

# **OIL ANALYSIS REPORT**

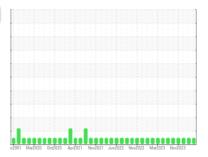
(YA130535) [D service]



3877 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (10 GAL)



Sample Rating Trend





## 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

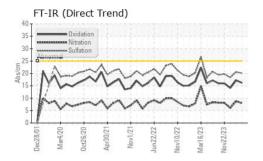
## **Fluid Condition**

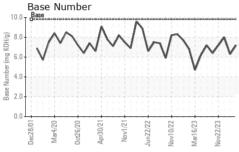
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

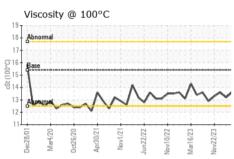
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   19518   19460   15581	Sample Number		Client Info		GFL0124485	GFL0124466	GFL0098530
Oil Age         hrs         Client Info         O Changed Ch	Sample Date		Client Info		08 Jul 2024	18 Jun 2024	28 Dec 2023
Cilient Info   Changed   Changed   Changed   NORMAL   NORMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		19518	19460	15581
NORMAL   NORMAL   NORMAL   NORMAL	Oil Age	hrs	Client Info		0	900	600
Fuel	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status						NORMAL
Water         WC Method         >0.2         NEG         NEG <t< td=""><td>CONTAMINAT</td><td>ION</td><td>method</td><td>limit/base</td><th>current</th><td>history1</td><td>history2</td></t<>	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
Chromium         ppm         ASTM D5185m         >20         <1         <1         0           Nickel         ppm         ASTM D5185m         >5         <1         0         0           Titanium         ppm         ASTM D5185m         >2         <1         <1         0           Silver         ppm         ASTM D5185m         >2         <1         <1         0           Aluminum         ppm         ASTM D5185m         >20         3         3         1           Lead         ppm         ASTM D5185m         >20         3         3         1           Lead         ppm         ASTM D5185m         >40         2         3         0           Copper         ppm         ASTM D5185m         >330         9         9         <1           Tin         ppm         ASTM D5185m         >15         <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	Iron	ppm	ASTM D5185m	>120	15	17	1
Nickel	Chromium		ASTM D5185m	>20		<1	0
Titanium	Nickel						
Silver	Titanium						
Aluminum         ppm         ASTM D5185m         >20         3         3         1           Lead         ppm         ASTM D5185m         >40         2         3         0           Copper         ppm         ASTM D5185m         >330         9         9         <1							
Lead							
Copper         ppm         ASTM D5185m         >330         9         9         <1           Tin         ppm         ASTM D5185m         >15         <1							
Tin		• • • • • • • • • • • • • • • • • • • •					
Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         <1         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         60         60         62         55           Manganese         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1070         1109         1277         1016         Potasium         Potasim         1270         1192         1421         1236         Potasium					-		
Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         <1				710			
ADDITIVES	Cadmium						
Boron	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         60         62         55           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	2	<1	2
Molybdenum         ppm         ASTM D5185m         60         60         62         55           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         896         1026         927           Calcium         ppm         ASTM D5185m         1070         1109         1277         1016           Phosphorus         ppm         ASTM D5185m         1150         917         1090         1019           Zinc         ppm         ASTM D5185m         1270         1192         1421         1236           Sulfur         ppm         ASTM D5185m         2060         2434         3045         2958           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         25         7         7         3           Sodium         ppm         ASTM D5185m         4         5         1           Potassium         ppm         ASTM D5185m         20         2         3         <1           INFRA-RED         method         limit/base         current <td>Barium</td> <td></td> <td>ASTM D5185m</td> <td>0</td> <th>0</th> <td>0</td> <td>0</td>	Barium		ASTM D5185m	0	0	0	0
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         896         1026         927           Calcium         ppm         ASTM D5185m         1070         1109         1277         1016           Phosphorus         ppm         ASTM D5185m         1150         917         1090         1019           Zinc         ppm         ASTM D5185m         1270         1192         1421         1236           Sulfur         ppm         ASTM D5185m         2060         2434         3045         2958           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         7         3           Sodium         ppm         ASTM D5185m         >20         2         3         <1	Molvbdenum				60	62	55
Magnesium         ppm         ASTM D5185m         1010         896         1026         927           Calcium         ppm         ASTM D5185m         1070         1109         1277         1016           Phosphorus         ppm         ASTM D5185m         1150         917         1090         1019           Zinc         ppm         ASTM D5185m         1270         1192         1421         1236           Sulfur         ppm         ASTM D5185m         2060         2434         3045         2958           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         7         3           Sodium         ppm         ASTM D5185m         >20         2         3         <1	•						
