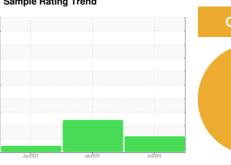


# **OIL ANALYSIS REPORT**

Sample Rating Trend





Machine Id 826045 Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

## DIAGNOSIS

### Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

### Wear

All component wear rates are normal.

### Contamination

Sodium and/or potassium levels are high.

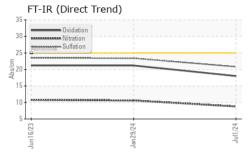
### Fluid Condition

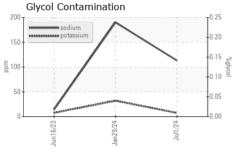
The BN result indicates that there is suitable alkalinity remaining in the oil.

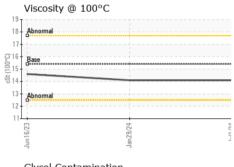
AL) Junž023 Janž024 Juč024						
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0119880	GFL0103602	GFL0085320
Sample Date		Client Info		01 Jul 2024	29 Jan 2024	16 Jun 2023
Machine Age	hrs	Client Info		24103	24103	24103
Oil Age	hrs	Client Info		600	498	583
Oil Changed		Client Info		N/A	N/A	Changed
Sample Status				ATTENTION	ABNORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	16	40	31
Chromium	ppm	ASTM D5185m	>20	<1	2	1
Nickel	ppm	ASTM D5185m	>4	0	1	<1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	2	10	6
Lead	ppm	ASTM D5185m	>40	0	1	<1
Copper	ppm	ASTM D5185m	>330	<1	2	2
Tin	ppm	ASTM D5185m	>15	0	<1	<1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 2	history1 4	history2 2
	ppm				•	
Boron	• •	ASTM D5185m	0	2	4	2
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	2 0	4 <1	2 <1
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 0 61	4 <1 68	2 <1 60
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 0 61 <1	4 <1 68 <1	2 <1 60 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 0 61 <1 988	4 <1 68 <1 923	2 <1 60 <1 1000
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	2 0 61 <1 988 1086	4 <1 68 <1 923 1042	2 <1 60 <1 1000 1148
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 ASTM D5185m	0 0 60 0 1010 1070 1150	2 0 61 <1 988 1086 1068	4 <1 68 <1 923 1042 1002	2 <1 60 <1 1000 1148 1026
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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	2 0 61 <1 988 1086 1068	4 <1 68 <1 923 1042 1002 1224	2 <1 60 <1 1000 1148 1026 1297
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 ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	2 0 61 <1 988 1086 1068 1300 3564	4 <1 68 <1 923 1042 1002 1224 3016	2 <1 60 <1 1000 1148 1026 1297 3492
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	2 0 61 <1 988 1086 1068 1300 3564	4 <1 68 <1 923 1042 1002 1224 3016 history1	2 <1 60 <1 1000 1148 1026 1297 3492 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	2 0 61 <1 988 1086 1068 1300 3564 current	4 <1 68 <1 923 1042 1002 1224 3016 history1 9	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5
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	2 0 61 <1 988 1086 1068 1300 3564 current 5	4 <1 68 <1 923 1042 1002 1224 3016 history1 9	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	2 0 61 <1 988 1086 1068 1300 3564 current 5 113	4 <1 68 <1 923 1042 1002 1224 3016 history1 9  190 32	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14 8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	2 0 61 <1 988 1086 1068 1300 3564 current 5 113 7	4 <1 68 <1 923 1042 1002 1224 3016 history1 9 ▲ 190 ▲ 32 NEG	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14 8 NEG
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm	ASTM D5185m *ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	2 0 61 <1 988 1086 1068 1300 3564 current 5 113 7 NEG current	4 <1 68 <1 923 1042 1002 1224 3016 history1 9 ▲ 190 ▲ 32 NEG history1	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14 8 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm	ASTM D5185m *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D7844	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	2 0 61 <1 988 1086 1068 1300 3564 current 5 113 7 NEG	4 <1 68 <1 923 1042 1002 1224 3016 history1 9 ▲ 190 ▲ 32 NEG history1 0.6	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14 8 NEG history2 0.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20	2 0 61 <1 988 1086 1068 1300 3564 current 5 113 7 NEG current 0.3 8.8	4 <1 68 <1 923 1042 1002 1224 3016 history1 9  190 32 NEG history1 0.6 10.6	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14 8 NEG history2 0.8 10.8
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D2982  method  *ASTM D7844 *ASTM D7624 *ASTM D7415  method	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30 limit/base	2 0 61 <1 988 1086 1068 1300 3564 current 5 113 7 NEG current 0.3 8.8 20.8	4 <1 68 <1 923 1042 1002 1224 3016 history1 9  190 190 10.6 10.6 23.4 history1	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14 8 NEG history2 0.8 10.8 23.5 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30	2 0 61 <1 988 1086 1068 1300 3564 current 5 113 7 NEG current 0.3 8.8 20.8	4 <1 68 <1 923 1042 1002 1224 3016 history1 9 ▲ 190 ▲ 32 NEG history1 0.6 10.6 23.4	2 <1 60 <1 1000 1148 1026 1297 3492 history2 5 14 8 NEG history2 0.8 10.8 23.5

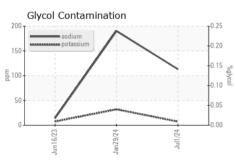


## **OIL ANALYSIS REPORT**





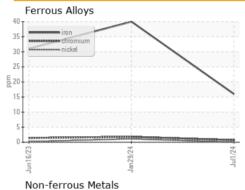


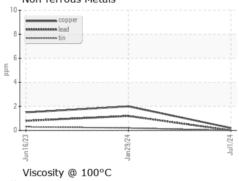


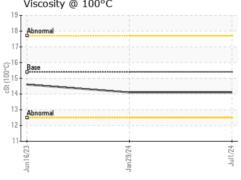
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

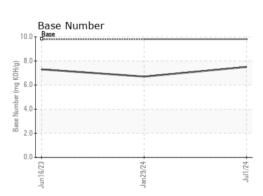
FLUID PROPI	EHILES					
Visc @ 100°C	cSt	ASTM D445	15.4	14.1	14.1	14.6

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

Lab Number : 06229458 Unique Number : 11112951

: GFL0119880

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received

: 05 Jul 2024 **Tested** Diagnosed

: 09 Jul 2024 : 09 Jul 2024 - Sean Felton

GFL Environmental - 958 - Tri County HC Morton 1090 W. Jefferson St. Morton, IL US 61550

Test Package : FLEET ( Additional Tests: Glycol ) 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)

Contact: Bryan Link blink@gflenv.com T:

F: