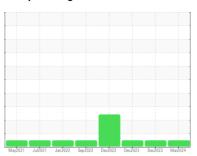


# **OIL ANALYSIS REPORT**

## Sample Rating Trend









Machine Id
4637M
Component
Diesel Engine
Fluid

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

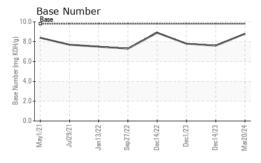
## **Fluid Condition**

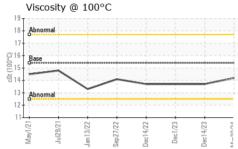
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Date	N SHP 15W40 (	- GAL)	May2021	Jul2021 Jan2022 Sep20	22 Dec2022 Dec2023 Dec2023	3 Mar2024	
Client Info	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age   hrs   Client Info   19402   19086   18992   17441     Oil Age   hrs   Client Info   19402   18992   17441     Oil Changed   Not Changd   Not Changd   Not Changd   Not Changd   North   North	Sample Number		Client Info		GFL0108761	GFL0105640	GFL0101474
Dil Age	Sample Date		Client Info		20 Mar 2024	14 Dec 2023	01 Dec 2023
Dil Age	Machine Age	hrs	Client Info		19402	19086	18992
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   minit/base   current   history1   history2	Oil Age	hrs	Client Info		19402	18992	17441
CONTAMINATION   method   militibase   current   history1   history2			Client Info		Changed	Not Changd	Not Changd
Fuel					_	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         >90         14         24         29           Chromium         ppm         ASTM D5185m         >20         <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	WEAR METAL	S	method	limit/base	current	history1	history2
Strickel	ron	ppm	ASTM D5185m	>90	14	24	29
Silver	Chromium		ASTM D5185m	>20	<1	1	<1
Distribution	Nickel				<1	<1	0
Silver	Titanium		ASTM D5185m	>2	<1	0	0
Aluminum	Silver		ASTM D5185m	>2	0	<1	0
Lead	Aluminum		ASTM D5185m	>20	2	2	2
Copper	Lead		ASTM D5185m	>40	<1	0	0
Canadium	Copper		ASTM D5185m	>330	4	39	52
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         <1         3         2           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0         0           Manganese         ppm         ASTM D5185m         0         0         1         <1         1           Magnesium         ppm         ASTM D5185m         1070         1146         1060         1173           Phosphorus         ppm         ASTM D5185m         1270         1321         1239         1308           Sulfur         ppm         ASTM D5185m         1270         1321         1239         1308           Sulfur         ppm         ASTM D5185m         2060         2965         2570         2698           CONTAMINANTS         method         limit/base	• •			>15	<1	<1	<1
ADDITIVES	Vanadium		ASTM D5185m		0	0	0
Boron   ppm   ASTM D5185m   0   0   0   0   0   0   0   0   0	Cadmium				0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         64         54         60           Manganese         ppm         ASTM D5185m         0         0         1         <1           Magnesium         ppm         ASTM D5185m         1010         1008         880         968           Calcium         ppm         ASTM D5185m         1070         1146         1060         1173           Phosphorus         ppm         ASTM D5185m         1150         1047         949         1036           Zinc         ppm         ASTM D5185m         1270         1321         1239         1308           Sulfur         ppm         ASTM D5185m         2060         2965         2570         2698           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         6         6           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >6	Boron	ppm	ASTM D5185m	0	<1	3	2
Manganese         ppm         ASTM D5185m         0         0         1         <1           Magnesium         ppm         ASTM D5185m         1010         1008         880         968           Calcium         ppm         ASTM D5185m         1070         1146         1060         1173           Phosphorus         ppm         ASTM D5185m         1150         1047         949         1036           Zinc         ppm         ASTM D5185m         1270         1321         1239         1308           Sulfur         ppm         ASTM D5185m         2060         2965         2570         2698           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         6         6           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cmm         *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         1008         880         968           Calcium         ppm         ASTM D5185m         1070         1146         1060         1173           Phosphorus         ppm         ASTM D5185m         1150         1047         949         1036           Zinc         ppm         ASTM D5185m         1270         1321         1239         1308           Sulfur         ppm         ASTM D5185m         2060         2965         2570         2698           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         6         6           Sodium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/.1mm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D	Molybdenum	ppm	ASTM D5185m	60	64	54	60
