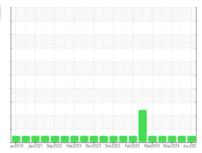


# **OIL ANALYSIS REPORT**

Sample Rating Trend



NORMAL



Machine Id **927085-260324** 

Component
Diesel Engine

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

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

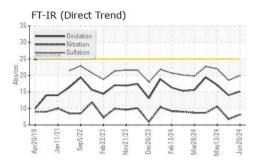
### **Fluid Condition**

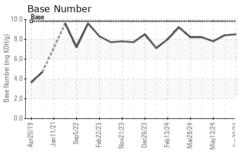
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

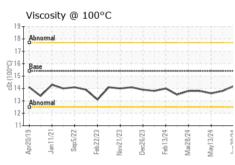
SAMPLE INFORMATION   method   timubase   current   history1   history2	JAL)		iprŽ019 JanŽ0	21 Sep2022 Feb2023 Nov20	023   Dec2023   Feb2024   Mar2024   Ma	y2024 Jun202	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0118212	GFL0118223	GFL0118270
Machine Age         hrs         Client Info         19294         19098         10562           Oil Age         hrs         Client Info         700         700         700         700           Oil Changed         Client Info         Changed         Not Changd         Not Changd <th< th=""><th></th><th></th><th>Client Info</th><th></th><th>20 Jun 2024</th><th>27 May 2024</th><th>13 May 2024</th></th<>			Client Info		20 Jun 2024	27 May 2024	13 May 2024
Oil Changed Sample Status         Client Info         Changed NORMAL         Not Changd NORMAL         Not Changd NORMAL         NORMAL NORMAL         NORMAL		hrs	Client Info		19294	19098	10562
CONTAMINATION	Oil Age	hrs	Client Info		700	700	700
CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         17         10         38           Chromium         ppm         ASTM D5185m         >20         <1         <1         <1         ≥2           Nickel         ppm         ASTM D5185m         >4         0         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	Oil Changed		Client Info		Changed	Not Changd	Not Changd
Fuel         WC Method         >5         <1.0	Sample Status				NORMAL	NORMAL	NORMAL
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >100         17         10         38           Chromium         ppm         ASTM D5185m         >20         <1         <1         2           Nickel         ppm         ASTM D5185m         >4         0         0         <1           Silver         ppm         ASTM D5185m         >4         0         0         1           Silver         ppm         ASTM D5185m         >40         0         1         1           Silver         ppm         ASTM D5185m         >40         0         1         1           Copper         ppm         ASTM D5185m         >40         0         1         1           Copper         ppm         ASTM D5185m         >15         <1         <1         1           Vanadium         ppm         ASTM D5185m         >10         0         <1         1           Vanadium         ppm         ASTM D5185m         >10         0         <1 <th>CONTAMINAT</th> <th>ION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         <1         2           Nickel         ppm         ASTM D5185m         >4         0         0         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	17	10	38
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	<1	2
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	<1
Aluminum	Titanium	ppm	ASTM D5185m		<1	<1	<1
Lead         ppm         ASTM D5185m         >40         0         1         1           Copper         ppm         ASTM D5185m         >330         <1         <1         2           Tin         ppm         ASTM D5185m         >15         <1         <1         1           Vanadium         ppm         ASTM D5185m         0         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Barium         ppm         ASTM D5185m         0         <1         0         <1           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         0         <1         0         <1           Calcium         ppm         ASTM D5185m         1070         1202         1016	Silver	ppm	ASTM D5185m	>3	0	0	1
Copper         ppm         ASTM D5185m         >330         <1         <1         2           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	2	2	7
Tin         ppm         ASTM D5185m         >15         <1         <1         1           Vanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1	Lead	ppm	ASTM D5185m	>40	0	1	1
Vanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         0         <1           Barium         ppm         ASTM D5185m         0         0         0         1           Molybdenum         ppm         ASTM D5185m         0         0         0         1           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         1039         878         1311           Calcium         ppm         ASTM D5185m         1070         1202         1016         1408           Phosphorus         ppm         ASTM D5185m         11270         1396         1155         1689           Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         histor	Copper	ppm	ASTM D5185m	>330	<1	<1	2
Cadmium         ppm         ASTM D5185m         0         <1         ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>15	<1	<1	1
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		0	0	<1
Barium         ppm         ASTM D5185m         0         0         0         1           Molybdenum         ppm         ASTM D5185m         60         58         55         81           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         58         55         81           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         1039         878         1311           Calcium         ppm         ASTM D5185m         1070         1202         1016         1408           Phosphorus         ppm         ASTM D5185m         1150         1140         993         1389           Zinc         ppm         ASTM D5185m         1270         1396         1155         1689           Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844<	Boron	ppm					
Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         1039         878         1311           Calcium         ppm         ASTM D5185m         1070         1202         1016         1408           Phosphorus         ppm         ASTM D5185m         1150         1140         993         1389           Zinc         ppm         ASTM D5185m         1270         1396         1155         1689           Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D		ppm			-		
Magnesium         ppm         ASTM D5185m         1010         1039         878         1311           Calcium         ppm         ASTM D5185m         1070         1202         1016         1408           Phosphorus         ppm         ASTM D5185m         1150         1140         993         1389           Zinc         ppm         ASTM D5185m         1270         1396         1155         1689           Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/:nm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         *ASTM D7		ppm					
Calcium         ppm         ASTM D5185m         1070         1202         1016         1408           Phosphorus         ppm         ASTM D5185m         1150         1140         993         1389           Zinc         ppm         ASTM D5185m         1270         1396         1155         1689           Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >20         0         2         3           Potassium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         meth	-	ppm					
Phosphorus         ppm         ASTM D5185m         1150         1140         993         1389           Zinc         ppm         ASTM D5185m         1270         1396         1155         1689           Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm	_						
Zinc         ppm         ASTM D5185m         1270         1396         1155         1689           Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >20         0         2         3           Potassium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1					-		
Sulfur         ppm         ASTM D5185m         2060         3963         3153         4145           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         >20         0         2         3           Potassium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         4         4         7           Potassium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1							
Silicon         ppm         ASTM D5185m         >25         5         4         9           Sodium         ppm         ASTM D5185m         4         4         7           Potassium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1			ASTM D5185m	2060	3963	3153	4145
Sodium         ppm         ASTM D5185m         4         4         7           Potassium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1		ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         0         2         3           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1				>25	5		
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1		ppm					
Soot %         %         *ASTM D7844 >3         0.8         0.3         1.2           Nitration         Abs/cm         *ASTM D7624 >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415 >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.1         14.0         17.1	Potassium	ppm	ASTM D5185m	>20	0	2	3
Nitration         Abs/cm         *ASTM D7624         >20         8.1         6.8         10.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         20.0         18.5         22.0           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.1         14.0         17.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415 >30         20.0         18.5         22.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.1         14.0         17.1							
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2515.114.017.1	Nitration	Abs/cm	*ASTM D7624	>20			
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.1</b> 14.0 17.1	Sulfation	Abs/.1mm	*ASTM D7415	>30	20.0	18.5	22.0
	FLUID DEGRA	OITAC	method	limit/base	current	history1	history2
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.5         8.4         7.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.1	14.0	17.1
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.5	8.4	7.8

