

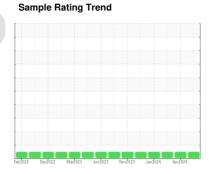
# **OIL ANALYSIS REPORT**



# **MONTGOMERY** MACK 924016-142519

Diesel Engine

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





# 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

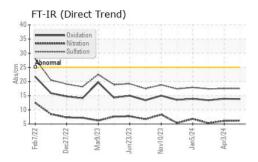
## **Fluid Condition**

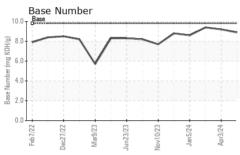
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

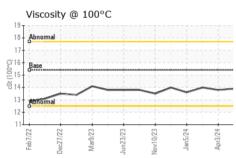
Sample Number	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2			
Machine Age         hrs         Client Info         22188         22150         22089           Oil Age         hrs         Client Info         0         177         116           Oil Changed         Client Info         N/A         Not Changd         Not Changd           Sample Status         NORMAL         NORMAL         NORMAL         NORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG         NEG           Glycol         WC Method         Immit/base         current         history1         history2           Iron         ppm         ASTM D5186m         >120         0         0         <1           Iron         ppm         ASTM D5186m         >20         0         0         <1           Chromium         ppm         ASTM D5186m         >20         0         0         <1           Silver         ppm         ASTM D5186m         >20         0         0         <1           Silver         ppm         ASTM D	Sample Number		Client Info		GFL0118454	GFL0083553	GFL0088642			
Oil Age         hrs         Client Info         N/A         NIA         Not Changd         Not Changd           Sample Status         Client Info         N/A         NORMAL         NORMAL <t< th=""><th>Sample Date</th><th></th><th>Client Info</th><th></th><th>22 Apr 2024</th><th>03 Apr 2024</th><th>06 Feb 2024</th></t<>	Sample Date		Client Info		22 Apr 2024	03 Apr 2024	06 Feb 2024			
Oil Changed Sample Status         Client Info         N/A         Not Changd         Not Changd <t< th=""><th>Machine Age</th><th>hrs</th><th>Client Info</th><th></th><th>22188</th><th>22150</th><th>22089</th></t<>	Machine Age	hrs	Client Info		22188	22150	22089			
Oil Changed Sample Status         Client Info         N/A         Not Changd         Not Changd <t< th=""><th>Oil Age</th><th>hrs</th><th>Client Info</th><th></th><th>0</th><th>177</th><th>116</th></t<>	Oil Age	hrs	Client Info		0	177	116			
NORMAL   NORMAL   NORMAL	-		Client Info		N/A	Not Changd	Not Changd			
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0					NORMAL	_				
Fuel		ION	method	limit/base	current					
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Ilimit/base         current         history1         history2           WEAR METALS         method         Ilimit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >12.0         16         30         9           Chromium         ppm         ASTM D5185m         >2.0         0         0         <1           Nickel         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         7         6         4           Lead         ppm         ASTM D5185m         >33.0         6         6         6         6           Tin         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0										
WEAR METALS										
WEAR METALS				70.L	-					
Iron	<u> </u>									
Chromium         ppm         ASTM D5185m         >20         0         0         <1	WEAR METAL	S	method	limit/base	current					
Nickel	Iron	ppm	ASTM D5185m	>120	16	30	9			
Titanium         ppm         ASTM D5185m         >2         0         0         <1	Chromium	ppm	ASTM D5185m	>20	0	0	<1			
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         7         6         4           Lead         ppm         ASTM D5185m         >40         0         0         <1           Copper         ppm         ASTM D5185m         >330         6         6         6           Tin         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         5         9           Boron         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1 <td< th=""><th>Nickel</th><th>ppm</th><th>ASTM D5185m</th><th>&gt;5</th><th>0</th><th>0</th><th>&lt;1</th></td<>	Nickel	ppm	ASTM D5185m	>5	0	0	<1			
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	0	<1			
Lead         ppm         ASTM D5185m         >40         0         0         <1	Silver	ppm	ASTM D5185m	>2	0	0	0			
Copper         ppm         ASTM D5185m         >330         6         6         6         6           Tin         ppm         ASTM D5185m         >15         0         0         <1           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         5         5         9           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <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	Aluminum	ppm	ASTM D5185m	>20	7	6	4			
Tin	Lead	ppm	ASTM D5185m	>40	0	0	<1			
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         <1	Copper	ppm	ASTM D5185m	>330	6	6	6			
Cadmium         ppm         ASTM D5185m         0         0         <1	Tin	ppm	ASTM D5185m	>15	0	0	<1			
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0			
Boron	Cadmium	ppm	ASTM D5185m		0	0	<1			
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         62         63         89           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         1042         1072         1435           Calcium         ppm         ASTM D5185m         1070         1130         1174         1481           Phosphorus         ppm         ASTM D5185m         1150         1115         1152         1506           Zinc         ppm         ASTM D5185m         1270         1344         1427         1842           Sulfur         ppm         ASTM D5185m         2060         3929         4424         4723           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3         2           INFRA-RED         method         limit/bas	ADDITIVES		method	limit/base	current	history1	history2			
Molybdenum         ppm         ASTM D5185m         60         62         63         89           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	5	5	9			
Manganese         ppm         ASTM D5185m         0         <1	Barium	ppm	ASTM D5185m	0	0	0	0			
Magnesium         ppm         ASTM D5185m         1010         1042         1072         1435           Calcium         ppm         ASTM D5185m         1070         1130         1174         1481           Phosphorus         ppm         ASTM D5185m         1150         1115         1152         1506           Zinc         ppm         ASTM D5185m         1270         1344         1427         1842           Sulfur         ppm         ASTM D5185m         2060         3929         4424         4723           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/.mm         *ASTM D7415         >30         17.5 </th <th>Molybdenum</th> <th>ppm</th> <th>ASTM D5185m</th> <th>60</th> <th>62</th> <th>63</th> <th>89</th>	Molybdenum	ppm	ASTM D5185m	60	62	63	89			
Calcium         ppm         ASTM D5185m         1070         1130         1174         1481           Phosphorus         ppm         ASTM D5185m         1150         1115         1152         1506           Zinc         ppm         ASTM D5185m         1270         1344         1427         1842           Sulfur         ppm         ASTM D5185m         2060         3929         4424         4723           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION         method         l	Manganese	ppm	ASTM D5185m	0	<1	<1	<1			
Phosphorus         ppm         ASTM D5185m         1150         1115         1152         1506           Zinc         ppm         ASTM D5185m         1270         1344         1427         1842           Sulfur         ppm         ASTM D5185m         2060         3929         4424         4723           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION         method         l	Magnesium	ppm	ASTM D5185m	1010	1042	1072	1435			
Zinc         ppm         ASTM D5185m         1270         1344         1427         1842           Sulfur         ppm         ASTM D5185m         2060         3929         4424         4723           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION         *ASTM D7414         >25         13.8         13.9         13.4	Calcium	ppm	ASTM D5185m	1070	1130	1174	1481			
Sulfur         ppm         ASTM D5185m         2060         3929         4424         4723           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	Phosphorus	ppm	ASTM D5185m	1150	1115	1152	1506			
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	Zinc	ppm	ASTM D5185m	1270	1344	1427	1842			
Silicon         ppm         ASTM D5185m         >25         8         7         7           Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	Sulfur	ppm	ASTM D5185m	2060	3929	4424	4723			
Sodium         ppm         ASTM D5185m         9         7         3           Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	CONTAMINAN	TS	method	limit/base	current	history1	history2			
Potassium         ppm         ASTM D5185m         >20         3         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	Silicon	ppm	ASTM D5185m	>25	8	7	7			
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	Sodium	ppm	ASTM D5185m		9	7	3			
Soot %         %         *ASTM D7844         >4         0.2         0.2         0.1           Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	Potassium	ppm	ASTM D5185m	>20	3	3	2			
Nitration         Abs/cm         *ASTM D7624         >20         6.2         6.1         5.3           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	INFRA-RED		method	limit/base	current	history1	history2			
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.5         17.5         17.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         13.9         13.4	Soot %	%	*ASTM D7844	>4	0.2	0.2	0.1			
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     13.8     13.9     13.4	Nitration	Abs/cm	*ASTM D7624	>20	6.2	6.1	5.3			
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.8</b> 13.9 13.4	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.5	17.5	17.4			
	FLUID DEGRADATION method limit/base current history1 history2									
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.8	13.9	13.4			

