

# **OIL ANALYSIS REPORT**

## Sample Rating Trend

# **NORMAL**

(YA117978) **AUTOCAR 3516** 

Diesel Engine

PETRO CANADA DURON SHP 15W40 (45

## 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

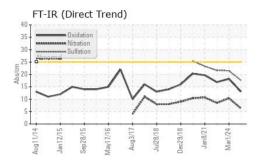
## **Fluid Condition**

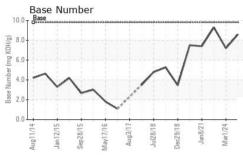
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

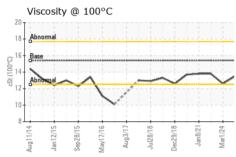
Sample Number   Client Info   GFL0111397   GFL0111397   GFL01222.	iAL)		.ug2014 Jan20	115 Sep2015 May2016 Au	2017 Jul2018 Dec2018 Jan2021	Mar2024	
Client Info   O1 Mar 2024   12 Apr 2024	SAMPLE INFO	RMATION	method	limit/base	current	history1	history2
Client Info   O1 Mar 2024   12 Apr 2024	Sample Number		Client Info		GFL0111377	GFL0111393	GFL0022244
Machine Age         hrs         Client Info         2491         24917         17096           Oil Age         hrs         Client Info         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         N/A         N/A         NORMAL           Sample Status         Client Info         N/A         N/A         N/A         N/A         N/A         N/A         NORMAL           CONTAMINATION         method         Immitibase         current         history         history           Fuel         WC Method         >3.0         <1.0			Client Info		01 Mar 2024	01 Mar 2024	12 Apr 2021
Oil Age         hrs         Client Info         0         0         0         0         0         0         0         0         0         0         N/A         N/A         N/A         Not Change           Sample Status         Current         Inistory         Inist	Machine Age	hrs	Client Info		2491		
Contamped   Client Info   N/A   N/A   Not Change   Sample Status   Normal   Normal   ABNORMAL   Normal   Nor		hrs	Client Info		0	0	0
NORMAL   ABNORMAL   NORMAL   CONTAMINATION   method   limit/base   current   history1   history1   history1   history1   history2   Ned   Ned	-		Client Info			N/A	Not Changd
Fuel					NORMAL	ABNORMAL	
Water Glycol         WC Method         >0.2         NEG         Netory         Netory         Netory         Netory         Netory         Netory         Netory         Net	CONTAMINA	NOITA	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
Control   Cont	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR META	ALS	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>75	10	65	20
Description	Chromium	ppm	ASTM D5185m	>5	2	3	<1
Silver	Nickel	ppm	ASTM D5185m	>4	<1	0	0
Aluminum	Γitanium	ppm	ASTM D5185m	>2	<1	0	<1
Lead         ppm         ASTM D5185m         >25         <1         0         <1           Copper         ppm         ASTM D5185m         >100         <1         ▲ 111         1           Fin         ppm         ASTM D5185m         >4         <1         <1         0           Antimony         ppm         ASTM D5185m           0           Vanadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history1           Boron         ppm         ASTM D5185m         0         3         1         9           Boron         ppm         ASTM D5185m         0         0         0         0         0           Boron         ppm         ASTM D5185m         0         41         1         <1         <1           Boron         ppm         ASTM D5185m         0         0         1         92         904	Silver	ppm	ASTM D5185m	>2	0	0	0
Description	Aluminum	ppm	ASTM D5185m	>15	3	8	2
Antimony	_ead	ppm	ASTM D5185m	>25	<1	0	<1
Antimony   ppm   ASTM D5185m   >4   <1   <1   0   O	Copper	ppm	ASTM D5185m	>100	<1	<u> 111</u>	1
Antimony			ASTM D5185m	>4	<1	<1	0
Anadium         ppm         ASTM D5185m         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0           ADDITIVES         method         limit/base         current         history1         history3           Boron         ppm         ASTM D5185m         0         3         1         9           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         61         62         61           Magnesium         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         901         920         904           Calcium         ppm         ASTM D5185m         1070         1053         1051         1035           Phosphorus         ppm         ASTM D5185m         1270         1166         1174         1171           Sulfur         ppm         ASTM D5185m         2060         2925         2164         2579           CONTAMINANTS         method         limit/base         current         history1<	Antimony		ASTM D5185m				0
ADDITIVES	•		ASTM D5185m		<1	0	0
Soron   ppm   ASTM D5185m   0   0   0   0   0   0   0   0   0	Cadmium		ASTM D5185m		<1	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         61         62         61           Manganese         ppm         ASTM D5185m         0         <1	Boron	ppm	ASTM D5185m	0	3	1	9
Manganese         ppm         ASTM D5185m         0         <1         1         <1           Magnesium         ppm         ASTM D5185m         1010         901         920         904           Calcium         ppm         ASTM D5185m         1070         1053         1051         1035           Phosphorus         ppm         ASTM D5185m         1150         953         933         1006           Zinc         ppm         ASTM D5185m         1270         1166         1174         1171           Sulfur         ppm         ASTM D5185m         2060         2925         2164         2579           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         4         7         4           Godium         ppm         ASTM D5185m         >20         2         <1	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         901         920         904           Calcium         ppm         ASTM D5185m         1070         1053         1051         1035           Phosphorus         ppm         ASTM D5185m         1150         953         933         1006           Zinc         ppm         ASTM D5185m         1270         1166         1174         1171           Sulfur         ppm         ASTM D5185m         2060         2925         2164         2579           CONTAMINANTS         method         limit/base         current         history1         history1           Silicon         ppm         ASTM D5185m         >25         4         7         4           Sodium         ppm         ASTM D5185m         >20         2         <1	Molybdenum	ppm	ASTM D5185m	60	61	62	61
Calcium         ppm         ASTM D5185m         1070         1053         1051         1035           Phosphorus         ppm         ASTM D5185m         1150         953         933         1006           Zinc         ppm         ASTM D5185m         1270         1166         1174         1171           Gulfur         ppm         ASTM D5185m         2060         2925         2164         2579           CONTAMINANTS         method         limit/base         current         history1         history           CONTAMINANTS         method         limit/base         current         history1         history           Goldium         ppm         ASTM D5185m         >25         4         7         4           Goldium         ppm         ASTM D5185m         >20         2         4         6           Potassium         ppm         ASTM D5185m         >20         2         <1	Manganese	ppm	ASTM D5185m	0	<1	1	<1
Phosphorus         ppm         ASTM D5185m         1150         953         933         1006           Zinc         ppm         ASTM D5185m         1270         1166         1174         1171           Sulfur         ppm         ASTM D5185m         2060         2925         2164         2579           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         4         7         4           Godium         ppm         ASTM D5185m         2         4         6           Potassium         ppm         ASTM D5185m         >20         2         <1	Magnesium	ppm	ASTM D5185m	1010	901	920	904
Zinc   ppm   ASTM D5185m   1270   1166   1174   1171   1171   2579	Calcium	ppm	ASTM D5185m	1070	1053	1051	1035
Sulfur         ppm         ASTM D5185m         2060         2925         2164         2579           CONTAMINANTS         method         limit/base         current         history1         history           Silicon         ppm         ASTM D5185m         >25         4         7         4           Sodium         ppm         ASTM D5185m         2         4         6           Potassium         ppm         ASTM D5185m         >20         2         <1	Phosphorus	ppm	ASTM D5185m	1150	953	933	1006
Gulfur         ppm         ASTM D5185m         2060         2925         2164         2579           CONTAMINANTS         method         limit/base         current         history1         history           Golium         ppm         ASTM D5185m         >25         4         7         4           Godium         ppm         ASTM D5185m         2         4         6           Potassium         ppm         ASTM D5185m         >20         2         <1	Zinc	ppm	ASTM D5185m	1270	1166	1174	1171
Solition   ppm   ASTM D5185m   >25   4   7   4	Sulfur		ASTM D5185m	2060	2925	2164	2579
Sodium         ppm         ASTM D5185m         2         4         6           Potassium         ppm         ASTM D5185m         >20         2         <1         <1           INFRA-RED         method         limit/base         current         history1         history1           Soot %         %         *ASTM D7844         >6         0.4         1.1         0.5           Vitration         Abs/cm         *ASTM D7624         >20         6.3         10.4         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         21.5         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history           Dxidation         Abs/.1mm         *ASTM D7414         >25         13.1         18.2         16.9	CONTAMINA	ANTS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         2         <1         <1           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.4         1.1         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.3         10.4         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         21.5         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         18.2         16.9	Silicon	ppm	ASTM D5185m	>25	4	7	4
INFRA-RED	Sodium	ppm	ASTM D5185m		2	4	6
Soot %         %         *ASTM D7844         >6         0.4         1.1         0.5           Nitration         Abs/cm         *ASTM D7624         >20         6.3         10.4         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         21.5         21.6           FLUID DEGRADATION method limit/base current history1         history1         history1           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         18.2         16.9	Potassium	ppm	ASTM D5185m	>20	2	<1	<1
Nitration         Abs/cm         *ASTM D7624         >20         6.3         10.4         8.5           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         21.5         21.6           FLUID DEGRADATION method limit/base current         history1         history           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         18.2         16.9	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         21.5         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         18.2         16.9	Soot %	%	*ASTM D7844	>6	0.4	1.1	0.5
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         21.5         21.6           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         18.2         16.9	Vitration	Abs/cm	*ASTM D7624	>20	6.3	10.4	8.5
Oxidation         Abs/.1mm         *ASTM D7414         >25         13.1         18.2         16.9				>30	17.6	21.5	
	FLUID DEGR	ADATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.1	18.2	16.9
	Base Number (BN	Mg KOH/a	ASTM D2896	9.8		7.2	9.3



