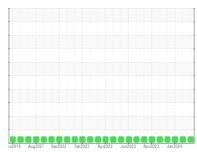


# **OIL ANALYSIS REPORT**

### Sample Rating Trend



NORMAL



Machine Id **929088-205308** 

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

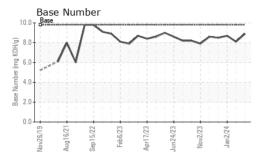
## **Fluid Condition**

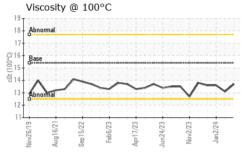
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   limit/bass   current   history1   history2	GAL)		3v2019 Aug	021 Sep2022 Feb2023	Apr2023 Jun2023 Nov2023	Jan 2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   700   600   700   700   600   700   700   600   700   700   600   700	Sample Number		Client Info		GFL0109226	GFL0098354	GFL0098322
Oil Age         hrs         Client Info         700         600         700           Oil Changed         Client Info         Not Changd         Changed         Not Changd           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limil/base         method         Imiliary           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG         NEG           UVEAR METALS         method         limil/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         3         7         2           Chromium         ppm         ASTM D5185m         >100         3         7         2           Chromium         ppm         ASTM D5185m         >20         0         <1         0           Nickel         ppm         ASTM D5185m         >3         0         0         0           Itrainium         ppm         ASTM D5185m         >40         <1         <1         <1           Lead         ppm         ASTM D5185m	Sample Date		Client Info		10 Feb 2024	24 Jan 2024	02 Jan 2024
Oil Changed   Cilient Info   Not Changed   NORMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		12426	12265	12112
Sample Status	Oil Age	hrs	Client Info		700	600	700
CONTAMINATION	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Fuel         WC Method         >5         <1.0	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         3         7         2           Chromium         ppm         ASTM D5185m         >20         0         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         3         7         2           Chromium         ppm         ASTM D5185m         >20         0         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         ≥20         0         <1         0           Nickel         ppm         ASTM D5185m         >4         0         0         0           Titanium         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >20         <1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	3	7	2
Titanium	Chromium	ppm	ASTM D5185m	>20	0	<1	0
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	0
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead         ppm         ASTM D5185m         >40         <1         <1         0           Copper         ppm         ASTM D5185m         >330         0         <1         0           Tin         ppm         ASTM D5185m         >15         0         <1         0           Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         <1         <1           ADDITIVES         method         limit/base         current         history1         history2           Barium         ppm         ASTM D5185m         0         0         0         0           Barium         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         <1         0           Calcium         ppm         ASTM D5185m         100         1074         986         981	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >330         0         <1         0           Tin         ppm         ASTM D5185m         >15         0         <1	Aluminum	ppm	ASTM D5185m	>20	<1	<1	<1
Tin         ppm         ASTM D5185m         >15         0         <1         0           Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         <1         <1           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         <1         0           Magnesium         ppm         ASTM D5185m         1010         1025         972         930           Calcium         ppm         ASTM D5185m         1070         1074         986         981           Phosphorus         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330<	Lead	ppm	ASTM D5185m	>40	<1	<1	0
Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         <1         <1           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         <1         0           Magnesium         ppm         ASTM D5185m         1070         1074         986         981           Calcium         ppm         ASTM D5185m         1170         1115         1004         1035           Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current	Copper	ppm	ASTM D5185m	>330	0	<1	0
Cadmium         ppm         ASTM D5185m         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>15	0	<1	
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron	Cadmium	ppm	ASTM D5185m		0	<1	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         60         53         57           Manganese         ppm         ASTM D5185m         0         0         <1         0           Magnesium         ppm         ASTM D5185m         1010         1025         972         930           Calcium         ppm         ASTM D5185m         1070         1074         986         981           Phosphorus         ppm         ASTM D5185m         1150         1115         1004         1035           Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         20         0         <1         0           INFRA-RED         method         limit/base <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         60         53         57           Manganese         ppm         ASTM D5185m         0         0         <1         0           Magnesium         ppm         ASTM D5185m         1010         1025         972         930           Calcium         ppm         ASTM D5185m         1070         1074         986         981           Phosphorus         ppm         ASTM D5185m         1150         1115         1004         1035           Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         >20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         % ASTM D7624         >20	Boron	ppm					
Manganese         ppm         ASTM D5185m         0         0         <1         0           Magnesium         ppm         ASTM D5185m         1010         1025         972         930           Calcium         ppm         ASTM D5185m         1070         1074         986         981           Phosphorus         ppm         ASTM D5185m         1150         1115         1004         1035           Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         >20         0         <1		ppm	ASTM D5185m		-		
Magnesium         ppm         ASTM D5185m         1010         1025         972         930           Calcium         ppm         ASTM D5185m         1070         1074         986         981           Phosphorus         ppm         ASTM D5185m         1150         1115         1004         1035           Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         25         3         3         2           Sodium         ppm         ASTM D5185m         20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         5.0         6.6         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.4         18.6         17.3           FLUID DEGRADATION         *ASTM D7414	-						
Calcium         ppm         ASTM D5185m         1070         1074         986         981           Phosphorus         ppm         ASTM D5185m         1150         1115         1004         1035           Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         2         3         2           Potassium         ppm         ASTM D5185m         >20         0         <1	-				-		
Phosphorus         ppm         ASTM D5185m         1150         1115         1004         1035           Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         2         3         2           Potassium         ppm         ASTM D5185m         >20         0         <1	_						
Zinc         ppm         ASTM D5185m         1270         1323         1203         1229           Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         2         3         2           Potassium         ppm         ASTM D5185m         >20         0         <1							
Sulfur         ppm         ASTM D5185m         2060         3330         2961         2997           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         2         3         2           Potassium         ppm         ASTM D5185m         >20         0         <1	·						
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         2           Sodium         ppm         ASTM D5185m         2         3         2           Potassium         ppm         ASTM D5185m         >20         0         <1							
Silicon         ppm         ASTM D5185m         >25         3         3         2           Sodium         ppm         ASTM D5185m         2         3         2           Potassium         ppm         ASTM D5185m         >20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.0         6.6         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.4         18.6         17.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         14.1         13.3					3330		
Sodium         ppm         ASTM D5185m         2         3         2           Potassium         ppm         ASTM D5185m         >20         0         <1		ITS				•	
Potassium         ppm         ASTM D5185m         >20         0         <1         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.0         6.6         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.4         18.6         17.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         14.1         13.3				>25			
INFRA-RED		ppm					
Soot %         %         *ASTM D7844 >3         0.1         0.3         0.2           Nitration         Abs/cm         *ASTM D7624 >20         5.0         6.6         5.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.4         18.6         17.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         12.9         14.1         13.3	Potassium	ppm	ASTM D5185m	>20	0	<1	0
Nitration         Abs/cm         *ASTM D7624         >20         5.0         6.6         5.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.4         18.6         17.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         14.1         13.3	INFRA-RED			limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415 >30         17.4         18.6         17.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         12.9         14.1         13.3	Soot %						
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2512.914.113.3		Abs/cm	*ASTM D7624	>20	5.0		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.4	18.6	17.3
	FLUID DEGRAI	OITAC	method	limit/base	current	history1	history2
<b>Base Number (BN)</b> mg KOH/g ASTM D2896 9.8 <b>8.9</b> 8.1 8.7	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.9	14.1	13.3
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.9	8.1	8.7



