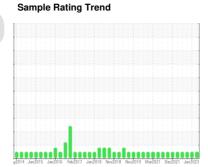


# **OIL ANALYSIS REPORT**



(YA115730) 2527 Diesel Engine

PETRO CANADA DURON SHP 15W40 (32 GAL)





## **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

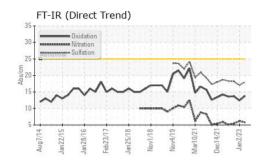
## **Fluid Condition**

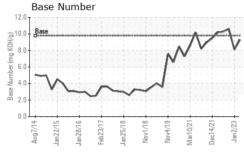
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

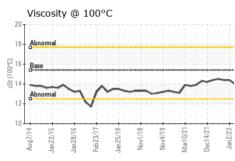
Sample Date	SAMPLE INFO	RMATION	method	limit/base	current	history1	history2	
Machine Age   hrs   Client Info   13374   13340   13300	Sample Number		Client Info		GFL0082246	GFL0069240	GFL0049545	
Oil Age         hrs         Client Info         320         620         600           Oil Changed         Client Info         Not Changed         Changed         Changed           Sample Status         NormAL         NormAL         NormAL         NormAL           CONTAMINATION         method         limit/base         current         history1         history1           Fuel         WC Method         S         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG           WEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >75         7         6         7           Chromium         ppm         ASTM D5185m         >5         <1         <1         <1           Iron         ppm         ASTM D5185m         >2         <1         0         <1           Chromium         ppm         ASTM D5185m         >2         <1         0         <1           Iron         ppm         ASTM D5185m         >2         <1         0         <	Sample Date		Client Info		17 May 2023	02 Jan 2023	20 Jul 2022	
Cilient Info	Machine Age	hrs	Client Info		13374	13340	13300	
NORMAL   NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   hi	Oil Age	hrs	Client Info		320	620	600	
NORMAL   NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   hi	Oil Changed		Client Info		Not Changd	Changed	Changed	
Fuel							_	
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         Imilitybase         current         history1         history1           WEAR METALS         method         limitybase         current         history1         history1           Iron         ppm         ASTM D5185m         >75         7         6         7           Chromium         ppm         ASTM D5185m         >5         <1	CONTAMINA	TION	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         >75         7         6         7           Chromium         ppm         ASTM D5185m         >5         <1	Water		WC Method	>0.2	NEG	NEG	NEG	
Irron	Glycol		WC Method		NEG	NEG	NEG	
Chromium         ppm         ASTM D5185m         >5         <1         <1         <1         <1         Nickel         ppm         ASTM D5185m         >4         0         <1         0         Titanium         ppm         ASTM D5185m         >2         <1         0         0         0         7         0         <1         0	WEAR META	LS	method	limit/base	current	history1	history2	
Nickel	Iron	ppm	ASTM D5185m	>75	7	6	7	
Nickel	Chromium	ppm	ASTM D5185m	>5	<1	<1	<1	
Silver	Nickel		ASTM D5185m	>4	0	<1	0	
Silver								
Aluminum								
Lead         ppm         ASTM D5185m         >25         0         <1         0           Copper         ppm         ASTM D5185m         >100         1         1         3           Tin         ppm         ASTM D5185m         >4         <1         <1         0           Vanadium         ppm         ASTM D5185m         0         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         19         47         14           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         4         7         14           Barium         ppm         ASTM D5185m         0         4         1         1           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         774         465 <t< td=""><td></td><td></td><td></td><td></td><th></th><td></td><td></td></t<>								
Copper         ppm         ASTM D5185m         >100         1         1         3           Tin         ppm         ASTM D5185m         >4         <1					-			
Tin					-			
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         19         47         14           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         60         63         70         54           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         774         465         839           Calcium         ppm         ASTM D5185m         1070         1298         1736         1109           Phosphorus         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base <td></td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td>								
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         19         47         14           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         63         70         54           Manganese         ppm         ASTM D5185m         0         <1				>4				
ADDITIVES								
Boron		ppm	ASTM D5185m		0	0	0	
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         63         70         54           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         60         63         70         54           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         774         465         839           Calcium         ppm         ASTM D5185m         1070         1298         1736         1109           Phosphorus         ppm         ASTM D5185m         1150         1015         1022         999           Zinc         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         3         1           Potassium         ppm         ASTM D5185m         >20         <1         <1         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *A	Boron	ppm			_			
