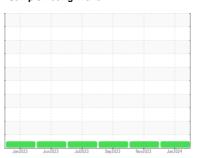


# **OIL ANALYSIS REPORT**

## Sample Rating Trend



NORMAL



Machine Id 228077 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

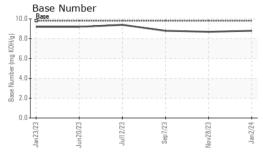
## **Fluid Condition**

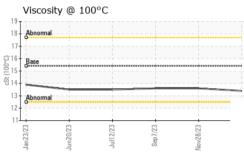
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   imit/base   current   history1   history2	āAL)		Jan 2023	Jun2023 Jul2023	Sep2023 Nov2023	Jan 2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         23670         23670         23670         23670         600           Oil Age         hrs         Client Info         1200         23670         600         23670         600           Oil Changed         Client Info         Changed         Not Changed         Changed         Not Changed	Sample Number		Client Info		GFL0100887	GFL0086809	GFL0086867
Oil Age         hrs         Client Info         1200         23670         600           Oil Changed Sample Status         Client Info         Changed Not Changed Not Changed NormAL N	Sample Date		Client Info		02 Jan 2024	28 Nov 2023	07 Sep 2023
Oil Changed Sample Status         Client Info         Changed NORMAL         Not Changed NORMAL         Changed NORMAL         NORMAL         Changed NORMAL         Changed NORMAL         Changed NORMAL         NOR	Machine Age	hrs	Client Info		23670	23670	23670
NORMAL   NORMAL   NORMAL   NORMAL	Oil Age	hrs	Client Info		1200	23670	600
Fuel	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imit/base         current         history1         history2           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         6         3         6           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         1         <1         <1           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >40         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >2         0         0         0           Titanium         ppm         ASTM D5185m         >2         <1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	6	3	6
Titanium         ppm         ASTM D5185m         >2         <1         <1         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         <1         <1         <1           Lead         ppm         ASTM D5185m         >40         <1         0         <1           Copper         ppm         ASTM D5185m         >330         1         <1         1           Tin         ppm         ASTM D5185m         >15         1         0         <1           Vanadium         ppm         ASTM D5185m         >15         1         0         <1           Cadmium         ppm         ASTM D5185m         0         6         6         6         6           Boron         ppm         ASTM D5185m         0         6         6         6         6           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         4         58         61           Manganesium         ppm         ASTM D5185m         1010	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	0
Aluminum         ppm         ASTM D5185m         >25         <1         <1         <1           Lead         ppm         ASTM D5185m         >40         <1	Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper         ppm         ASTM D5185m         >330         1         <1         1           Tin         ppm         ASTM D5185m         >15         1         0         <1	Aluminum	ppm	ASTM D5185m	>25	<1	<1	<1
Tin	Lead	ppm	ASTM D5185m	>40	<1	0	<1
Vanadium         ppm         ASTM D5185m         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	Copper	ppm	ASTM D5185m	>330	1	<1	1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         6         6         6         6           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>15	1	0	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	<1	<1
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         64         58         61           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         64         58         61           Manganese         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         1010         980         881         1028           Calcium         ppm         ASTM D5185m         1070         1105         1064         1180           Phosphorus         ppm         ASTM D5185m         1150         1075         968         1069           Zinc         ppm         ASTM D5185m         1270         1269         1138         1299           Sulfur         ppm         ASTM D5185m         2060         3160         2876         3843           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         >20         0         0         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7414         >3<	Boron	ppm	ASTM D5185m	0	6	6	6
Manganese         ppm         ASTM D5185m         0         <1         0         0           Magnesium         ppm         ASTM D5185m         1010         980         881         1028           Calcium         ppm         ASTM D5185m         1070         1105         1064         1180           Phosphorus         ppm         ASTM D5185m         1150         1075         968         1069           Zinc         ppm         ASTM D5185m         1270         1269         1138         1299           Sulfur         ppm         ASTM D5185m         2060         3160         2876         3843           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         >20         0         0         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         980         881         1028           Calcium         ppm         ASTM D5185m         1070         1105         1064         1180           Phosphorus         ppm         ASTM D5185m         1150         1075         968         1069           Zinc         ppm         ASTM D5185m         1270         1269         1138         1299           Sulfur         ppm         ASTM D5185m         2060         3160         2876         3843           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         4         3         2           Potassium         ppm         ASTM D5185m         >20         0         0         <1	Molybdenum	ppm	ASTM D5185m	60	64	58	61
