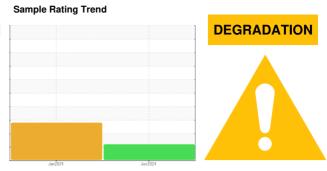


# **OIL ANALYSIS REPORT**



GFL035 834021 Diesel Engine

PETRO CANADA DURON SHP 15W40 (42 QTS)



## **DIAGNOSIS**

## Recommendation

The oil is near the end of it's useful service life. recommend schedule an oil change. Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

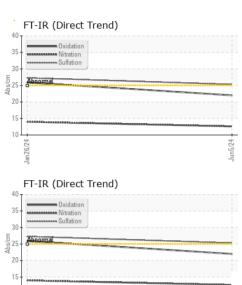
## Fluid Condition

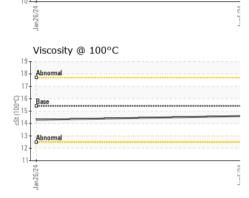
The BN level is low. The condition of the oil is acceptable for the time in service.

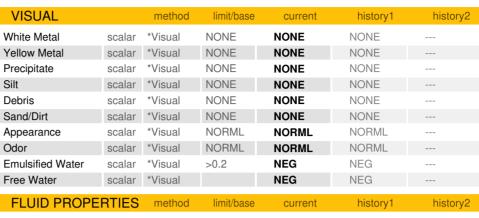
Sample Number   Client Info   GFL0116502   GFL0102341     Client Info   Machine Age   hrs   Client Info   0	N 3HP 13W40 (4	<b>2 Q</b> 10)		Jan2U24	Jun2024		
Sample Date   Client Info   05 Jun 2024   26 Jan 2024     Machine Age   hrs   Client Info   0	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info	Sample Number		Client Info		GFL0116502	GFL0102341	
Dil Age	Sample Date		Client Info		05 Jun 2024	26 Jan 2024	
Contamper   Con	Machine Age	hrs	Client Info		0	0	
CONTAMINATION   method   limit/base   current   history1   histo	Oil Age	hrs	Client Info		600	600	
CONTAMINATION   method   limit/base   current   history1   history1   history2   history2   history2   history2   history3   history2   history3   history4   history4   history4   history4   history5   history5   history5   history6   history7   history7   history7   history8   history8   history8   history8   history8   history8   history8   history8   history8   history9   history8   history8   history9   history9   history9   history8   history9   hist	Oil Changed		Client Info		Not Changd	Not Changd	
Victor	Sample Status				ABNORMAL	ABNORMAL	
Water Glycol         WC Method         >0.2         NEG NEG         NEG	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	-uel		WC Method	>3.0	<1.0	<1.0	
WEAR METALS         method         limit/base         current         history1         histor           ron         ppm         ASTM D5185m         >120         30         64            Chromium         ppm         ASTM D5185m         >20         <1	Nater		WC Method	>0.2	NEG	NEG	
Pron	Glycol		WC Method		NEG	NEG	
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Sirver	ron	ppm	ASTM D5185m	>120	30	64	
ASTM D5185m   >2	Chromium	ppm	ASTM D5185m	>20	<1	1	
Salver	Nickel	ppm	ASTM D5185m	>5	1	2	
Aluminum	Γitanium	ppm	ASTM D5185m	>2	<1	0	
Aluminum	Silver	ppm	ASTM D5185m	>2	0	<1	
Description	Aluminum	ppm	ASTM D5185m	>20	4	5	
Copper	_ead	ppm	ASTM D5185m	>40	10	6	
Acade   Aca	Copper		ASTM D5185m	>330	7	16	
Anandium         ppm         ASTM D5185m         0         0            Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         history3           Boron         ppm         ASTM D5185m         0         4         5            Barium         ppm         ASTM D5185m         0         2         3            Molybdenum         ppm         ASTM D5185m         0         2         13            Manganese         ppm         ASTM D5185m         0         2         13            Magnesium         ppm         ASTM D5185m         1010         620         832            Calcium         ppm         ASTM D5185m         1070         1701         1426            Phosphorus         ppm         ASTM D5185m         1150         705         804            Phosphorus         ppm         ASTM D5185m         1270         1012         996            Sulfur         ppm         ASTM D5185m         2060         2513         225	• •	ppm	ASTM D5185m	>15	2	3	
ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         4         5            Barium         ppm         ASTM D5185m         0         2         3            Molybdenum         ppm         ASTM D5185m         60         59         61            Magnesium         ppm         ASTM D5185m         0         2         13            Magnesium         ppm         ASTM D5185m         1010         620         832            Calcium         ppm         ASTM D5185m         1070         1701         1426            Phosphorus         ppm         ASTM D5185m         1150         705         804            Phosphorus         ppm         ASTM D5185m         1270         1012         996            Sulfur         ppm         ASTM D5185m         2060         2513         2256            CONTAMINANTS         method         limit/base         current         history1         history1           Bodium         ppm         ASTM D5185m	/anadium	ppm	ASTM D5185m		0	0	
