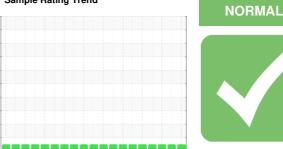


# **OIL ANALYSIS REPORT**

### Sample Rating Trend





429032-402478

Component

Diesel Engine

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

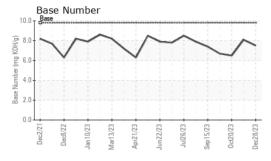
## **Fluid Condition**

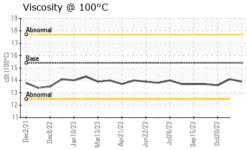
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0090978	GFL0103042	GFL0098819
Sample Date		Client Info		28 Dec 2023	28 Nov 2023	20 Oct 2023
Machine Age	hrs	Client Info		12787	12628	12500
Oil Age	hrs	Client Info		159	128	37
Oil Changed		Client Info		Changed	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	3	<1	7
Chromium	ppm	ASTM D5185m	>20	0	0	, <1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m		0	0	<1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	<1	2	2
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	1	0	2
Tin	ppm	ASTM D5185m	>15	- <1	<1	<1
Vanadium	ppm	ASTM D5185m	7 10	0	0	0
Cadmium	ppm	ASTM D5185m		0	0	<1
	pp					
ADDITIVES		method	limit/base	current	history1	historv2
ADDITIVES	nnm	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	0	1	2	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	1 0	2	2
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	1 0 59	2 0 58	2 3 68
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	1 0 59	2 0 58 <1	2 3 68 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	1 0 59 0 1000	2 0 58 <1 932	2 3 68 0 913
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	1 0 59 0 1000 1063	2 0 58 <1 932 986	2 3 68 0 913 1048
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	1 0 59 0 1000 1063 1065	2 0 58 <1 932 986 1101	2 3 68 0 913 1048 938
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m 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 59 0 1000 1063 1065 1326	2 0 58 <1 932 986 1101 1301	2 3 68 0 913 1048 938 1229
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	0 0 60 0 1010 1070 1150	1 0 59 0 1000 1063 1065	2 0 58 <1 932 986 1101 1301 3264	2 3 68 0 913 1048 938 1229 2940
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 59 0 1000 1063 1065 1326 3206	2 0 58 <1 932 986 1101 1301 3264 history1	2 3 68 0 913 1048 938 1229 2940 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	1 0 59 0 1000 1063 1065 1326 3206 current	2 0 58 <1 932 986 1101 1301 3264 history1	2 3 68 0 913 1048 938 1229 2940 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	1 0 59 0 1000 1063 1065 1326 3206 current 3	2 0 58 <1 932 986 1101 1301 3264 history1 3	2 3 68 0 913 1048 938 1229 2940 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	1 0 59 0 1000 1063 1065 1326 3206 current 3 2 <1	2 0 58 <1 932 986 1101 1301 3264 history1 3 2	2 3 68 0 913 1048 938 1229 2940 history2 4 4
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	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	1 0 59 0 1000 1063 1065 1326 3206 current 3 2 <1	2 0 58 <1 932 986 1101 1301 3264 history1 3 2 <1	2 3 68 0 913 1048 938 1229 2940 history2 4 4
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  method  *ASTM D5185m  *ASTM D5185m  ASTM D5185m  *ASTM D5185m  *ASTM D5185m  *ASTM D5185m  *ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	1 0 59 0 1000 1063 1065 1326 3206 current 3 2 <1	2 0 58 <1 932 986 1101 1301 3264 history1 3 2 <1 history1 0.2	2 3 68 0 913 1048 938 1229 2940 history2 4 4 history2
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  Method  *ASTM D5185m ASTM D5185m	0 0 0 0 1010 1150 1270 2060 limit/base >25 >20 limit/base	1 0 59 0 1000 1063 1065 1326 3206 current 3 2 <1 current 0.2 6.8	2 0 58 <1 932 986 1101 1301 3264 history1 3 2 <1 history1 0.2 5.5	2 3 68 0 913 1048 938 1229 2940 history2 4 4 4 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  method  *ASTM D5185m  *ASTM D5185m  ASTM D5185m  *ASTM D5185m  *ASTM D5185m  *ASTM D5185m  *ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	1 0 59 0 1000 1063 1065 1326 3206 current 3 2 <1	2 0 58 <1 932 986 1101 1301 3264 history1 3 2 <1 history1 0.2	2 3 68 0 913 1048 938 1229 2940 history2 4 4 history2
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  Method  *ASTM D5185m ASTM D5185m	0 0 0 0 1010 1150 1270 2060 limit/base >25 >20 limit/base	1 0 59 0 1000 1063 1065 1326 3206 current 3 2 <1 current 0.2 6.8	2 0 58 <1 932 986 1101 1301 3264 history1 3 2 <1 history1 0.2 5.5	2 3 68 0 913 1048 938 1229 2940 history2 4 4 4 history2
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  Method ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30	1 0 59 0 1000 1063 1065 1326 3206 current 3 2 <1 current 0.2 6.8 18.5	2 0 58 <1 932 986 1101 1301 3264 history1 3 2 <1 history1 0.2 5.5 17.8	2 3 68 0 913 1048 938 1229 2940 history2 4 4 4 history2 0.4 8.3 20.0



## **OIL ANALYSIS REPORT**

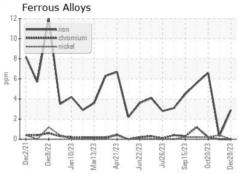


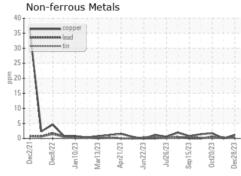


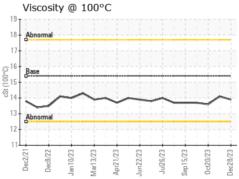
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

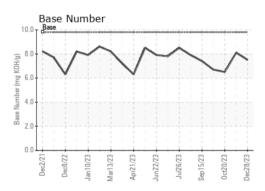
FLUID PROPE	KIIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	14.1	13.6

## **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number Test Package : FLEET

Unique Number : 10810046

: GFL0090978 : 06049438

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 02 Jan 2024 Diagnosed

: 04 Jan 2024 Diagnostician : Wes Davis

GFL Environmental - 814 - Little Rock Hauling

4005 Hwy 161 N. Little Rock, AR US 72117

Contact: Brad Manager

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)

T:

F: