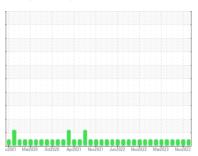


# **OIL ANALYSIS REPORT**

Sample Rating Trend



**NORMAL** 



Machine Id **3877** Component **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (10 GAL)

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the

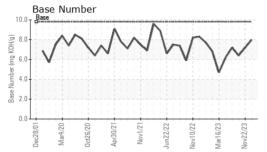
## **Fluid Condition**

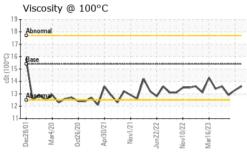
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION   method   imit/base   current   history1   history2	CAL)  c2001 Mar2020 Oc2020 Apr2021 Nov2021 Jun2022 Nov2022 Mar2023 Nov2023						
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age	Sample Number		Client Info		GFL0098530	GFL0098509	GFL0087785
Oil Age         hrs         Client Info         600         600         600         600           Oil Changed         Changed	Sample Date		Client Info		28 Dec 2023	22 Nov 2023	04 Aug 2023
Oil Changed Sample Status	Machine Age	hrs	Client Info		15581	18340	17726
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   milibase   current   history1   history2	Oil Age	hrs	Client Info		600	600	600
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	Changed
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         >100         1         4         5           Chromium         ppm         ASTM D5185m         >20         0         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Silycol	Fuel		WC Method	>6.0	<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         0         <1         0           Nickel         ppm         ASTM D5185m         >2         0         0         <1           Titanium         ppm         ASTM D5185m         >2         0         0         <1           Silver         ppm         ASTM D5185m         >2         0         0         <1           Aluminum         ppm         ASTM D5185m         >2         1         <1         <1         <1           Lead         ppm         ASTM D5185m         >40         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         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	1	4	5
Titanium	Chromium	ppm	ASTM D5185m	>20	0	<1	0
Silver	Nickel	ppm	ASTM D5185m	>2	0	0	<1
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead         ppm         ASTM D5185m         >40         0         <1         <1           Copper         ppm         ASTM D5185m         >330         <1         2         <1           Tin         ppm         ASTM D5185m         >15         <1         <1         <1           Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         2         <1           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         2         2         2         <1           Magnesium         ppm         ASTM D5185m         0         <1         <1         <1         <1           Calcium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1270	Silver	ppm	ASTM D5185m	>2	0	0	<1
Copper         ppm         ASTM D5185m         >330         <1         2         <1           Tin         ppm         ASTM D5185m         >15         <1	Aluminum	ppm	ASTM D5185m	>25	1	<1	<1
Tin         ppm         ASTM D5185m         >15         <1         <1         <1           Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         2         2         <1           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         55         58         60           Manganese         ppm         ASTM D5185m         0         <1         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2	Lead	ppm	ASTM D5185m	>40	0	<1	<1
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         2         <1           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         927         951         861           Calcium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1150         1019         1017         964           Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         <	Copper	ppm	ASTM D5185m	>330	<1	2	<1
Cadmium         ppm         ASTM D5185m         0	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron         ppm         ASTM D5185m         0         2         2         <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         55         58         60           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         927         951         861           Calcium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1150         1019         1017         964           Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         1         4         0         2           INFRA-RED         method         limit/base <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         55         58         60           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         927         951         861           Calcium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1150         1019         1017         964           Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >20         <1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844	Boron	ppm	ASTM D5185m	0	2	2	<1
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         927         951         861           Calcium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1150         1019         1017         964           Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         927         951         861           Calcium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1150         1019         1017         964           Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Molybdenum	ppm	ASTM D5185m	60	55	58	60
Calcium         ppm         ASTM D5185m         1070         1016         1093         1094           Phosphorus         ppm         ASTM D5185m         1150         1019         1017         964           Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         1150         1019         1017         964           Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >25         3         4         4           Potassium         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m	1010	927	951	861
Zinc         ppm         ASTM D5185m         1270         1236         1263         1173           Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m	1070	1016	1093	1094
Sulfur         ppm         ASTM D5185m         2060         2958         2675         2655           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         >20         <1		ppm		1150	1019		964
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         1         4         0           Potassium         ppm         ASTM D5185m         >20         <1	Zinc	ppm	ASTM D5185m	1270	1236	1263	1173
Silicon         ppm         ASTM D5185m         >25         3         4         4           Sodium         ppm         ASTM D5185m         1         4         0           Potassium         ppm         ASTM D5185m         >20         <1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         6.1         8.1         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         19.8         19.4           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         16.0         16.0	Sulfur	ppm	ASTM D5185m	2060	2958	2675	2655
Sodium         ppm         ASTM D5185m         1         4         0           Potassium         ppm         ASTM D5185m         >20         <1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         6.1         8.1         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         19.8         19.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         16.0         16.0	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         0         2           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >3         0.2         0.3         0.2           Nitration         Abs/cm         *ASTM D7624         >20         6.1         8.1         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         19.8         19.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         16.0         16.0	Silicon	ppm	ASTM D5185m	>25	3	4	4
INFRA-RED	Sodium	ppm	ASTM D5185m		1	4	0
Soot %         %         *ASTM D7844 >3         0.2         0.3         0.2           Nitration         Abs/cm         *ASTM D7624 >20         6.1         8.1         8.2           Sulfation         Abs/.1mm         *ASTM D7415 >30         18.3         19.8         19.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         14.1         16.0         16.0	Potassium	ppm	ASTM D5185m	>20	<1	0	2
Nitration         Abs/cm         *ASTM D7624         >20         6.1         8.1         8.2           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         19.8         19.4           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         16.0         16.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.3         19.8         19.4           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         14.1         16.0         16.0	Soot %	%	*ASTM D7844	>3	0.2	0.3	0.2
FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2514.116.016.0	Nitration	Abs/cm	*ASTM D7624	>20	6.1	8.1	8.2
Oxidation Abs/.1mm *ASTM D7414 >25 <b>14.1</b> 16.0 16.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.3	19.8	19.4
	FLUID DEGRADATION method limit/base current history1 history2						
Base Number (BN) mg KOH/g ASTM D2896 9.8 <b>8.0</b> 7.2 6.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	14.1	16.0	16.0
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.0	7.2	6.4



# **OIL ANALYSIS REPORT**

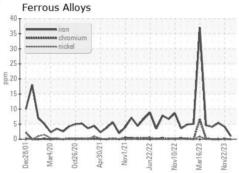


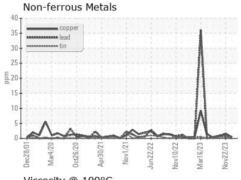


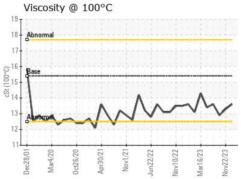
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

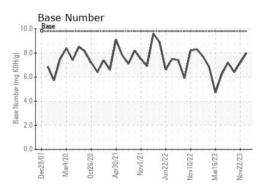
FLUID PROPE	KIIES	metnoa	ilmit/base	current	nistory i	nistory2
Visc @ 100°C	cSt	ASTM D445	15.4	13.6	13.3	12.9

## **GRAPHS**













Certificate L2367

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

: GFL0098530 : 06050672

: 10816621

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Recieved : 04 Jan 2024 Diagnosed : 04 Jan 2024

Diagnostician : Don Baldridge

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)

GFL Environmental - 006 - Wilmington

3618 US Highway 421 N Wilmington, NC US 28401

Contact: Eric Wood eric.wood@gflenv.com T: (717)723-1956

F: (910)762-6880