Boron   ppm   ASTM D5185m   0   2   3	Cadmium	ppm	ASTM D5185m		0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         59         61            Manganese         ppm         ASTM D5185m         0         2         13            Magnesium         ppm         ASTM D5185m         1010         620         832            Calcium         ppm         ASTM D5185m         1070         1701         1426            Phosphorus         ppm         ASTM D5185m         1150         705         804            Zinc         ppm         ASTM D5185m         1270         1012         996            Zinc         ppm         ASTM D5185m         2060         2513         2256            CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         8         28            Godium         ppm         ASTM D5185m         >20         7         7            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base	Boron	ppm	ASTM D5185m	0	4	5	
Manganese         ppm         ASTM D5185m         0         2         13            Magnesium         ppm         ASTM D5185m         1010         620         832            Calcium         ppm         ASTM D5185m         1070         1701         1426            Phosphorus         ppm         ASTM D5185m         1150         705         804            Zinc         ppm         ASTM D5185m         1270         1012         996            Sulfur         ppm         ASTM D5185m         2060         2513         2256            CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         8         Δ         28            Goldium         ppm         ASTM D5185m         >20         7         7            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         history1           Solf with action         Abs	Barium	ppm	ASTM D5185m	0	2	3	
Manganese         ppm         ASTM D5185m         0         2         13            Magnesium         ppm         ASTM D5185m         1010         620         832            Calcium         ppm         ASTM D5185m         1070         1701         1426            Phosphorus         ppm         ASTM D5185m         1150         705         804            Zinc         ppm         ASTM D5185m         1270         1012         996            Sulfur         ppm         ASTM D5185m         2060         2513         2256            CONTAMINANTS         method         limit/base         current         history1         history1           Billicon         ppm         ASTM D5185m         >25         8         Δ         28            Goldium         ppm         ASTM D5185m         >20         7         7            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         history1           Solf mark         *ASTM D74	Molybdenum	ppm	ASTM D5185m	60	59	61	
Calcium         ppm         ASTM D5185m         1070         1701         1426            Phosphorus         ppm         ASTM D5185m         1150         705         804            Zinc         ppm         ASTM D5185m         1270         1012         996            Sulfur         ppm         ASTM D5185m         2060         2513         2256            CONTAMINANTS         method         limit/base         current         history1         history1         history1           Sollicon         ppm         ASTM D5185m         >25         8         28            Soldium         ppm         ASTM D5185m         6         6            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         history1         history1           Soot %         %         *ASTM D7844         >4         0.1         0            Sulfation         Abs/:1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION		ppm	ASTM D5185m	0	2	13	
Phosphorus         ppm         ASTM D5185m         1150         705         804	Magnesium	ppm	ASTM D5185m	1010	620	832	
Zinc         ppm         ASTM D5185m         1270         1012         996            Sulfur         ppm         ASTM D5185m         2060         2513         2256            CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         8         28            Sodium         ppm         ASTM D5185m         6         6         6            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         history1         history1           Soot %         %         *ASTM D7844         >4         0.1         0            Nitration         Abs/cm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION         method         limit/base         current         history1         history1         history2           Dxidation         Abs/:1mm         *ASTM D7414         >25         22.0         25.9	Calcium	ppm	ASTM D5185m	1070	1701	1426	
Zinc         ppm         ASTM D5185m         1270         1012         996            Sulfur         ppm         ASTM D5185m         2060         2513         2256            CONTAMINANTS         method         limit/base         current         history1         histor           Silicon         ppm         ASTM D5185m         >25         8         ▲ 28            Sodium         ppm         ASTM D5185m         6         6         6            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         histor           Soot %         %         *ASTM D7844         >4         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.6         14.0            Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION         method         limit/base         current         history1         history1         history2           Dxidation         Abs/.1mm <td>Phosphorus</td> <td>ppm</td> <td>ASTM D5185m</td> <td>1150</td> <td>705</td> <td>804</td> <td></td>	Phosphorus	ppm	ASTM D5185m	1150	705	804	
CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         8         28            Sodium         ppm         ASTM D5185m         6         6         6            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         history1         history1         history1           Soot %         %         *ASTM D7844         >4         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.6         14.0            Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION         method         limit/base         current         history1         history1         history2           Dxidation         Abs/.1mm         *ASTM D7414         >25         22.0         25.9		ppm	ASTM D5185m	1270	1012	996	
Solition   ppm   ASTM D5185m   >25   8	Sulfur	ppm	ASTM D5185m	2060	2513	2256	
Sodium         ppm         ASTM D5185m         6         6            Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         history1         history1           Soot %         %         *ASTM D7844         >4         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.6         14.0            Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION         method         limit/base         current         history1         history1           Dxidation         Abs/.1mm         *ASTM D7414         >25         22.0         25.9	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         7         7            INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.6         14.0            Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION         method         limit/base         current         history1         history1           Dxidation         Abs/.1mm         *ASTM D7414         >25         22.0         25.9	Silicon	ppm	ASTM D5185m	>25	8	<u>^</u> 28	
INFRA-RED	Sodium	ppm	ASTM D5185m		6	6	
Soot %         *ASTM D7844         >4         0.1         0            Nitration         Abs/cm         *ASTM D7624         >20         12.6         14.0            Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION         method         limit/base         current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         22.0         25.9	Potassium	ppm	ASTM D5185m	>20	7	7	
Nitration         Abs/cm         *ASTM D7624         >20         12.6         14.0            Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION method limit/base current history1 history           Oxidation         Abs/.1mm         *ASTM D7414         >25         22.0         25.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         25.3         27.3            FLUID DEGRADATION         method         limit/base         current         history1         history1           Dxidation         Abs/.1mm         *ASTM D7414         >25         22.0         25.9	Soot %	%	*ASTM D7844	>4	0.1	0	
FLUID DEGRADATION     method     limit/base     current     history1     history1       Dxidation     Abs/.1mm     *ASTM D7414     >25     22.0     25.9	Nitration	Abs/cm	*ASTM D7624	>20	12.6	14.0	
Oxidation			*ASTM D7415	>30			
	FLUID DEGRAD	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	22.0	25.9	
Base Number (BN) mg KOH/g ASTM D2896   9.8	Base Number (BN)	mg KOH/g			<u> </u>	<u>△</u> 2.7	



# **OIL ANALYSIS REPORT**

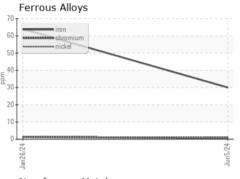


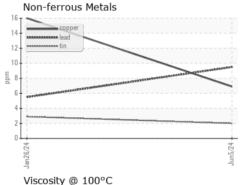


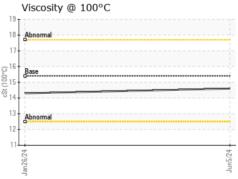


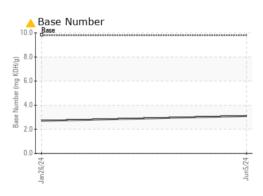
FLUID PROPI	ERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.6	14.3	

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

Lab Number : 06201300 Unique Number : 11063423 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0116502

Received **Tested** Diagnosed

: 07 Jun 2024 : 09 Jun 2024 - Don Baldridge

: 06 Jun 2024

GFL Environmental - 035 - Greensboro 1236 Elon Place High Point, NC US 27263 Contact: JORGE COSTA

jorge.costa@gflenv.com T: (336)668-3712

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)