Calcium         ppm         ASTM D5185m         1070         1109         1277         1016           Phosphorus         ppm         ASTM D5185m         1150         917         1090         1019           Zinc         ppm         ASTM D5185m         1270         1192         1421         1236           Sulfur         ppm         ASTM D5185m         2060         2434         3045         2958           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         7         3           Sodium         ppm         ASTM D5185m         >20         2         3         <1	•					1026	927
Phosphorus         ppm         ASTM D5185m         1150         917         1090         1019           Zinc         ppm         ASTM D5185m         1270         1192         1421         1236           Sulfur         ppm         ASTM D5185m         2060         2434         3045         2958           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         7         3           Sodium         ppm         ASTM D5185m         >20         2         3         <1							
Zinc         ppm         ASTM D5185m         1270         1192         1421         1236           Sulfur         ppm         ASTM D5185m         2060         2434         3045         2958           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         7         3           Sodium         ppm         ASTM D5185m         >20         2         3         <1							
Sulfur         ppm         ASTM D5185m         2060         2434         3045         2958           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         7         7         3           Sodium         ppm         ASTM D5185m         4         5         1           Potassium         ppm         ASTM D5185m         >20         2         3         <1					-		
Silicon         ppm         ASTM D5185m         >25         7         7         3           Sodium         ppm         ASTM D5185m         4         5         1           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.0         8.8         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.2         17.2         14.1	-				_		
Sodium         ppm         ASTM D5185m         4         5         1           Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.0         8.8         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.2         17.2         14.1	CONTAMINAN	TC	mathad	12 21-//			1::
Potassium         ppm         ASTM D5185m         >20         2         3         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.2           Nitration         Abs/cm         *ASTM D7624         >20         8.0         8.8         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.2         17.2         14.1	CONTAMINAN	10	method	ilmit/base	current	history1	nistory2
INFRA-RED							
Soot %         %         *ASTM D7844 >4         0.3         0.4         0.2           Nitration         Abs/cm         *ASTM D7624 >20         8.0         8.8         6.1           Sulfation         Abs/.1mm         *ASTM D7415 >30         20.1         20.6         18.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         16.2         17.2         14.1	Silicon	ppm	ASTM D5185m		7	7	3
Nitration         Abs/cm         *ASTM D7624         >20         8.0         8.8         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.6         18.3           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.2         17.2         14.1	Silicon Sodium	ppm	ASTM D5185m ASTM D5185m	>25	7 4	7 5	3 1
Sulfation         Abs/.1mm         *ASTM D7415         >30         20.1         20.6         18.3           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         16.2         17.2         14.1	Silicon Sodium Potassium	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>25 >20	7 4 2	7 5 3	3 1 <1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 16.2 17.2 14.1	Silicon Sodium Potassium INFRA-RED	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method	>25 >20 limit/base	7 4 2 current	7 5 3 history1	3 1 <1 history2
Oxidation Abs/.1mm *ASTM D7414 >25 <b>16.2</b> 17.2 14.1	Silicon Sodium Potassium INFRA-RED	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	>25 >20 limit/base >4	7 4 2 current	7 5 3 history1	3 1 <1 history2 0.2
	Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624	>25 >20 limit/base >4 >20	7 4 2 current 0.3 8.0	7 5 3 history1 0.4 8.8	3 1 <1 history2 0.2 6.1
	Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415	>25 >20 limit/base >4 >20 >30	7 4 2 current 0.3 8.0 20.1	7 5 3 history1 0.4 8.8 20.6	3 1 <1 history2 0.2 6.1 18.3
	Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	>25 >20 limit/base >4 >20 >30 limit/base	7 4 2 current 0.3 8.0 20.1	7 5 3 history1 0.4 8.8 20.6 history1	3 1 <1 history2 0.2 6.1 18.3 history2



# **OIL ANALYSIS REPORT**



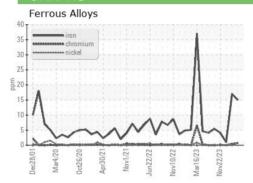




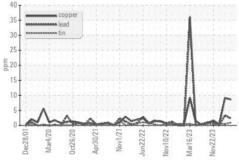
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

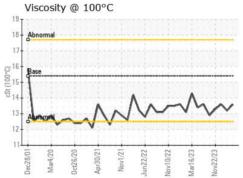
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.2	13.6

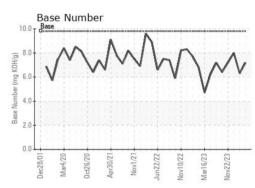
## **GRAPHS**



### Non-ferrous Metals











Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0124485 Lab Number : 06232149 Unique Number : 11115642

Test Package : FLEET

Received **Tested** 

: 10 Jul 2024 : 11 Jul 2024 Diagnosed : 11 Jul 2024 - Wes Davis

GFL Environmental - 006 - Wilmington

3618 US Highway 421 N Wilmington, NC US 28401

Contact: NEIL GIFFIN ngiffin@gflenv.com T:

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)

F: (910)762-6880