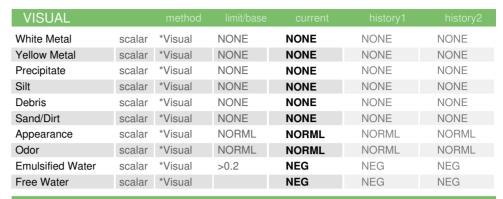


# **OIL ANALYSIS REPORT**



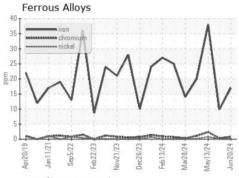


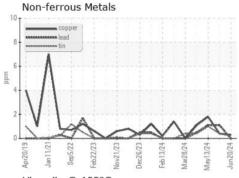


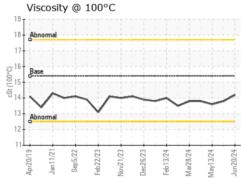


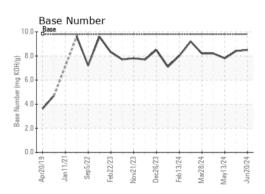
FLUID PROPI	ERIIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	13.8	13.6

### **GRAPHS**













Certificate 12367

Laboratory Sample No. : GFL0118212 Lab Number : 06224354

Test Package : FLEET

Unique Number : 11102551

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

Received : 01 Jul 2024 **Tested** : 02 Jul 2024

Diagnosed : 02 Jul 2024 - Wes Davis

GFL Environmental - 822 - Springfield Hauling 2120 West Bennett Street Springfield, MO US 65807

Contact: Dennis Moore dennis.moore@gflenv.com T: (417)403-3641

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)