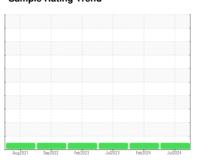


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id **526015-728** 

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

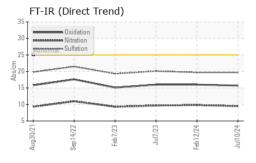
## **Fluid Condition**

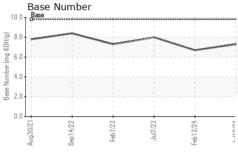
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

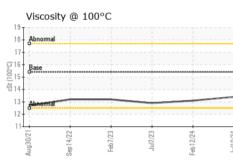
SAMPLE INFORMATION   method   limit/base   current   history1   history2   Sample Number   Client Info   10 Jul 2024   12 Feb 2024   07 Jul 2023   12 Feb 2024   07 Jul 2023   12 Feb 2024   07 Jul 2023   13 Feb 2024   07 Jul 2023   07 Feb 2024   07 Jul	JAL)		Aug2021	Sep2022 Feb2023	Jul2023 Feb2024	Jul2024	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0124159	GFL0099630	GFL0030396
Machine Age         hrs         Client Info         0         600         580           Oil Age         hrs         Client Info         0         600         580           Oil Changed         Client Info         Changed Cha			Client Info		10 Jul 2024	12 Feb 2024	07 Jul 2023
Oil Age         hrs         Client Info         Changed         Changed <t< th=""><th></th><th>hrs</th><th>Client Info</th><th></th><th>15200</th><th>14560</th><th></th></t<>		hrs	Client Info		15200	14560	
Sample Status		hrs	Client Info		0	600	580
Sample Status	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	-				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         13         15         15           Chromium         ppm         ASTM D5185m         >20         <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
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         <1           Nickel         ppm         ASTM D5185m         >4         0         0         0           Tittanium         ppm         ASTM D5185m         >3         0         0         0           Silver         ppm         ASTM D5185m         >20         1         3         4           Lead         ppm         ASTM D5185m         >20         1         4         2           Copper         ppm         ASTM D5185m         >40         1         4         2           Copper         ppm         ASTM D5185m         >330         <1	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	13	15	15
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	0
Altuminum         ppm         ASTM D5185m         >20         1         3         4           Lead         ppm         ASTM D5185m         >40         1         4         2           Copper         ppm         ASTM D5185m         >330         <1	Titanium	ppm	ASTM D5185m		<1	<1	<1
Lead         ppm         ASTM D5185m         >40         1         4         2           Copper         ppm         ASTM D5185m         >330         <1         <1         <1           Tin         ppm         ASTM D5185m         0         <1         <1           Vanadium         ppm         ASTM D5185m         0         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         <1         <1           Cadmium         ppm         ASTM D5185m         0         2         6         8           Barium         ppm         ASTM D5185m         0         2         6         8           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         2         6         8           Barium         ppm         ASTM D5185m         0         21         <1         <1           Magnesium         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1070         1161         1231         1203	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >330         <1         <1         <1           Tin         ppm         ASTM D5185m         >15         0         <1	Aluminum	ppm	ASTM D5185m	>20	1	3	4
Tin         ppm         ASTM D5185m         >15         0         <1         <1           Vanadium         ppm         ASTM D5185m         0         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         6         8           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         59         68         63           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         955         1016         970           Calcium         ppm         ASTM D5185m         1070         1161         1231         1203           Phosphorus         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089	Lead	ppm	ASTM D5185m	>40	1	4	2
Vanadium         ppm         ASTM D5185m         0         <1         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         6         8           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1070         1161         1231         1203           Phosphorus         ppm         ASTM D5185m         1150         1028         1093         1039           Zinc         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current	Copper	ppm	ASTM D5185m	>330	<1	<1	<1
Cadmium         ppm         ASTM D5185m         0	Tin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	<1
Boron         ppm         ASTM D5185m         0         2         6         8           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         59         68         63           Manganese         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         59         68         63           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         59         68         63           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         955         1016         970           Calcium         ppm         ASTM D5185m         1070         1161         1231         1203           Phosphorus         ppm         ASTM D5185m         1150         1028         1093         1039           Zinc         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844<	Boron	ppm	ASTM D5185m	0		6	8
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         955         1016         970           Calcium         ppm         ASTM D5185m         1070         1161         1231         1203           Phosphorus         ppm         ASTM D5185m         1150         1028         1093         1039           Zinc         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM	Barium	ppm				-	· ·
Magnesium         ppm         ASTM D5185m         1010         955         1016         970           Calcium         ppm         ASTM D5185m         1070         1161         1231         1203           Phosphorus         ppm         ASTM D5185m         1150         1028         1093         1039           Zinc         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415		ppm					
Calcium         ppm         ASTM D5185m         1070         1161         1231         1203           Phosphorus         ppm         ASTM D5185m         1150         1028         1093         1039           Zinc         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION         method         l	-	ppm	ASTM D5185m				
Phosphorus         ppm         ASTM D5185m         1150         1028         1093         1039           Zinc         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7644         >3         0.4         0.4         0.4           Nitration         Abs/.1mm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION         method <td< td=""><td>-</td><td>ppm</td><td></td><td></td><th></th><td></td><td></td></td<>	-	ppm					
Zinc         ppm         ASTM D5185m         1270         1243         1303         1306           Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7644         >3         0.4         0.4         0.4           Nitration         Abs/.1mm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D		ppm					
Sulfur         ppm         ASTM D5185m         2060         3355         3089         3671           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         16.0         16.0							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         16.0         16.0							
Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         16.0         16.0			ASTM D5185m	2060	3355	3089	3671
Sodium         ppm         ASTM D5185m         2         1         2           Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         16.0         16.0		ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         16.0         16.0				>25			
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         16.0         16.0		ppm					
Soot %         %         *ASTM D7844 >3         0.4         0.4         0.4           Nitration         Abs/cm         *ASTM D7624 >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.7         19.7         20.1           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.7         16.0         16.0	Potassium	ppm	ASTM D5185m	>20	2	3	8
Nitration         Abs/cm         *ASTM D7624         >20         9.5         9.8         9.7           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.7         19.7         20.1           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.7         16.0         16.0	INFRA-RED			limit/base			
Sulfation         Abs/.1mm         *ASTM D7415 >30         19.7         19.7         20.1           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.7         16.0         16.0	Soot %		*ASTM D7844	>3	0.4		
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.716.016.0	Nitration	Abs/cm	*ASTM D7624	>20	9.5	9.8	9.7
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.7</b> 16.0 16.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.7	19.7	20.1
	FLUID DEGRA	NOITAC	method	limit/base	current	history1	history2
<b>Base Number (BN)</b> mg KOH/g ASTM D2896 9.8 <b>7.3</b> 6.7 8	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.7	16.0	16.0
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.3	6.7	8



# **OIL ANALYSIS REPORT**



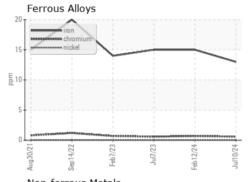


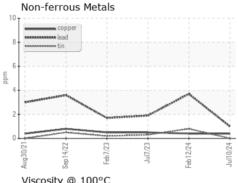


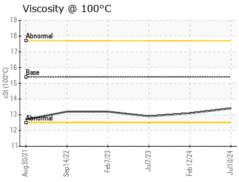
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

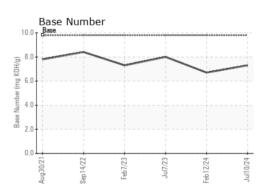
FLUID PROPI	ERHES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.4	13.1	12.9

## **GRAPHS**













Laboratory Sample No. Lab Number : 06238855

: GFL0124159 Unique Number : 11127689

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 17 Jul 2024 **Tested** 

: 17 Jul 2024 Diagnosed : 17 Jul 2024 - Wes Davis

GFL Environmental - 633 - Grand Haven

1680 Peach St Whitehall, MI US 49461

Contact: Derek Kater dkater@gflenv.com

Test Package : FLEET Certificate 12367 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: