

OIL ANALYSIS REPORT



Sample Rating Trend







(43346HA) 811004 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- LTR)

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

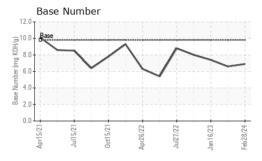
Fluid Condition

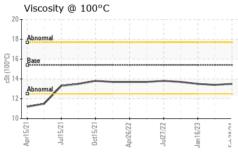
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Cample Number Client Info Cample Number Client Info Cample Date Changed Changed Changed Changed Changed Changed Changed Changed NORMAL NORMAL	IN SHP 13W4U (-	LIN)	Apr2021	Jul2021 Oct2021	Apr2022 Jul2022 Jan2023	Feb2024	
Client Info 28 Feb 2024 16 Nov 2023 16 Jan 2025	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Client Info 28 Feb 2024 16 Nov 2023 16 Jan 2025	Sample Number		Client Info		GFL0058087	GFL0058123	GFL0058021
Machine Age hrs Client Info 4891 4413 4189 224 270			Client Info		28 Feb 2024	16 Nov 2023	16 Jan 2023
Oil Changed	•	hrs	Client Info		4891	4413	4189
Oil Changed Client Info N/A Changed Changed NORMAL N		hrs	Client Info		478	224	
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history3 hi	-		Client Info		N/A	Changed	Changed
Fuel	-						Ü
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 17 25 8 Chromium ppm ASTM D5185m >20 1 1 <1 Nickel ppm ASTM D5185m >5 3 3 1 Titanium ppm ASTM D5185m >2 <1 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 4 5 <1 Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >15 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >120 17 25 8 Chromium ppm ASTM D5185m >20 1 1 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	ron	ppm	ASTM D5185m	>120	17	25	8
Silver	Chromium	ppm	ASTM D5185m	>20	1	1	<1
Silver	Nickel	ppm	ASTM D5185m	>5	3	3	1
Aluminum	Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Lead	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 9 14 2 Tin ppm ASTM D5185m >15 <1	Aluminum	ppm	ASTM D5185m	>20	4	5	<1
Tin	Lead	ppm	ASTM D5185m	>40	0	0	<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 4 5 5 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 0 60 63 57 62 Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 979 838 880 Calcium ppm ASTM D5185m 1070 1051 1047 1114 Phosphorus ppm ASTM D5185m 1270 1263 1129 1153 Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current h	Copper	ppm	ASTM D5185m	>330	9	14	2
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 4 5 5 Barium ppm ASTM D5185m 0 0 0 2 Molybdenum ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	<1	<1	<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron ppm ASTM D5185m 0 0 0 0 0 2	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 2 Molybdenum ppm ASTM D5185m 60 63 57 62 Manganese ppm ASTM D5185m 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 63 57 62 Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 979 838 880 Calcium ppm ASTM D5185m 1070 1051 1047 1114 Phosphorus ppm ASTM D5185m 1150 964 876 928 Zinc ppm ASTM D5185m 1270 1263 1129 1153 Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % *6 *ASTM D7844 <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>4</th> <td>5</td> <td>5</td>	Boron	ppm	ASTM D5185m	0	4	5	5
Manganese ppm ASTM D5185m 0 <1 1 <1 Magnesium ppm ASTM D5185m 1010 979 838 880 Calcium ppm ASTM D5185m 1070 1051 1047 1114 Phosphorus ppm ASTM D5185m 1150 964 876 928 Zinc ppm ASTM D5185m 1270 1263 1129 1153 Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1	Barium	ppm	ASTM D5185m	0	0	0	2
Magnesium ppm ASTM D5185m 1010 979 838 880 Calcium ppm ASTM D5185m 1070 1051 1047 1114 Phosphorus ppm ASTM D5185m 1150 964 876 928 Zinc ppm ASTM D5185m 1270 1263 1129 1153 Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/.1mm *ASTM D7845 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D784	Molybdenum	ppm	ASTM D5185m	60	63	57	62
Calcium ppm ASTM D5185m 1070 1051 1047 1114 Phosphorus ppm ASTM D5185m 1150 964 876 928 Zinc ppm ASTM D5185m 1270 1263 1129 1153 Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 <td< td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th><1</th><td>1</td><td><1</td></td<>	Manganese	ppm	ASTM D5185m	0	<1	1	<1
Phosphorus ppm ASTM D5185m 1150 964 876 928 Zinc ppm ASTM D5185m 1270 1263 1129 1153 Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limi	Magnesium	ppm	ASTM D5185m	1010	979	838	880
Zinc ppm ASTM D5185m 1270 1263 1129 1153 Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D74	Calcium	ppm	ASTM D5185m	1070	1051	1047	1114
Sulfur ppm ASTM D5185m 2060 2925 2318 2758 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Phosphorus	ppm	ASTM D5185m	1150	964	876	928
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Zinc	ppm	ASTM D5185m	1270	1263	1129	1153
Silicon ppm ASTM D5185m >25 4 4 4 Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Sulfur	ppm	ASTM D5185m	2060	2925	2318	2758
Sodium ppm ASTM D5185m 5 8 4 Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 2 3 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Silicon	ppm	ASTM D5185m	>25	4	4	4
INFRA-RED	Sodium	ppm	ASTM D5185m		5	8	4
Soot % % *ASTM D7844 >4 0.4 0.5 0.4 Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Potassium	ppm	ASTM D5185m	>20	2	3	2
Nitration Abs/cm *ASTM D7624 >20 7.8 9.3 7.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current bistory1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.5 20.4 19.0 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Soot %	%	*ASTM D7844	>4	0.4	0.5	0.4
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Nitration	Abs/cm	*ASTM D7624	>20	7.8	9.3	7.7
Oxidation Abs/.1mm *ASTM D7414 >25 15.4 15.3 14.6	Sulfation	Abs/.1mm	*ASTM D7415	>30	19.5	20.4	19.0
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 6.9 6.6 7.4	Oxidation	Abs/.1mm	*ASTM D7414	>25	15.4	15.3	14.6
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	6.9	6.6	7.4



OIL ANALYSIS REPORT

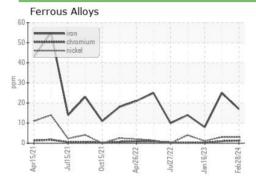


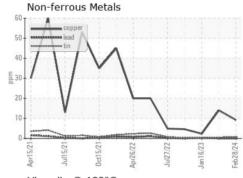


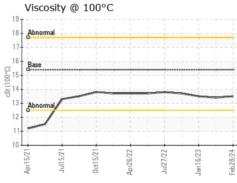
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

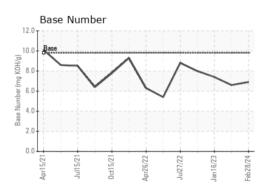
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.5	13.4	13.5

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number : 06104072 Unique Number : 10902302

Test Package : FLEET

: GFL0058087

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

Tested Diagnosed

: 29 Feb 2024 : 29 Feb 2024 : 29 Feb 2024 - Wes Davis

GFL Environmental - 657 - Charlottesville Hauling 5498 Richmond Road

Troy, VA US 22974

Contact: Brian Ulickas bulickas@gflenv.com T:

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: