

# **OIL ANALYSIS REPORT**

# Sample Rating Trend

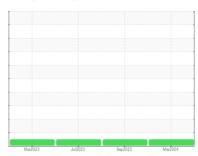
## NORMAL



# (19354Z) S0916A-Suamico

Component Front Center Diesel Engine

PETRO CANADA DURON SHP 15W40 (44 QTS)





## 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

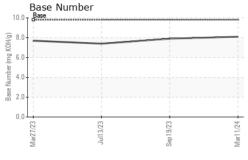
## **Fluid Condition**

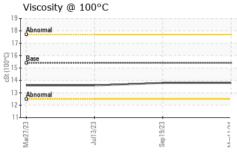
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date			Mar202	3 Jul2023	Sep2023 M	ar2024	
Sample Date	SAMPLE INFO	PRMATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   9089   7929   7426	Sample Number		Client Info		GFL0095938	GFL0074844	GFL0074831
Oil Age         hrs         Client Info         1160         503         652           Oil Changed         Changed <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <th>11 Mar 2024</th> <td>19 Sep 2023</td> <td>13 Jul 2023</td>	Sample Date		Client Info		11 Mar 2024	19 Sep 2023	13 Jul 2023
Oil Age         hrs         Client Info         1160         503         652           Oil Changed         Changed <td>Machine Age</td> <td>hrs</td> <td>Client Info</td> <td></td> <th>9089</th> <td>7929</td> <td>7426</td>	Machine Age	hrs	Client Info		9089	7929	7426
Client Info		hrs	Client Info		1160	503	652
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history2   history2	•				Changed		
Fuel			0.1011.0		_		
Fuel		ATION	method	limit/base			
Water         WC Method         >0.2         NEG         NEG         NEG         NEG           Glycol         WC Method         Imitibase         current         history1         history2           WEAR METALS         method         limitibase         current         history1         history2           Iron         ppm         ASTM D5185m         >120         11         13         14           Chromium         ppm         ASTM D5185m         >20         <1							
WEAR METALS							
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >120         11         13         14           Chromium         ppm         ASTM D5185m         >20         <1				<b>70.</b> L			
Irron							
Chromium         ppm         ASTM D5185m         >20         <1	WEAR META	ALS	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	11	13	14
Titanium	Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Silver         ppm         ASTM D5185m         >2         0         0         0           Aluminum         ppm         ASTM D5185m         >20         2         1         1           Lead         ppm         ASTM D5185m         >40         <1         0         0           Copper         ppm         ASTM D5185m         >330         2         2         3           Tin         ppm         ASTM D5185m         >15         <1         0         <1           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         3         3         7           Barium         ppm         ASTM D5185m         0         0         12         0           Molybdenum         ppm         ASTM D5185m         0         0         12         0           Manganesium         ppm         ASTM D5185m         1010         974         932         <	Nickel	ppm	ASTM D5185m	>5	2	<1	2
Aluminum         ppm         ASTM D5185m         >20         2         1         1           Lead         ppm         ASTM D5185m         >40         <1	Titanium	ppm	ASTM D5185m	>2	<1	0	0
Lead         ppm         ASTM D5185m         >40         <1         0         0           Copper         ppm         ASTM D5185m         >330         2         2         3           Tin         ppm         ASTM D5185m         >15         <1         0         <1           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         3         3         7           Barium         ppm         ASTM D5185m         0         0         12         0           Molybdenum         ppm         ASTM D5185m         0         4         62         61           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         0         <1         0         <1           Phosphorus         ppm         ASTM D5185m         1070         1123         1165	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper         ppm         ASTM D5185m         >330         2         2         3           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	2	1	1
Tin	Lead	ppm	ASTM D5185m	>40	<1	0	0
Tin	Copper	ppm	ASTM D5185m	>330	2	2	3
Vanadium         ppm         ASTM D5185m         0         0         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         3         3         7           Barium         ppm         ASTM D5185m         0         0         12         0           Molybdenum         ppm         ASTM D5185m         60         64         62         61           Manganese         ppm         ASTM D5185m         1010         974         932         983           Calcium         ppm         ASTM D5185m         1070         1123         1165         1235           Phosphorus         ppm         ASTM D5185m         1070         1123         1165         1235           Phosphorus         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1<				>15	<1	0	<1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         3         3         7           Barium         ppm         ASTM D5185m         0         0         12         0           Molybdenum         ppm         ASTM D5185m         0         60         64         62         61           Manganese         ppm         ASTM D5185m         0         <1	Vanadium		ASTM D5185m		0	0	0
ADDITIVES	Cadmium		ASTM D5185m				
Boron	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         0         12         0           Molybdenum         ppm         ASTM D5185m         60         64         62         61           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         974         932         983           Calcium         ppm         ASTM D5185m         1070         1123         1165         1235           Phosphorus         ppm         ASTM D5185m         1070         1027         1006         1043           Zinc         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >225         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/ba	Boron	ppm	ASTM D5185m	0	3	3	7
Molybdenum         ppm         ASTM D5185m         60         64         62         61           Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         974         932         983           Calcium         ppm         ASTM D5185m         1070         1123         1165         1235           Phosphorus         ppm         ASTM D5185m         1150         1027         1006         1043           Zinc         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         1         9         4           Potassium         ppm         ASTM D5185m         20         2         18         1           INFRA-RED         method         limit/base         current <td>Barium</td> <td></td> <td>ASTM D5185m</td> <td>0</td> <th></th> <td>12</td> <td>0</td>	Barium		ASTM D5185m	0		12	0
Manganese         ppm         ASTM D5185m         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         1010         974         932         983           Calcium         ppm         ASTM D5185m         1070         1123         1165         1235           Phosphorus         ppm         ASTM D5185m         1150         1027         1006         1043           Zinc         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D						62	61
Magnesium         ppm         ASTM D5185m         1010         974         932         983           Calcium         ppm         ASTM D5185m         1070         1123         1165         1235           Phosphorus         ppm         ASTM D5185m         1150         1027         1006         1043           Zinc         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         18         1           Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         "ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/:nm         "ASTM D7415	-				-		
Calcium         ppm         ASTM D5185m         1070         1123         1165         1235           Phosphorus         ppm         ASTM D5185m         1150         1027         1006         1043           Zinc         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         method<	•						
Phosphorus         ppm         ASTM D5185m         1150         1027         1006         1043           Zinc         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         >20         2         18         1           Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         *ASTM D7414 <td></td> <td></td> <td></td> <td></td> <th>_</th> <td></td> <td></td>					_		
Zinc         ppm         ASTM D5185m         1270         1292         1210         1318           Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         1         9         4           Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414							
Sulfur         ppm         ASTM D5185m         2060         3175         3218         3612           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         1         9         4           Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.8         16.6							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         1         9         4           Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.8         16.6							
Silicon         ppm         ASTM D5185m         >25         4         4         4           Sodium         ppm         ASTM D5185m         1         9         4           Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.8         16.6							
Sodium         ppm         ASTM D5185m         1         9         4           Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.8         16.6		AINTS				•	,
Potassium         ppm         ASTM D5185m         >20         2         18         1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.8         16.6				>25			
INFRA-RED							
Soot %         %         *ASTM D7844 >4         0.3         0.4         0.4           Nitration         Abs/cm         *ASTM D7624 >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.2         19.8         20.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.5         15.8         16.6	Potassium	ppm	ASTM D5185m	>20	2	18	1
Nitration         Abs/cm         *ASTM D7624         >20         7.7         7.7         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.8         16.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.8         20.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.5         15.8         16.6	Soot %	%	*ASTM D7844	>4	0.3	0.4	0.4
FLUID DEGRADATION     method     limit/base     current     history1     history2       Oxidation     Abs/.1mm     *ASTM D7414     >25     15.5     15.8     16.6	Nitration	Abs/cm	*ASTM D7624	>20	7.7	7.7	8.8
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.5</b> 15.8 16.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.2	19.8	20.4
	FLUID DEGRADATION method limit/base current history1 history2						
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.5	15.8	16.6
	Base Number (BN	M) mg KOH/g	ASTM D2896	9.8	8.1	7.9	7.4



# **OIL ANALYSIS REPORT**

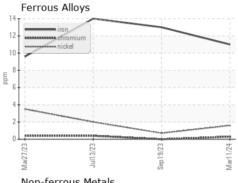


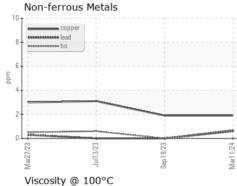


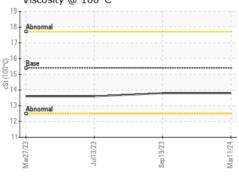
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

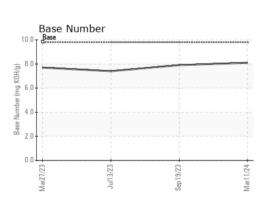
FLUID PROPE	ERITES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.8	13.8	13.6

## **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number : 06122218

Unique Number: 10936369 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0095938 Received

**Tested** Diagnosed

: 19 Mar 2024 : 20 Mar 2024 : 20 Mar 2024 - Wes Davis

2300 Deerfield Ave E Suamico, WI US 54313

Contact: NICHOLAS WEIDNER nweidner@gflenv.com

GFL Environmental - 916A - Suamico

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)

Report Id: GFL916A [WUSCAR] 06122218 (Generated: 03/20/2024 10:40:56) Rev: 1

Submitted By: Teresa Vuckovich

T:

F: