

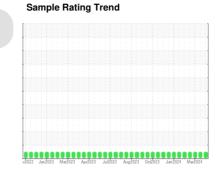
## **OIL ANALYSIS REPORT**



# **MONTGOMERY MACK 913016**

**Diesel Engine** 

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



## **NORMAL**



## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

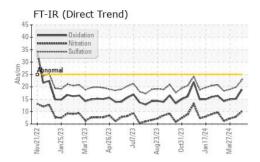
### **Fluid Condition**

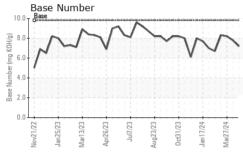
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

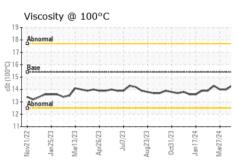
Sample Date   Client Info   11 Apr 2024   04 Apr 2024   27 Mar 2024   Machine Age   hrs   Client Info   2918   5046   4930   341   225   341   225   341   225   341   225   341   341   225   341	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   2918   5046   4930   Oil Age   hrs   Client Info   2918   341   225   Oil Changed   Client Info   Not Changd   NoRMAL   NORMAL	Sample Number		Client Info		GFL0083570	GFL0083559	GFL0115615
Oil Age         hrs         Client Info         2918         341         225           Oil Changed         Client Info         Not Changd         Not Changed         Not Change	Sample Date		Client Info		11 Apr 2024	04 Apr 2024	27 Mar 2024
Cilient Info	Machine Age	hrs	Client Info		2918	5046	4930
NORMAL   NORMAL   NORMAL   NORMAL	Oil Age	hrs	Client Info		2918	341	225
CONTAMINATION	Oil Changed		Client Info		Not Changd	Changed	Not Changd
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method         >0.2         NEG         A           Lead         ppm	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<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	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	15	6	4
Description	Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Description	Nickel		ASTM D5185m	>5	0	0	<1
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         1         0         2           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         3         0         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         2         2         2           Barium         ppm         ASTM D5185m         0         4         2         2         2           Barium         ppm         ASTM D5185m         0         4         2         2         2           Barium         ppm         ASTM D5185m         0         0         0         0         0           Mangaesium         ppm         ASTM D5185m	Titanium	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>2	0	0	
Aluminum         ppm         ASTM D5185m         >20         1         0         2           Lead         ppm         ASTM D5185m         >40         0         0         0           Copper         ppm         ASTM D5185m         >330         3         0         0           Tin         ppm         ASTM D5185m         >15         <1	Silver				0		0
Lead	Aluminum	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>20			2
Copper         ppm         ASTM D5185m         >330         3         0         0           Tin         ppm         ASTM D5185m         >15         <1	Lead				0		0
Tin	Copper	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	>330	3	0	0
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         2         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         64         59         56           Manganese         ppm         ASTM D5185m         0         <1         1         0           Magnesium         ppm         ASTM D5185m         1010         998         935         941           Calcium         ppm         ASTM D5185m         1070         1116         1042         1035           Phosphorus         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1	Tin				<1		<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         2         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1		• • • • • • • • • • • • • • • • • • • •					
ADDITIVES	Cadmium				-		
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         64         59         56           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         998         935         941           Calcium         ppm         ASTM D5185m         1070         1116         1042         1035           Phosphorus         ppm         ASTM D5185m         1150         1121         999         1009           Zinc         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3         3           Potassium         ppm         ASTM D5185m	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         64         59         56           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	4	2	2
Molybdenum         ppm         ASTM D5185m         60         64         59         56           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         998         935         941           Calcium         ppm         ASTM D5185m         1070         1116         1042         1035           Phosphorus         ppm         ASTM D5185m         1150         1121         999         1009           Zinc         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3         3           Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base	Barium		ASTM D5185m	0	0	0	0
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         998         935         941           Calcium         ppm         ASTM D5185m         1070         1116         1042         1035           Phosphorus         ppm         ASTM D5185m         1150         1121         999         1009           Zinc         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.7         0.6         0.5           Nitration         Abs/cm         *ASTM D7815	Molybdenum		ASTM D5185m	60	64	59	56
Magnesium         ppm         ASTM D5185m         1010         998         935         941           Calcium         ppm         ASTM D5185m         1070         1116         1042         1035           Phosphorus         ppm         ASTM D5185m         1150         1121         999         1009           Zinc         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3         3           Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         10.1         7.9         7.2           Sulfation         Abs/.1mm         *ASTM D7415	•	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m	0	<1		0
Calcium         ppm         ASTM D5185m         1070         1116         1042         1035           Phosphorus         ppm         ASTM D5185m         1150         1121         999         1009           Zinc         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3         3           Potassium         ppm         ASTM D5185m         >20         <1	-				998	935	941
Phosphorus         ppm         ASTM D5185m         1150         1121         999         1009           Zinc         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3           Potassium         ppm         ASTM D5185m         >20         <1	Calcium		ASTM D5185m	1070	1116	1042	1035
Zinc         ppm         ASTM D5185m         1270         1333         1169         1231           Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3           Potassium         ppm         ASTM D5185m         >20         <1	Phosphorus		ASTM D5185m	1150	1121	999	1009
Sulfur         ppm         ASTM D5185m         2060         3541         3072         3370           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3           Potassium         ppm         ASTM D5185m         >20         <1	Zinc		ASTM D5185m	1270	1333	1169	1231
Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         5         3         3           Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.7         0.6         0.5           Nitration         Abs/cm         *ASTM D7624         >20         10.1         7.9         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.8         19.8         19.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.9         15.2         14.9	Sulfur		ASTM D5185m	2060	3541	3072	3370
Sodium         ppm         ASTM D5185m         5         3         3           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         5         3         3           Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.7         0.6         0.5           Nitration         Abs/cm         *ASTM D7624         >20         10.1         7.9         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.8         19.8         19.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.9         15.2         14.9	Silicon	ppm	ASTM D5185m	>25	4	4	4
Potassium         ppm         ASTM D5185m         >20         <1         0         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.7         0.6         0.5           Nitration         Abs/cm         *ASTM D7624         >20         10.1         7.9         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.8         19.8         19.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.9         15.2         14.9	Sodium	• • • • • • • • • • • • • • • • • • • •	ASTM D5185m		5	3	3
Soot %         %         *ASTM D7844 >4         0.7         0.6         0.5           Nitration         Abs/cm         *ASTM D7624 >20         10.1         7.9         7.2           Sulfation         Abs/.1mm         *ASTM D7415 >30         22.8         19.8         19.0           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         18.9         15.2         14.9	Potassium		ASTM D5185m	>20	<1		1
Nitration         Abs/cm         *ASTM D7624         >20         10.1         7.9         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.8         19.8         19.0           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.9         15.2         14.9	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         10.1         7.9         7.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         22.8         19.8         19.0           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.9         15.2         14.9	Soot %	%	*ASTM D7844	>4	0.7	0.6	0.5
Sulfation         Abs/.1mm         *ASTM D7415         >30         22.8         19.8         19.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         18.9         15.2         14.9	Nitration						
Oxidation Abs/.1mm *ASTM D7414 >25 <b>18.9</b> 15.2 14.9	Sulfation						
	FLUID DEGRAD	OATION	method	limit/base	current	history1	history2
	Oxidation	Ahs/1mm	*ASTM D7414	>25	18.9	15.2	14 9



## **OIL ANALYSIS REPORT**



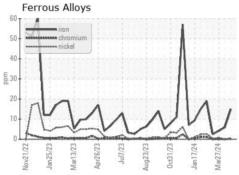


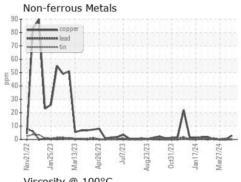


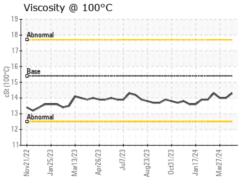
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

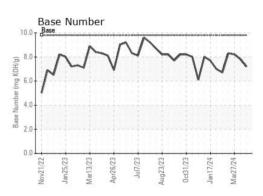
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.0	14.0	

### **GRAPHS**













Certificate 12367

Laboratory Sample No. Lab Number : 06147069 Unique Number : 10977147 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0083570

Received : 12 Apr 2024 **Tested** : 15 Apr 2024

Diagnosed : 15 Apr 2024 - Wes Davis

GFL Environmental - 955 - Montgomery 1121 Wilbanks St

Montgomery, AL US 36108

Contact: LISA REEVES

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)

Report Id: GFL955 [WUSCAR] 06147069 (Generated: 04/15/2024 08:14:07) Rev: 1

Submitted By: Lisa Reeves

T:

F: