 4	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5	<1 0 57 1 853 1230 1110 1219 3419 history2 6 5
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>	0 0 60 1010 1070 1150 1270 2060	1 0 53 <1 866 984 966 1142 3278 current 8	<1 0 56 <1 874 1202 1032 1213 3255 history1 4	<1 0 57 1 853 1230 1110 1219 3419 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 ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base >35	1 0 53 <1 866 984 966 1142 3278 current 8 4	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5	<1 0 57 1 853 1230 1110 1219 3419 history2 6 5
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 <b>limit/base</b> >35	1 0 53 <1 866 984 966 1142 3278 <u>current</u> 8 4 3 <u>current</u> 0.2	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5 2 2 history1 0.4	<1 0 57 1 853 1230 1110 1219 3419 history2 6 5 3 3 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 TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <b>limit/base</b> >35	1 0 53 <1 866 984 966 1142 3278 current 8 4 3 3 current	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5 2 2 history1	<1 0 57 1 853 1230 1110 1219 3419 history2 6 5 3 3
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 >35 >20 limit/base	1 0 53 <1 866 984 966 1142 3278 <u>current</u> 8 4 3 <u>current</u> 0.2	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5 2 2 history1 0.4	<1 0 57 1 853 1230 1110 1219 3419 history2 6 5 3 3 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	1 0 53 <1 866 984 966 1142 3278 current 8 4 3 current 0.2 6.4	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5 2 history1 0.4 9.4	<1 0 57 1 853 1230 1110 1219 3419 history2 6 5 3 history2 0.4 8.5
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	1 0 53 <1 866 984 966 1142 3278 <u>current</u> 8 4 3 <u>current</u> 0.2 6.4 18.6	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5 2 2 history1 0.4 9.4 20.6	<1 0 57 1 853 1230 1110 1219 3419 6 5 3 6 5 3 history2 0.4 8.5 19.7
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 1270 2060 2060 2060 2060 2060 2060 2060 2	1 0 53 <1 866 984 966 1142 3278 <i>current</i> 8 4 3 <i>current</i> 0.2 6.4 18.6	<1 0 56 <1 874 1202 1032 1213 3255 history1 4 5 2 history1 0.4 9.4 20.6 history1	<1 0 57 1 853 1230 1110 1219 3419 history2 6 5 3 history2 0.4 8.5 19.7 history2

Submitted By: GFL084,GFL842,GFL844,GFL846 - ROBERT THIBAULT Page 1 of 2

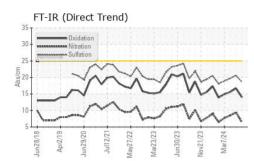


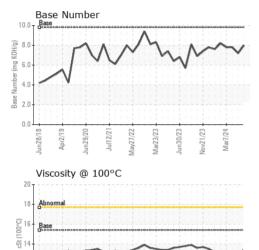
12

Jun28/18

Anr 2/1 C

# **OIL ANALYSIS REPORT**





Aay27/22 Aar23/23 Jun30/23 Vov21/23

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	13.4	12.8	12.7
GRAPHS						

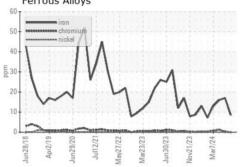
Ferrous Alloys

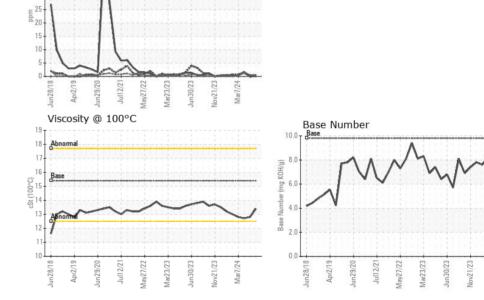
Non-ferrous Metals

Mar7/24

45

40 35 30





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 084 - Clarksville Sample No. : GFL0098932 Received : 29 May 2024 699 Jack Miller Boulevard Lab Number : 06193773 Tested : 30 May 2024 Clarksville, TN Unique Number : 11055896 Diagnosed : 30 May 2024 - Wes Davis US 37042 Test Package : FLEET Contact: ROBERT THIBAULT Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. robert.thibault@gflenv.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (931)552-7276 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F: (931)572-9674

Report Id: GFL084 [WUSCAR] 06193773 (Generated: 05/30/2024 15:57:29) Rev: 1

Submitted By: GFL084,GFL842,GFL844,GFL846 - ROBERT THIBAULT

Page 2 of 2

Mar7/24