

# **OIL ANALYSIS REPORT**

## Sample Rating Trend

# NO





Machine Id 913119 Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (28 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

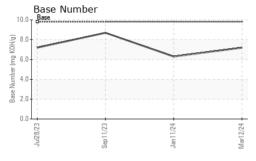
## **Fluid Condition**

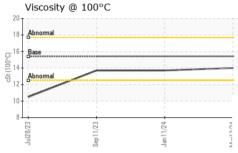
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date	N 30P 13W40 (20	o GAL)	Jul202	3 Sep 2023	Jan 2024 M	ar2024	
Sample Date	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Date	Sample Number		Client Info		GFL0109005	GFL0096893	GFL0091724
Machine Age         hrs         Client Info         0         0         0           Oil Age         hrs         Client Info         600         600         0           Oil Changed         Client Info         Changed         Changed         Changed         Changed           Sample Status         NORMAL         ABNORMAL         NORMAL           CONTAMINATION         method         Imitibase         current         history1         history2           Fuel         WC Method         >3.0         <1.0	Sample Date		Client Info		12 Mar 2024	11 Jan 2024	11 Sep 2023
Colient Info   Changed   Changed   Changed   NORMAL   ABNORMAL   ABNORMAL   ABNORMAL   ABNORMAL   NORMAL	Machine Age	hrs	Client Info		0	0	·
Client Info   Changed   Changed   Changed   Changed   NORMAL   ABNORMAL   ABNORMAL   NORMAL	Oil Age	hrs	Client Info		600	600	0
CONTAMINATION	-		Client Info		Changed	Changed	Changed
Fuel	Sample Status						NORMAL
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >12.0         16         22         12           Chromium         ppm         ASTM D5185m         >2.0         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >20         <1         1         <1           Nickel         ppm         ASTM D5185m         >5         2         ▲ 8         2           Titanium         ppm         ASTM D5185m         >2         0         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>120	16	22	12
Titanium	Chromium	ppm	ASTM D5185m	>20	<1		<1
Silver	Nickel	ppm	ASTM D5185m	>5	2	<u> </u>	2
Aluminum	Titanium	ppm	ASTM D5185m	>2	0	<1	0
Lead	Silver	ppm	ASTM D5185m	>2	0	<1	<1
Copper         ppm         ASTM D5185m         >330         5         16         19           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>20	<1	2	2
Tin	Lead	ppm	ASTM D5185m	>40	0	<1	<1
Vanadium         ppm         ASTM D5185m         0         0         <1           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         4         2         16           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         58         60         66           Manganese         ppm         ASTM D5185m         0         <1         <1         1           Magnesium         ppm         ASTM D5185m         1070         1031         1086         1206           Phosphorus         ppm         ASTM D5185m         1150         997         890         1019           Zinc         ppm         ASTM D5185m         1270         1204         1185         1286           Sulfur         ppm         ASTM D5185m         >2060         2907         2939         3678           CONTAMINANTS         method         limit/base	Copper	ppm	ASTM D5185m	>330	5	16	19
ADDITIVES	Tin	ppm	ASTM D5185m	>15	<1	1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         58         60         66           Manganese         ppm         ASTM D5185m         0         <1         <1         1           Magnesium         ppm         ASTM D5185m         1010         939         916         1016           Calcium         ppm         ASTM D5185m         1070         1031         1086         1206           Phosphorus         ppm         ASTM D5185m         1150         997         890         1019           Zinc         ppm         ASTM D5185m         1270         1204         1185         1286           Sulfur         ppm         ASTM D5185m         2060         2907         2939         3678           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7624         >20	Boron	ppm	ASTM D5185m	0	4	2	16
Manganese         ppm         ASTM D5185m         0         <1         <1         1           Magnesium         ppm         ASTM D5185m         1010         939         916         1016           Calcium         ppm         ASTM D5185m         1070         1031         1086         1206           Phosphorus         ppm         ASTM D5185m         1150         997         890         1019           Zinc         ppm         ASTM D5185m         1270         1204         1185         1286           Sulfur         ppm         ASTM D5185m         2060         2907         2939         3678           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/:mm         *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         939         916         1016           Calcium         ppm         ASTM D5185m         1070         1031         1086         1206           Phosphorus         ppm         ASTM D5185m         1150         997         890         1019           Zinc         ppm         ASTM D5185m         1270         1204         1185         1286           Sulfur         ppm         ASTM D5185m         2060         2907         2939         3678           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION         *ASTM D74	Molybdenum	ppm	ASTM D5185m	60	58	60	66
Calcium         ppm         ASTM D5185m         1070         1031         1086         1206           Phosphorus         ppm         ASTM D5185m         1150         997         890         1019           Zinc         ppm         ASTM D5185m         1270         1204         1185         1286           Sulfur         ppm         ASTM D5185m         2060         2907         2939         3678           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION         <	Manganese	ppm	ASTM D5185m	0	<1	<1	1
Phosphorus         ppm         ASTM D5185m         1150         997         890         1019           Zinc         ppm         ASTM D5185m         1270         1204         1185         1286           Sulfur         ppm         ASTM D5185m         2060         2907         2939         3678           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/	Magnesium	ppm	ASTM D5185m	1010	939	916	1016
Zinc         ppm         ASTM D5185m         1270         1204         1185         1286           Sulfur         ppm         ASTM D5185m         2060         2907         2939         3678           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.2         16.2         14.4	Calcium	ppm	ASTM D5185m	1070	1031	1086	1206
Sulfur         ppm         ASTM D5185m         2060         2907         2939         3678           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         >20         0         3         2           Potassium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.2         16.2         14.4	Phosphorus	ppm	ASTM D5185m	1150	997	890	1019
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         <1	Zinc	ppm	ASTM D5185m	1270	1204	1185	1286
Silicon         ppm         ASTM D5185m         >25         3         5         13           Sodium         ppm         ASTM D5185m         <1         0         1           Potassium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.2         16.2         14.4	Sulfur	ppm	ASTM D5185m	2060	2907	2939	3678
Sodium         ppm         ASTM D5185m         <1         0         1           Potassium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.2         16.2         14.4	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         0         3         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.2         16.2         14.4	Silicon	ppm	ASTM D5185m	>25	3	5	
INFRA-RED	Sodium	ppm	ASTM D5185m		<1	0	1
Soot %         %         *ASTM D7844 >4         0.5         0.6         0.3           Nitration         Abs/cm         *ASTM D7624 >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.2         19.9         18.5           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.2         16.2         14.4	Potassium	ppm	ASTM D5185m	>20	0	3	2
Nitration         Abs/cm         *ASTM D7624         >20         8.7         9.5         6.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.2         16.2         14.4	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.2         19.9         18.5           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.2         16.2         14.4	Soot %	%	*ASTM D7844	>4	0.5	0.6	0.3
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm 'ASTM D7414 >25 15.2 16.2 14.4	Nitration	Abs/cm	*ASTM D7624	>20	8.7	9.5	6.5
Oxidation Abs/.1mm *ASTM D7414 >25 <b>15.2</b> 16.2 14.4	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.2	19.9	18.5
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.2	16.2	14.4
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	7.2	6.3	8.7



