

## **OIL ANALYSIS REPORT**

#### Sample Rating Trend

## NORMAL



## Component

Diesel Engine

## PETRO CANADA DURON SHP 15W40 (38 QTS)

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

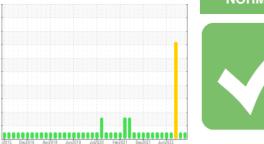
All component wear rates are normal.

#### Contamination

Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

### Fluid Condition

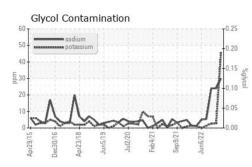
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

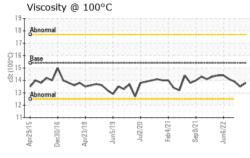


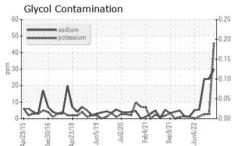
	MATION	method	limit/base	current	history 1	history 2
Sample Number		Client Info		GFL0071544	GFL0053181	GFL0061640
Sample Date		Client Info		21 Jun 2023	14 Feb 2023	14 Dec 2022
Machine Age	hrs	Client Info		96121	96121	96121
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	SEVERE
CONTAMINAT	ION	method	limit/base	current	history 1	history 2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METAL	S	method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>110	25	40	<b>1</b> 33
Chromium	ppm	ASTM D5185m	>4	3	2	<b>9</b>
Nickel	ppm	ASTM D5185m	>2	1	0	0
Titanium	ppm	ASTM D5185m		2	<1	2
Silver	ppm	ASTM D5185m		1	<1	0
Aluminum	ppm	ASTM D5185m		6	6	<u> </u>
Lead	ppm	ASTM D5185m	>45	15	6	5
Copper	ppm	ASTM D5185m	>85	3	<1	2
Tin	ppm	ASTM D5185m	>4	2	<1	<1
Vanadium	ppm	ASTM D5185m		1	<1	0
Cadmium	ppm	ASTM D5185m		2	0	0
ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m	0	2	8	0
Barium	ppm	ASTM D5185m	0	18	0	1
Molybdenum	ppm	ASTM D5185m	60	51	69	67
Manganese	ppm	ASTM D5185m	0	2	-	
	1-1-	AO INI DO IODIII	0		<1	2
Magnesium	ppm	ASTM D5185m	1010	728	920	916
Calcium	ppm ppm	ASTM D5185m ASTM D5185m	1010 1070	728 849	920 1241	916 1188
Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150	728 849 783	920 1241 1060	916 1188 1027
Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270	728 849 783 959	920 1241 1060 1344	916 1188 1027 1287
Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060	728 849 783	920 1241 1060 1344 3687	916 1188 1027 1287 3562
Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	1010 1070 1150 1270 2060 limit/base	728 849 783 959 2651 current	920 1241 1060 1344 3687 history 1	916 1188 1027 1287 3562 history 2
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	1010 1070 1150 1270 2060	728 849 783 959 2651 current 12	920 1241 1060 1344 3687 history 1 18	916 1188 1027 1287 3562 history 2
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >30	728 849 783 959 2651 current 12 30	920 1241 1060 1344 3687 history 1 18 24	916 1188 1027 1287 3562 history 2 68 24
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base	728 849 783 959 2651 <u>current</u> 12 30 46	920 1241 1060 1344 3687 history 1 18 24 3	916 1188 1027 1287 3562 <b>history 2</b> ● 68 24 3
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	1010 1070 1150 1270 2060 limit/base >30	728 849 783 959 2651 current 12 30	920 1241 1060 1344 3687 history 1 18 24	916 1188 1027 1287 3562 history 2 ● 68 24
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 method	1010 1070 1150 1270 2060 limit/base >30	728 849 783 959 2651 <u>current</u> 12 30 46	920 1241 1060 1344 3687 history 1 18 24 3	916 1188 1027 1287 3562 history 2 ● 68 24 3
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982	1010 1070 1150 1270 2060 <i>limit/base</i> >30 >20	728 849 783 959 2651 <u>current</u> 12 30 46 NEG	920 1241 1060 1344 3687 history 1 18 24 3 NEG history 1 0.5	916 1188 1027 1287 3562 history 2 68 24 3 NEG
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 method	1010 1070 1150 1270 2060 <b>limit/base</b> >30 >20	728 849 783 959 2651 <i>current</i> 12 30 46 <b>NEG</b>	920 1241 1060 1344 3687 history 1 18 24 3 NEG history 1	916 1188 1027 1287 3562 history 2 68 24 3 8 NEG history 2
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm TS ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 <b>method</b> *ASTM D7844	1010 1070 1150 1270 2060 <i>limit/base</i> >30 <i>limit/base</i> >30	728 849 783 959 2651 current 12 30 46 NEG current 1.3	920 1241 1060 1344 3687 history 1 18 24 3 NEG history 1 0.5	916 1188 1027 1287 3562 history 2 68 24 3 NEG NEG history 2 1.1
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 *ASTM D2982 *ASTM D7844 *ASTM D7844	1010 1070 1150 1270 2060 imit/base >30 >20 imit/base >3 >20	728 849 783 959 2651 <u>current</u> 12 30 46 NEG <u>current</u> 1.3 13.6	920 1241 1060 1344 3687 history 1 18 24 3 NEG history 1 0.5 8.6	916 1188 1027 1287 3562 history 2 68 24 3 NEG history 2 1.1 1.2.2
Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm TS ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D2982 *ASTM D2982 *ASTM D7844 *ASTM D7844	1010 1070 1150 22060 <b>limit/base</b> >30 >20 <b>limit/base</b> >3 >20 >3	728 849 783 959 2651 <i>current</i> 12 30 46 NEG <i>current</i> 1.3 1.3 6 26.5	920 1241 1060 1344 3687 <b>history 1</b> 18 24 3 NEG <b>history 1</b> 0.5 8.6 20.2	916 1188 1027 1287 3562 <b>history 2</b> 68 24 3 NEG NEG 1.1 1.1 12.2 24.0



# **OIL ANALYSIS REPORT**

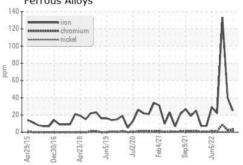


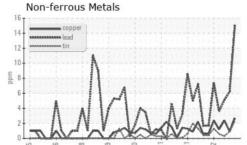


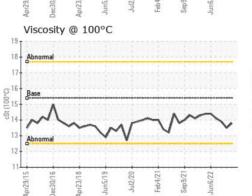


VISUAL		method	limit/base	current	history 1	history 2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	history 1	history 2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.5	13.9
GRAPHS						

Ferrous Alloys







Sen 9/21

Apr29/15

Laboratory

Sample No.

Lab Number

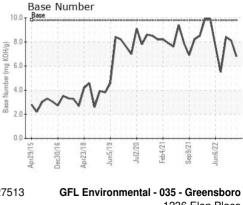
Unique Number

Dec30/

: GFL0071544

: 05888809

: 10539292



: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 03 Jul 2023 1236 Elon Place Diagnosed High Point, NC : 06 Jul 2023 Diagnostician : Angela Borella US 27263 Test Package : FLEET (Additional Tests: Glycol) Contact: JORGE COSTA 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] 05888809 (Generated: 07/06/2023 14:09:09) Rev: 1

Certificate L2367

Submitted By: JORGE COSTA