Calcium         ppm         ASTM D5185m         1070         1105         1064         1180           Phosphorus         ppm         ASTM D5185m         1150         1075         968         1069           Zinc         ppm         ASTM D5185m         1270         1269         1138         1299           Sulfur         ppm         ASTM D5185m         2060         3160         2876         3843           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         >20         0         0         <1	Manganese	ppm	ASTM D5185m	0	<1	0	0
Phosphorus         ppm         ASTM D5185m         1150         1075         968         1069           Zinc         ppm         ASTM D5185m         1270         1269         1138         1299           Sulfur         ppm         ASTM D5185m         2060         3160         2876         3843           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         >20         0         0         <1	Magnesium	ppm	ASTM D5185m	1010	980	881	1028
Zinc         ppm         ASTM D5185m         1270         1269         1138         1299           Sulfur         ppm         ASTM D5185m         2060         3160         2876         3843           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         4         3         2           Potassium         ppm         ASTM D5185m         >20         0         0         <1	Calcium	ppm	ASTM D5185m	1070	1105	1064	1180
Sulfur         ppm         ASTM D5185m         2060         3160         2876         3843           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         20         0         0         <1	Phosphorus	ppm	ASTM D5185m	1150	1075	968	1069
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         4         3         2           Potassium         ppm         ASTM D5185m         >20         0         0         <1	Zinc	ppm	ASTM D5185m	1270	1269	1138	1299
Silicon         ppm         ASTM D5185m         >25         2         2         3           Sodium         ppm         ASTM D5185m         4         3         2           Potassium         ppm         ASTM D5185m         >20         0         0         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         5.9         5.3         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         17.8         16.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         13.4         12.6	Sulfur	ppm	ASTM D5185m	2060	3160	2876	3843
Sodium         ppm         ASTM D5185m         4         3         2           Potassium         ppm         ASTM D5185m         >20         0         0         <1	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         0         0         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         5.9         5.3         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         17.8         16.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         13.4         12.6	Silicon	ppm	ASTM D5185m	>25	2	2	3
INFRA-RED	Sodium	ppm	ASTM D5185m		4	3	2
Soot %         %         *ASTM D7844 >3         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624 >20         5.9         5.3         5.9           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.7         17.8         16.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         13.9         13.4         12.6	Potassium	ppm	ASTM D5185m	>20	0	0	<1
Nitration         Abs/cm         *ASTM D7624         >20         5.9         5.3         5.9           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         17.8         16.8           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         13.4         12.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.7         17.8         16.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         13.4         12.6	Soot %	%	*ASTM D7844	>3	0.1	0.1	0.1
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm 'ASTM D7414 >25 13.9 13.4 12.6	Nitration	Abs/cm	*ASTM D7624	>20	5.9	5.3	5.9
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.9</b> 13.4 12.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.7	17.8	16.8
	FLUID DEGRAI	OATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.9	13.4	12.6



# **OIL ANALYSIS REPORT**

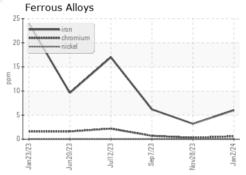


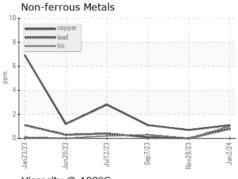


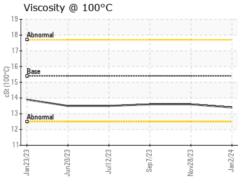
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

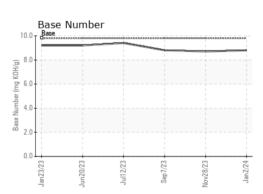
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.6	13.6	

## **GRAPHS**













Certificate L2367

Laboratory Sample No.

Lab Number **Unique Number** 

: GFL0100887 : 06050612

: 10816561 Test Package : FLEET

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 04 Jan 2024

Diagnosed : 04 Jan 2024 Diagnostician : Wes Davis

GFL Environmental - 419 - Metro Saginaw

6950 N Michigan Saginaw, MI US 48604 Contact: Jeremy Hines

jhines@gflenv.com T: (800)684-1277

\* - 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)