## **OIL ANALYSIS REPORT**

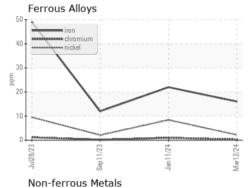


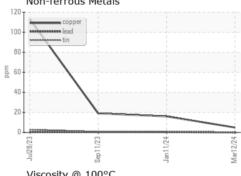


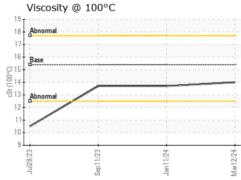
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

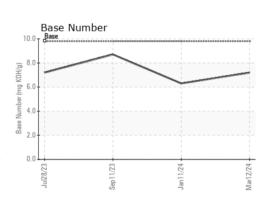
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.0	13.7	13.7

## **GRAPHS**













Certificate L2367

Laboratory Sample No.

: GFL0109005 Lab Number : 06120009 Unique Number : 10928842

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

**Tested** Diagnosed Test Package : FLEET

: 15 Mar 2024 : 18 Mar 2024 : 18 Mar 2024 - Wes Davis

GFL Environmental - 401 - Fort Wayne Hauling

4429 ALLEN MARTIN DR FORT WAYNE, IN US 46806

Contact: Stephanie Burton stephanieburton@gflenv.com T: (260)747-5037

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)

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