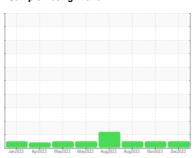


# **OIL ANALYSIS REPORT**

## Sample Rating Trend



NORMAL



# Machine Id **810035**

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.

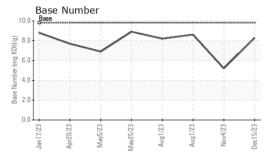
## **Fluid Condition**

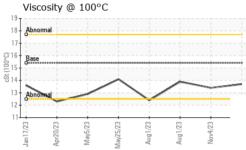
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   imit/base   current   history1   history2	GAL)		Jan2023	Apr2023 May2023 May20	23 Aug2023 Aug2023 Nov2023	Dec2023		
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2	
Machine Age         hrs         Client Info         0         0         0           Oil Age         hrs         Client Info         0         0         0           Oil Changed         Client Info         Not Changd         Not Changd         NORMAL         NORMAL           Contramination Status         Image: Client Info         Normal         NoRMAL         NORMAL         NORMAL           CONTAMINATION         method         Imitibase         current         historyt         history2           Fuel         WC Method         >5         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG         NEG           Glycol         WC Method         Imilibase         current         history1         history2           Iron         pm         ASTM D5185m         >110         9         34         3           Chromium         ppm         ASTM D5185m         >2         0         0         0           Chromium         ppm         ASTM D5185m         >2         0         0         0           Chromium         ppm         ASTM D5185m         >2         0         0         0 <th>Sample Number</th> <th></th> <th>Client Info</th> <th></th> <th>GFL0089657</th> <th>GFL0089633</th> <th>GFL0077900</th>	Sample Number		Client Info		GFL0089657	GFL0089633	GFL0077900	
Oil Age         hrs         Client Info         Not Changd Not Changd Not Changd Not Changd Not Changd Not Changd NorMAL         Not Changd NorMAL         Not Changd NorMAL         Not Changd NorMAL         NorMal	Sample Date		Client Info		15 Dec 2023	04 Nov 2023	01 Aug 2023	
Oil Changed   Cilient Info   Not Changed   NORMAL   NORMAL   NORMAL   NORMAL	Machine Age	hrs	Client Info		0	0	0	
Sample Status	Oil Age	hrs	Client Info		0	0	0	
CONTAMINATION	Oil Changed		Client Info		Not Changd	Not Changd	Not Changd	
Fuel	Sample Status				NORMAL	NORMAL	NORMAL	
Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >110         9         34         3           Chromium         ppm         ASTM D5185m         >4         1         2         0           Nickel         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         3         21         <1           Lead         ppm         ASTM D5185m         >45         0         0         0           Copper         ppm         ASTM D5185m         >4         <1         0         0           Vanadium         ppm         ASTM D5185m         >4         <1         0         0 <td colspa<="" th=""><th>CONTAMINAT</th><th>ION</th><th>method</th><th>limit/base</th><th>current</th><th>history1</th><th>history2</th></td>	<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
Silycol   WC Method   NEG   NEG   NEG	Fuel		WC Method	>5	<1.0	<1.0	<1.0	
Iron	Water		WC Method	>0.2	NEG	NEG	NEG	
Iron	Glycol		WC Method		NEG	NEG	NEG	
Chromium         ppm         ASTM D5185m         >4         1         2         0           Nickel         ppm         ASTM D5185m         >2         0         0         0           Titanium         ppm         ASTM D5185m         >2         0         0         0           Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >25         3         21         <1	WEAR METAL	.S	method	limit/base	current	history1	history2	
Nickel         ppm         ASTM D5185m         >2         0         0         0           Titanium         ppm         ASTM D5185m         0         0         <1	Iron	ppm	ASTM D5185m	>110	9	34	3	
Titanium	Chromium	ppm	ASTM D5185m	>4	1	2	0	
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	0	
Aluminum         ppm         ASTM D5185m         >25         3         21         <1           Lead         ppm         ASTM D5185m         >45         0         0         0           Copper         ppm         ASTM D5185m         >85         <1	Titanium	ppm	ASTM D5185m		0	0	<1	
Lead         ppm         ASTM D5185m         >45         0         0         0           Copper         ppm         ASTM D5185m         >85         <1         3         <1           Tin         ppm         ASTM D5185m         >4         <1         0         0           Vanadium         ppm         ASTM D5185m         <1         0         <1           Cadmium         ppm         ASTM D5185m         <1         0         <1           Cadmium         ppm         ASTM D5185m         0         4         4         2           Boron         ppm         ASTM D5185m         0         4         4         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         4         4         2           Barium         ppm         ASTM D5185m         0         4         4         2           Magnesium         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1070         1029         1023         935	Silver	ppm	ASTM D5185m	>2	0	0	0	
Copper         ppm         ASTM D5185m         >85         <1         3         <1           Tin         ppm         ASTM D5185m         >4         <1	Aluminum	ppm	ASTM D5185m	>25	3	21	<1	
Tin         ppm         ASTM D5185m         >4         <1         0         0           Vanadium         ppm         ASTM D5185m         <1         0         <1           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         4         2           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         60         62         62         62         51           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base	Lead	ppm	ASTM D5185m	>45	0	0	0	
Vanadium         ppm         ASTM D5185m         <1         0         <1           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         4         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         62         62         51           Manganese         ppm         ASTM D5185m         1010         943         896         794           Calcium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Sulfur         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1	Copper	ppm	ASTM D5185m	>85	<1	3	<1	
Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         4         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         62         62         51           Manganese         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>4	<1	0	0	
Boron	Vanadium	ppm	ASTM D5185m			0	<1	
Boron         ppm         ASTM D5185m         0         4         4         2           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         62         62         51           Manganese         ppm         ASTM D5185m         1010         943         896         794           Calcium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         >20         <1	Cadmium	ppm	ASTM D5185m		<1	0	0	
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         62         62         51           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         943         896         794           Calcium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         3         1         4           Potassium         ppm         ASTM D5185m         >20	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185m         60         62         62         51           Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         943         896         794           Calcium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         3         1         4           Potassium         ppm         ASTM D5185m         20         <1         47         2           INFRA-RED         method         limit/base         c	Boron	ppm						
Manganese         ppm         ASTM D5185m         0         <1         <1         0           Magnesium         ppm         ASTM D5185m         1010         943         896         794           Calcium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         >3         1         4           Potassium         ppm         ASTM D5185m         >20         <1		ppm	ASTM D5185m		-		-	
Magnesium         ppm         ASTM D5185m         1010         943         896         794           Calcium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         >20         <1	-							
Calcium         ppm         ASTM D5185m         1070         1029         1023         935           Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         >3         1         4           Potassium         ppm         ASTM D5185m         >20         <1	-							
Phosphorus         ppm         ASTM D5185m         1150         1077         914         858           Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         >3         1         4           Potassium         ppm         ASTM D5185m         >20         <1								
Zinc         ppm         ASTM D5185m         1270         1256         1216         1085           Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         >3         1         4           Potassium         ppm         ASTM D5185m         >20         <1								
Sulfur         ppm         ASTM D5185m         2060         3210         2533         3060           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         >3         1         4           Potassium         ppm         ASTM D5185m         >20         <1         47         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         10.3         6.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.3         23.9         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         18.5         13.5								
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         3         1         4           Potassium         ppm         ASTM D5185m         >20         <1	-							
Silicon         ppm         ASTM D5185m         >30         6         8         2           Sodium         ppm         ASTM D5185m         3         1         4           Potassium         ppm         ASTM D5185m         >20         <1         47         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         10.3         6.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.3         23.9         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         18.5         13.5					3210			
Sodium         ppm         ASTM D5185m         3         1         4           Potassium         ppm         ASTM D5185m         >20         <1         47         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         10.3         6.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.3         23.9         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         18.5         13.5		ITS				•		
Potassium         ppm         ASTM D5185m         >20         <1         47         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         10.3         6.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.3         23.9         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         18.5         13.5				>30				
INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.1         1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         10.3         6.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.3         23.9         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         18.5         13.5		ppm						
Soot %         %         *ASTM D7844 >3         0.1         1         0.2           Nitration         Abs/cm         *ASTM D7624 >20         5.4         10.3         6.6           Sulfation         Abs/.1mm         *ASTM D7415 >30         17.3         23.9         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         12.9         18.5         13.5	Potassium	ppm	ASTM D5185m	>20	<1	47	2	
Nitration         Abs/cm         *ASTM D7624         >20         5.4         10.3         6.6           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.3         23.9         17.8           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         18.5         13.5	INFRA-RED		method	limit/base	current	history1	history2	
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.3         23.9         17.8           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         12.9         18.5         13.5	Soot %							
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     12.9     18.5     13.5		Abs/cm	*ASTM D7624	>20	5.4		6.6	
Oxidation Abs/.1mm *ASTM D7414 >25 <b>12.9</b> 18.5 13.5	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.3	23.9	17.8	
	FLUID DEGRAI	OITAC	method	limit/base	current	history1	history2	
Base Number (BN)         mg KOH/g         ASTM D2896         9.8         8.3         5.2         8.6	Oxidation	Abs/.1mm	*ASTM D7414	>25	12.9	18.5	13.5	
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.3	5.2	8.6	



## **OIL ANALYSIS REPORT**

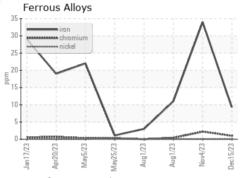


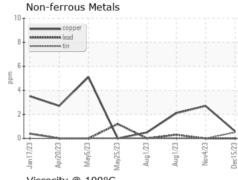


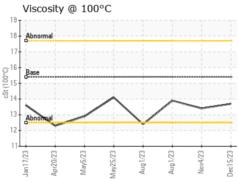
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

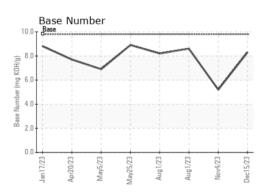
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.7	13.4	13.9	

## **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number **Unique Number** Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0089657 : 06041292 : 10796521

To discuss this sample report, contact Customer Service at 1-800-237-1369.

Recieved Diagnosed

: 20 Dec 2023 : 22 Dec 2023 Diagnostician : Wes Davis

GFL Environmental - 732 - Thomaston Hauling

2616 Waynmansville Road Thomaston, GA US 30286

Contact: WILLIAM BROWN william.brown@gflenv.com T: (706)936-4065

\* - 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)