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         774         465         839           Calcium         ppm         ASTM D5185m         1070         1298         1736         1109           Phosphorus         ppm         ASTM D5185m         1150         1015         1022         999           Zinc         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         4         4         3         1           Sodium         ppm         ASTM D5185m         >20         <1         <1         1           INFRA-RED         method         limit/base         current         history1         history1           Soot %         % ASTM D7844         >6         0.1         0.1         0.1           Nitration         Abs/atm         *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	0	
Magnesium         ppm         ASTM D5185m         1010         774         465         839           Calcium         ppm         ASTM D5185m         1070         1298         1736         1109           Phosphorus         ppm         ASTM D5185m         1150         1015         1022         999           Zinc         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         4         4         3           Sodium         ppm         ASTM D5185m         >20         <1	Molybdenum	ppm			63	70	54	
Calcium         ppm         ASTM D5185m         1070         1298         1736         1109           Phosphorus         ppm         ASTM D5185m         1150         1015         1022         999           Zinc         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         4         4         3           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	0	
Phosphorus         ppm         ASTM D5185m         1150         1015         1022         999           Zinc         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         4         4         3           Sodium         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m	1010	774	465	839	
Zinc         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         3           Sodium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m	1070	1298	1736	1109	
Zinc         ppm         ASTM D5185m         1270         1209         1164         1190           Sulfur         ppm         ASTM D5185m         2060         3615         3966         3386           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         3           Sodium         ppm         ASTM D5185m         >20         <1	Phosphorus	ppm	ASTM D5185m	1150	1015	1022	999	
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         3           Sodium         ppm         ASTM D5185m         4         3         1           Potassium         ppm         ASTM D5185m         >20         <1		ppm	ASTM D5185m	1270	1209	1164	1190	
Silicon         ppm         ASTM D5185m         >25         4         4         3           Sodium         ppm         ASTM D5185m         4         3         1           Potassium         ppm         ASTM D5185m         >20         <1         <1         1           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >6         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         5.8         6.2         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         17         18.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         12.4         13.7	Sulfur	ppm	ASTM D5185m	2060	3615	3966	3386	
Sodium         ppm         ASTM D5185m         4         3         1           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINA	NTS	method	limit/base	current	history1	history2	
Potassium         ppm         ASTM D5185m         >20         <1         <1         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.1         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         5.8         6.2         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         17         18.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         12.4         13.7	Silicon	ppm	ASTM D5185m	>25	4	4	3	
INFRA-RED	Sodium	ppm	ASTM D5185m		4	3	1	
Soot %         %         *ASTM D7844         >6         0.1         0.1         0.1           Nitration         Abs/cm         *ASTM D7624         >20         5.8         6.2         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         17         18.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         12.4         13.7	Potassium	ppm	ASTM D5185m	>20	<1	<1	1	
Nitration         Abs/cm         *ASTM D7624         >20         5.8         6.2         5.4           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         17         18.2           FLUID DEGRADATION         method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         12.4         13.7	INFRA-RED		method	limit/base	current	history1	history2	
Nitration         Abs/cm         *ASTM D7624         >20         5.8         6.2         5.4           Sulfation         Abs/.1mm         *ASTM D7615         >30         18.0         17         18.2           FLUID DEGRADATION method limit/base current         history1         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         12.4         13.7	Soot %	%	*ASTM D7844	>6	0.1	0.1	0.1	
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         17         18.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.8         12.4         13.7								
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.8</b> 12.4 13.7								
	FLUID DEGRADATION method limit/base current history1 history2							
DOSE NUMBER 13181	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.8	12.4	13.7	



# **OIL ANALYSIS REPORT**



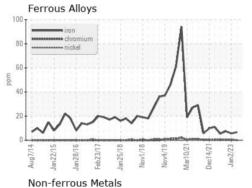


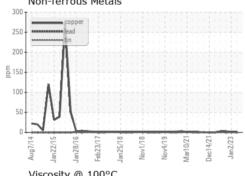


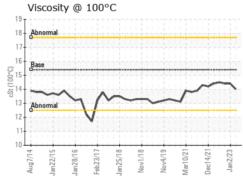
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

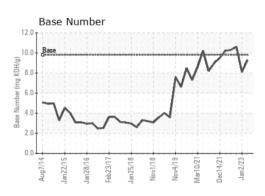
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	14.4	14.4	

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0082246 Lab Number : 05850495 Unique Number : 10479850

Test Package : FLEET

Received : 18 May 2023 **Tested** : 19 May 2023

Diagnosed : 19 May 2023 - Wes Davis

GFL Environmental - 006 - Wilmington

3618 US Highway 421 N Wilmington, NC

US 28401 Contact: Eric Wood eric.wood@gflenv.com

T: (717)723-1956

F: (910)762-6880

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)