## **OIL ANALYSIS REPORT**

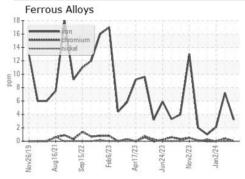


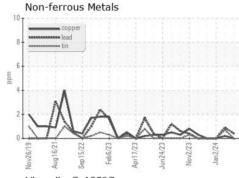


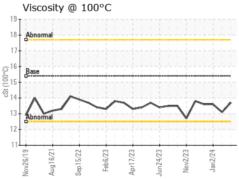
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

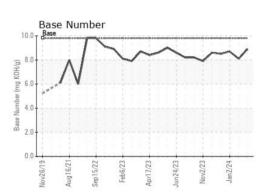
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.1	13.6

## **GRAPHS**













Certificate L2367

Laboratory Sample No.

Test Package : FLEET

: GFL0109226 Lab Number : 06092666 Unique Number: 10885519

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 19 Feb 2024

**Tested** : 20 Feb 2024 Diagnosed : 20 Feb 2024 - Wes Davis

GFL Environmental - 822 - Springfield Hauling

2120 West Bennett Street

Springfield, MO US 65807

Contact: Dennis Moore dennis.moore@gflenv.com

To discuss this sample report, contact Customer Service at 1-800-237-1369. T: (417)403-3641

\* - 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)