

OIL ANALYSIS REPORT

NORMAL

Hamman

Machine Id 10855

Component Diesel Engine

Fluid PETRO CANADA DURON SHP 15W40 (13 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 INFORI	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		GFL0122160	GFL0118106	GFL0112376	
Sample Date		Client Info		15 Jul 2024	13 May 2024	22 Feb 2024	
Machine Age	hrs	Client Info		670	462	65	
Oil Age	hrs	Client Info		605	397	535	
Oil Changed		Client Info		Changed	Not Changd	Changed	
Sample Status				NORMAL	NORMAL	NORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2	
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0	
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	>75	38	18	1	
Chromium	ppm	ASTM D5185m	>5	1	<1	0	
Nickel	ppm	ASTM D5185m	>4	<1	0	0	
Titanium	ppm	ASTM D5185m	>2	0	0	<1	
Silver	ppm	ASTM D5185m	>2	0	0	0	
Aluminum	ppm	ASTM D5185m	>15	5	2	<1	
Lead	ppm	ASTM D5185m	>25	0	0	0	
Copper	ppm	ASTM D5185m	>100	5	0	<1	
Tin	ppm	ASTM D5185m	>4	0	<1	0	
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
	pp	AOTIN DOTIONI		U	0	0	
ADDITIVES	66	method	limit/base		history1	history2	
ADDITIVES Boron	ppm		limit/base		-	-	
		method		current	history1	history2	
Boron	ppm	method ASTM D5185m	0	current 7	history1 12	history2 19	
Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 7 0	history1 12 1	history2 19 0	
Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 7 0 64	history1 12 1 60	history2 19 0 59	
Boron Barium Molybdenum Manganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	Current 7 0 64 <1 862 1052	history1 12 1 60 <1	history2 19 0 59 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	Current 7 0 64 <1 862	history1 12 1 60 <1 857 1048 1004	history2 19 0 59 <1 829 990 936	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 7 0 64 <1 862 1052	history1 12 1 60 <1 857 1048	history2 19 0 59 <1 829 990 936 1087	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 7 0 64 <1 862 1052 864	history1 12 1 60 <1 857 1048 1004	history2 19 0 59 <1 829 990 936	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current 7 0 64 <1 862 1052 864 1178 2511	history1 12 1 60 <1 857 1048 1004 1182	history2 19 0 59 <1 829 990 936 1087 2802 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 7 0 64 <1 862 1052 864 1178 2511 Current 15	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8	history2 19 0 59 <1 829 990 936 1087 2802 history2 5	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 7 0 64 <1 862 1052 864 1178 2511 current	history1 12 1 60 <1 857 1048 1004 1182 3305 history1	history2 19 0 59 <1 829 990 936 1087 2802 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 7 0 64 <1 862 1052 864 1178 2511 Current 15	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8	history2 19 0 59 <1 829 990 936 1087 2802 history2 5	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	Current 7 0 64 <1 862 1052 864 1178 2511 Current 15 37 3	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8 24	history2 19 0 59 <1 829 990 936 1087 2802 history2 5 6	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	Current 7 0 64 <1 862 1052 864 1178 2511 Current 15 37 3	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8 24 <1 history1 0.6	history2 19 0 59 <1 829 990 936 1087 2802 history2 5 6 0	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20	Current 7 0 64 <1 862 1052 864 1178 2511 <i>current</i> 15 37 3 3 <i>current</i>	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8 24 <1 history1	history2 19 0 59 <1 829 990 936 1087 2802 history2 5 6 0 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	Current 7 0 64 <1 862 1052 864 1178 2511 current 15 37 3 current 1.1	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8 24 <1 history1 0.6	history2 19 0 59 <1 829 990 936 1087 2802 history2 5 6 0 history2 0.2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm t ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >20 20 1imit/base >20	Current 7 0 64 <1 862 1052 864 1178 2511 current 15 37 3 current 1.1 9.1 19.7	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8 24 <1 0.6 6.8	history2 19 0 59 <1 829 990 936 1087 2802 history2 5 6 0 history2 0 4.5	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm t ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 20 225 20 imit/base >6 >20 20	Current 7 0 64 <1 862 1052 864 1178 2511 current 15 37 3 current 1.1 9.1 19.7	history1 12 1 60 <1 857 1048 1004 1182 3305 history1 8 24 <1 0.6 6.8 17.7	history2 19 0 59 <1 829 990 936 1087 2802 history2 5 6 0 history2 0.2 4.5 16.8	



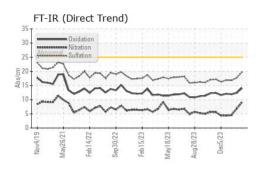
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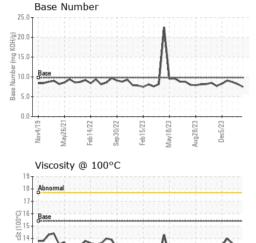
Nov4/19

Mav26/21

eb14/22

OIL ANALYSIS REPORT





Feb15/23

Aug28/23 Dec5/23

Mav18/23

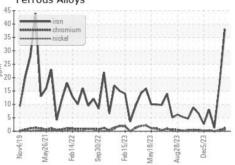
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.2	12.9	13.6
GRAPHS						

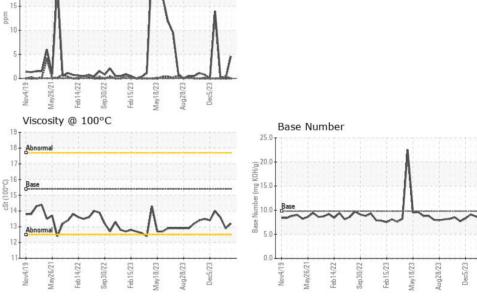
Ferrous Alloys

Non-ferrous Metals

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Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 010 - Stockbridge Sample No. : GFL0122160 Received : 16 Jul 2024 1280 Rum Creek Parkway Lab Number : 06237585 Tested : 17 Jul 2024 Stockbridge, GA Unique Number : 11126419 Diagnosed : 17 Jul 2024 - Wes Davis US 30281 Test Package : FLEET Contact: JOSHUA TINKER Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. joshuatinker@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Submitted By: JOSHUA TINKER Page 2 of 2