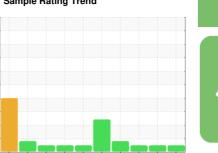


# **OIL ANALYSIS REPORT**

## Sample Rating Trend



NORMAL





Machine Id **4506M Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (--- 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

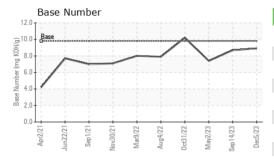
## **Fluid Condition**

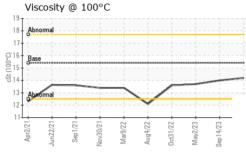
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number   Client Info   GFL0101463   GFL0093179   GFL0081   Sample Date   Client Info   05 Dec 2023   14 Sep 2023   02 May 2 Machine Age   hrs   Client Info   28652   28052   27006   25717   Client Info   Changed   Cha	N 50P 15W40 (	- GAL)	Apr2021 Juna	021 Sep2021 Nov2021 Marz	022 Aug2022 Oct2022 May2023 Sep2	023 Dec2023	
Sample Date   Client Info   05 Dec 2023   14 Sep 2023   02 May 2 Machine Age   hrs   Client Info   28652   28052   27006   25717   01 Changed   Client Info   Changed   Change	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Client Info	Sample Number		Client Info		GFL0101463	GFL0093179	GFL0081451
Machine Age         hrs         Client Info         28652         28052         27006         25717           Oil Age         hrs         Client Info         28052         27006         25717           Oil Changed         Client Info         Changed			Client Info		05 Dec 2023	14 Sep 2023	02 May 2023
Oil Changed	Machine Age	hrs	Client Info		28652		
Contained   Client Info   Changed   Changed   Changed   NORMAL		hrs	Client Info		28052	27006	25717
NORMAL   NORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1			Client Info		Changed	Changed	Changed
Fuel	-				_		NORMAL
Water Glycol         WC Method WC Method         >0.2         NEG NEG NEG         NEG NEG           WEAR METALS         method limit/base         current current         history1         history1           Iron         ppm ASTM D5185m         >80         9         26         83           Chromium         ppm ASTM D5185m         >5         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>5	<1.0	<1.0	<1.0
WEAR METALS         method         limit/base         current         history1         history1           Iron         ppm         ASTM D5185m         >80         9         26         83           Chromium         ppm         ASTM D5185m         >5         <1	Water		WC Method	>0.2	NEG	NEG	NEG
Pron	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>80	9	26	83
Titanium	Chromium	ppm	ASTM D5185m	>5	<1	1	2
Silver	Nickel	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper         ppm         ASTM D5185m         >150         2         <1         1           Tin         ppm         ASTM D5185m         >5         0         <1	Aluminum	ppm	ASTM D5185m	>30	<1	3	3
Tin	Lead	ppm	ASTM D5185m	>30	0	0	<1
Vanadium         ppm         ASTM D5185m         0         <1         0           Cadmium         ppm         ASTM D5185m         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         14         <1         1           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         0         0           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         836         1063         813           Calcium         ppm         ASTM D5185m         1070         1256         1194         979           Phosphorus         ppm         ASTM D5185m         1270         1196         1364         1144           Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         hi	Copper	ppm	ASTM D5185m	>150	2		1
Cadmium         ppm         ASTM D5185m         0         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         14         <1	Tin	ppm	ASTM D5185m	>5	0	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         59         60         57           Manganese         ppm         ASTM D5185m         0         <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         59         60         57           Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         836         1063         813           Calcium         ppm         ASTM D5185m         1070         1256         1194         979           Phosphorus         ppm         ASTM D5185m         1150         994         1092         954           Zinc         ppm         ASTM D5185m         1270         1196         1364         1144           Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         >20         <1         2         2           INFRA-RED         method         limit/base	Boron	ppm	ASTM D5185m	0	14	<1	1
Manganese         ppm         ASTM D5185m         0         <1         <1         <1           Magnesium         ppm         ASTM D5185m         1010         836         1063         813           Calcium         ppm         ASTM D5185m         1070         1256         1194         979           Phosphorus         ppm         ASTM D5185m         1150         994         1092         954           Zinc         ppm         ASTM D5185m         1270         1196         1364         1144           Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         >20         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         836         1063         813           Calcium         ppm         ASTM D5185m         1070         1256         1194         979           Phosphorus         ppm         ASTM D5185m         1150         994         1092         954           Zinc         ppm         ASTM D5185m         1270         1196         1364         1144           Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         >20         <1	Molybdenum	ppm	ASTM D5185m	60	59	60	57
Calcium         ppm         ASTM D5185m         1070         1256         1194         979           Phosphorus         ppm         ASTM D5185m         1150         994         1092         954           Zinc         ppm         ASTM D5185m         1270         1196         1364         1144           Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         >20         <1	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus         ppm         ASTM D5185m         1150         994         1092         954           Zinc         ppm         ASTM D5185m         1270         1196         1364         1144           Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         >20         4         7         8           Potassium         ppm         ASTM D5185m         >20         <1	Magnesium	ppm	ASTM D5185m	1010	836	1063	813
Zinc         ppm         ASTM D5185m         1270         1196         1364         1144           Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1	Calcium	ppm	ASTM D5185m	1070	1256	1194	979
Sulfur         ppm         ASTM D5185m         2060         3009         3940         2669           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1	Phosphorus	ppm	ASTM D5185m	1150	994	1092	954
CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1	Zinc	ppm	ASTM D5185m	1270	1196	1364	1144
Silicon         ppm         ASTM D5185m         >20         4         7         8           Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1         2         2           INFRA-RED         method         limit/base         current         history1         history1         history1           Soot %         %         *ASTM D7844         >3         0.2         0.4         0.7           Nitration         Abs/cm         *ASTM D7624         >20         6.0         7.8         10.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         18.5         19.3           FLUID DEGRADATION method         limit/base         current         history1         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         14.6         18.0	Sulfur	ppm	ASTM D5185m	2060	3009	3940	2669
Sodium         ppm         ASTM D5185m         3         4         3           Potassium         ppm         ASTM D5185m         >20         <1	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         <1         2         2           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >3         0.2         0.4         0.7           Nitration         Abs/cm         *ASTM D7624         >20         6.0         7.8         10.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         18.5         19.3           FLUID DEGRADATION         method         limit/base         current         history1         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         14.6         18.0	Silicon	ppm	ASTM D5185m	>20	4	7	8
INFRA-RED	Sodium	ppm	ASTM D5185m		3	4	3
Soot %         %         *ASTM D7844         >3         0.2         0.4         0.7           Nitration         Abs/cm         *ASTM D7624         >20         6.0         7.8         10.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         18.5         19.3           FLUID DEGRADATION method limit/base current         history1         history1         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         14.6         18.0	Potassium	ppm	ASTM D5185m	>20	<1	2	2
Nitration         Abs/cm         *ASTM D7624         >20         6.0         7.8         10.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         18.5         19.3           FLUID DEGRADATION method limit/base current         history1         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         14.6         18.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         18.0         18.5         19.3           FLUID DEGRADATION method limit/base current history1         history1         history1         history1         18.0           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.9         14.6         18.0	Soot %	%	*ASTM D7844	>3	0.2	0.4	0.7
FLUID DEGRADATION method limit/base current history1 history  Oxidation Abs/.1mm *ASTM D7414 >25 13.9 14.6 18.0	Nitration	Abs/cm	*ASTM D7624	>20	6.0	7.8	10.5
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.9</b> 14.6 18.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	18.0	18.5	19.3
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Rase Number (RN) mg KOH/g ASTM D2896 9.8 8.9 8.7 7.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.9	14.6	18.0
2.00 1.4 mg//city 7.5 mg//city 7.4	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	8.9	8.7	7.4



# **OIL ANALYSIS REPORT**

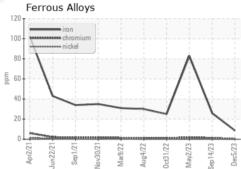


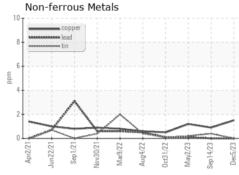


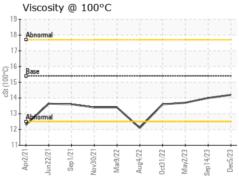
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

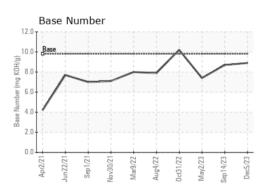
FLUID PROPE	RTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.2	14.0	13.7

## **GRAPHS**













Certificate L2367

Laboratory Sample No. Lab Number Unique Number : 10777181 Test Package : FLEET

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0101463 : 06027390

Received : 07 Dec 2023 Diagnosed : 08 Dec 2023 Diagnostician : Wes Davis

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)