# **OIL ANALYSIS REPORT**



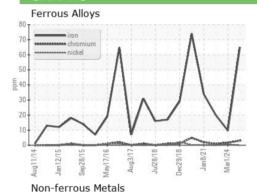


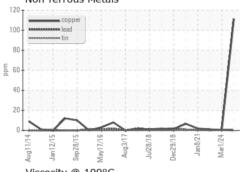


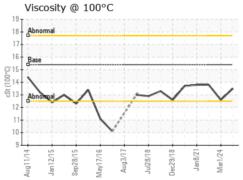
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

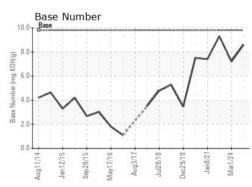
FLUID PROPERTIES		method				history2	
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	12.6	13.8	

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

: GFL0111377 Lab Number : 06139507 Unique Number : 10964315

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 05 Apr 2024

**Tested** : 05 Apr 2024 Diagnosed : 05 Apr 2024 - Wes Davis

427 Roberts Road Newport, NC US 28570 Contact: Marquis Williams

GFL Environmental - 004 - Newport - Central Coast

Test Package : FLEET 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) F: (252)223-6010

marquis.williams@gflenv.com T:

Report Id: GFL004 [WUSCAR] 06139507 (Generated: 04/06/2024 01:48:24) Rev: 1

Submitted By: GFL004 and GLF112 - Marquis Williams