Calcium         ppm         ASTM D5185m         1070         1146         1060         1173           Phosphorus         ppm         ASTM D5185m         1150         1047         949         1036           Zinc         ppm         ASTM D5185m         1270         1321         1239         1308           Sulfur         ppm         ASTM D5185m         2060         2965         2570         2698           CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >25         5         6         6           Solicon         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID D	Manganese	ppm	ASTM D5185m	0	0	1	<1
Phosphorus         ppm         ASTM D5185m         1 150         1047         949         1036           Zinc         ppm         ASTM D5185m         1 270         1321         1 239         1 308           Sulfur         ppm         ASTM D5185m         2060         2965         2570         2698           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         6         6           Sodium         ppm         ASTM D5185m         >20         2         2         0           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         <	Magnesium	ppm	ASTM D5185m	1010	1008	880	968
Zinc   ppm   ASTM D5185m   1270   1321   1239   1308	Calcium	ppm	ASTM D5185m	1070	1146	1060	1173
Sulfur         ppm         ASTM D5185m         2060         2965         2570         2698           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         6         6           Sodium         ppm         ASTM D5185m         6         7         9           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0	Phosphorus	ppm	ASTM D5185m	1150	1047	949	1036
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         5         6         6           Sodium         ppm         ASTM D5185m         6         7         9           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0	Zinc	ppm	ASTM D5185m	1270	1321	1239	1308
Silicon         ppm         ASTM D5185m         >25         5         6         6           Sodium         ppm         ASTM D5185m         6         7         9           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0	Sulfur	ppm	ASTM D5185m	2060	2965	2570	2698
Sodium         ppm         ASTM D5185m         6         7         9           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         6         7         9           Potassium         ppm         ASTM D5185m         >20         2         2         0           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0	Silicon	ppm	ASTM D5185m	>25	5	6	6
INFRA-RED	Sodium	ppm	ASTM D5185m		6	7	9
Soot %         %         *ASTM D7844 >6         0.2         0.6         0.6           Nitration         Abs/cm         *ASTM D7624 >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415 >30         19.6         20.3         20.2           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414 >25         15.8         16.9         17.0	Potassium	ppm	ASTM D5185m	>20	2	2	0
Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0	INFRA-RED		method	limit/base	current	history1	history2
Nitration         Abs/cm         *ASTM D7624         >20         7.6         8.8         8.8           Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION method limit/base current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0	Soot %	%	*ASTM D7844	>6	0.2	0.6	0.6
Sulfation         Abs/.1mm         *ASTM D7415         >30         19.6         20.3         20.2           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         15.8         16.9         17.0							
Oxidation							
	FLUID DEGRADATION method limit/base current history1 history2						
	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.8	16.9	17.0
	Base Number (BN)	mg KOH/g			8.8	7.6	7.8



# **OIL ANALYSIS REPORT**

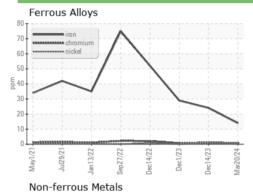


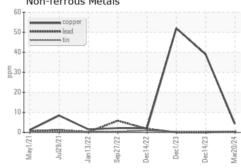


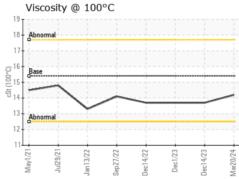
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

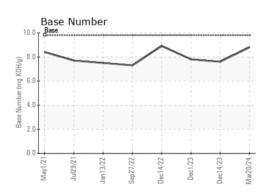
FLUID PROPE	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	13.7	13.7

## **GRAPHS**













Certificate L2367

Laboratory

Sample No. Lab Number : 06126185 Unique Number : 10940336

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0108761

Received **Tested** Diagnosed Test Package : FLEET

: 24 Mar 2024 : 24 Mar 2024 - Wes Davis

: 22 Mar 2024

GFL Environmental - 415 - Michigan East 6200 Elmridge

Sterling Heights, MI US 48313

Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

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)