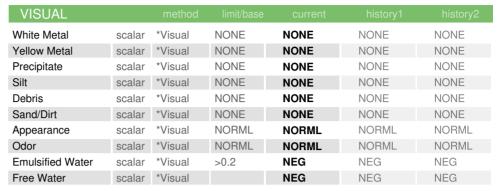


# **OIL ANALYSIS REPORT**



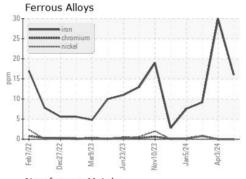


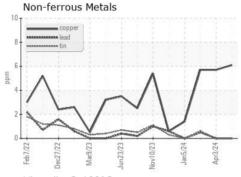


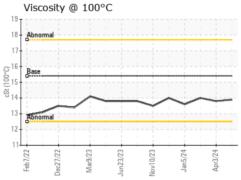


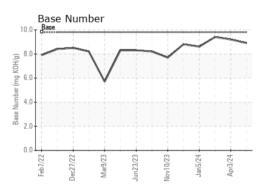
FLUID PROPI	ERIIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.8	14.0

### **GRAPHS**













Certificate 12367

Laboratory Sample No. Unique Number : 10995462 Test Package : FLEET

: GFL0118454 Lab Number : 06160039

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

Received **Tested** Diagnosed

: 25 Apr 2024 : 25 Apr 2024

: 25 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.

 $^st$  - 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] 06160039 (Generated: 04/25/2024 19:41:13) Rev: 1

Submitted By: Lisa Reeves

T:

F: