

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 829085

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.

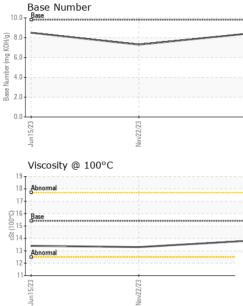
Fluid Condition

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

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0103590	GFL0085304	GFL0085321
Sample Date		Client Info		21 Dec 2023	22 Nov 2023	15 Jun 2023
Machine Age	hrs	Client Info		5629	5629	5629
Oil Age	hrs	Client Info		596	610	1220
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	ATTENTION	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	6	19	14
Chromium	ppm	ASTM D5185m	>20	<1	1	<1
Nickel	ppm	ASTM D5185m	>4	0	<1	0
Titanium	ppm	ASTM D5185m		<1	<1	0
Silver	ppm	ASTM D5185m	>3	0	<1	0
Aluminum	ppm	ASTM D5185m	>20	3	2	<1
Lead	ppm	ASTM D5185m	>40	<1	1	<1
Copper	ppm	ASTM D5185m	>330	34	1 50	12
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	<1	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 0	current 2	history1 4	history2 9
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2	4	9 0 56
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	2 9	4	9 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	2 9 59	4 0 61	9 0 56
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	2 9 59 0	4 0 61 <1	9 0 56 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	2 9 59 0 917	4 0 61 <1 972	9 0 56 <1 958
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	2 9 59 0 917 1046	4 0 61 <1 972 1101 939 1223	9 0 56 <1 958 1096
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	2 9 59 0 917 1046 1044	4 0 61 <1 972 1101 939	9 0 56 <1 958 1096 1018
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	2 9 59 0 917 1046 1044 1178 3257 current	4 0 61 <1 972 1101 939 1223	9 0 56 <1 958 1096 1018 1272
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	2 9 59 0 917 1046 1044 1178 3257	4 0 61 <1 972 1101 939 1223 2911	9 0 56 <1 958 1096 1018 1272 3587
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	2 9 59 0 917 1046 1044 1178 3257 current	4 0 61 <1 972 1101 939 1223 2911 history1 6 <1	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	2 9 59 0 917 1046 1044 1178 3257 current 3	4 0 61 <1 972 1101 939 1223 2911 history1 6	9 0 56 <1 958 1096 1018 1272 3587 history2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 Limit/base	2 9 59 0 917 1046 1044 1178 3257 current 3 <	4 0 61 <1 972 1101 939 1223 2911 history1 6 <1	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3	2 9 59 0 917 1046 1044 1178 3257 current 3 <1 2	4 0 61 <1 972 1101 939 1223 2911 history1 6 < 2	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >3	2 9 59 0 917 1046 1044 1178 3257 current 3 <1 2 Current	4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	2 9 59 0 917 1046 1044 1178 3257 current 3 3 <1 2 current 0.2	4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 <i>limit/base</i> >25 20 <i>limit/base</i> >3 >20	2 9 59 0 917 1046 1044 1178 3257 <i>current</i> 3 <1 2 <i>current</i> 0.2 5.8	4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5 8.8	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4 7.5
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 ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >3 >20 >3	2 9 59 0 917 1046 1044 1178 3257 current 3 <1 2 current 0.2 5.8 18.6	4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5 8.8 20.9	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4 7.5 20.3
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7615	0 0 0 1010 1070 1150 2260 2060 225 220 220 imit/base >3 20 >30 30	2 9 59 0 917 1046 1044 1178 3257 current 3 < 17 2 current 0.2 5.8 18.6 current	4 0 61 <1 972 1101 939 1223 2911 history1 6 <1 2 history1 0.5 8.8 20.9 history1	9 0 56 <1 958 1096 1018 1272 3587 history2 4 3 3 <1 history2 0.4 7.5 20.3 history2



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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 Odor	scalar	*Visual *Visual	NORML NORML		NORML NORML	NORML NORML
Emulsified Water	scalar scalar	*Visual	>0.2	NORML NEG	NORML	NORML
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE		method	limit/base	current	history1	history
Visc @ 100°C	cSt		15.4	13.8	13.3	13.4
GRAPHS						
Ferrous Alloys						
			1			
Non-ferrous Metal	Nov22/23		Dec21/23			
Non-ferrous Metal			Dec21/23			
Non-ferrous Metal	s		Dec21/23	Base Number		
Non-ferrous Metal	s		Dec21/23	Base Number	-	
Non-ferrous Metal	s		Dec21/23			
Non-ferrous Metal	s		0.01 ase ymuper (uo KOH(0) 4.0.			
Non-ferrous Metal	s		Dec21/23			

Ę Ś De 3 Ś De : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 958 - Tri County HC Morton Laboratory Sample No. : GFL0103590 Recieved : 26 Dec 2023 1090 W. Jefferson St. Lab Number : 06045392 Diagnosed : 27 Dec 2023 Morton, IL Unique Number : 10806000 Diagnostician : Wes Davis US 61550 Test Package : FLEET Contact: Bryan Link Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. blink@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: Also GFL958,958A, 958B - Bryan Link