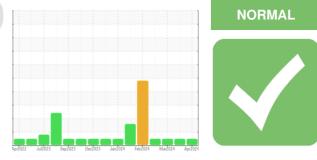


OIL ANALYSIS REPORT

Sample Rating Trend



Component Diesel Engine PETRO CANADA DURON SHP 15W40 (--- GAL)

SAMPLE INFORMATION method

DIAGNOSIS Recommendation

Resample at the next service interval to monitor.

Machine Id 1103M

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

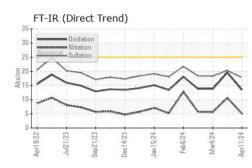
Fluid Condition

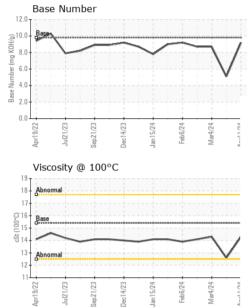
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

		method	iiiiii/base	current	Thistory I	TIIStOLYZ
Sample Number		Client Info		GFL0104451	GFL0104402	GFL0104269
Sample Date		Client Info		11 Apr 2024	03 Apr 2024	04 Mar 2024
Machine Age	hrs	Client Info		16509	16377	0
Oil Age	hrs	Client Info		500	300	600
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
-						
CONTAMINATI	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		>80	5	18	10
Chromium	ppm	ASTM D5185m	>50 >5	5 <1	<1	<1
Nickel			>2	0	0	0
	ppm		>2	0	0	0
Titanium Silver	ppm	ASTM D5185m	. 0			
	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>30	1	2	2
Lead	ppm		>30	0	0	0
Copper	ppm	ASTM D5185m	>150	2	1	8
Tin	ppm		>5	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm		limit/base	current 4	history1 3	history2 <1
	ppm ppm		0			
Boron		ASTM D5185m	0	4	3	<1
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	4 0	3 0	<1 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	4 0 60	3 0 55	<1 0 57
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	4 0 60 <1	3 0 55 <1	<1 0 57 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	4 0 60 <1 1014	3 0 55 <1 882	<1 0 57 0 1020
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	4 0 60 <1 1014 1091	3 0 55 <1 882 960	<1 0 57 0 1020 1104
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	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	4 0 60 <1 1014 1091 1153	3 0 55 <1 882 960 980	<1 0 57 0 1020 1104 1105
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	4 0 60 <1 1014 1091 1153 1299	3 0 55 <1 882 960 980 1170	<1 0 57 0 1020 1104 1105 1281
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	4 0 60 <1 1014 1091 1153 1299 3788	3 0 55 <1 882 960 980 1170 3089 history1	<1 0 57 0 1020 1104 1105 1281 3162 history2
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	0 0 60 0 1010 1070 1150 1270 2060	4 0 60 <1 1014 1091 1153 1299 3788 current 11	3 0 55 <1 882 960 980 1170 3089 history1 4	<1 0 57 0 1020 1104 1105 1281 3162 history2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	4 0 60 <1 1014 1091 1153 1299 3788 current	3 0 55 <1 882 960 980 1170 3089 history1	<1 0 57 0 1020 1104 1105 1281 3162 history2
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 60 0 1010 1070 1150 1270 2060 limit/base >20	4 0 60 <1 1014 1091 1153 1299 3788 current 11 1 1 0	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 220 220	4 0 60 <1 1014 1091 1153 1299 3788 current 11 1 0 current	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0 0	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0 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 TS ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >20 20 20	4 0 60 <1 1014 1091 1153 1299 3788 current 11 1 0 current 0.1	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0 history1 0.5	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	4 0 60 <1 1014 1091 1153 1299 3788 <i>current</i> 11 1 1 0 <i>current</i> 0.1 5.1	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0 history1 0.5 10.6	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0 0 history2 0.2 5.6
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 >20 20 20	4 0 60 <1 1014 1091 1153 1299 3788 current 11 1 0 current 0.1	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0 history1 0.5	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0 bistory2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	4 0 60 <1 1014 1091 1153 1299 3788 current 11 1 1 0 current 0.1 5.1	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0 history1 0.5 10.6	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0 0 history2 0.2 5.6
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 TS ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >20 imit/base >3 >20 >3	4 0 60 <1 1014 1091 1153 1299 3788 <u>current</u> 11 1 0 <u>current</u> 0.1 5.1 17.8	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0 0 history1 0.5 10.6 20.3	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0 bistory2 0.2 5.6 18.3
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 TS ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 0 1010 1070 1150 1270 2060 2060 2060 200 200 200 200 200 200	4 0 60 <1 1014 1091 1153 1299 3788 <i>current</i> 11 1 1 0 <i>current</i> 0.1 5.1 17.8 <i>current</i>	3 0 55 <1 882 960 980 1170 3089 history1 4 5 0 history1 0.5 10.6 20.3 history1	<1 0 57 0 1020 1104 1105 1281 3162 history2 6 4 0 0 history2 0.2 5.6 18.3 history2



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	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	12.6	14.3
GRAPHS						

Ferrous Alloys

Apr19/22

19

18

17

()-00 15

5 14

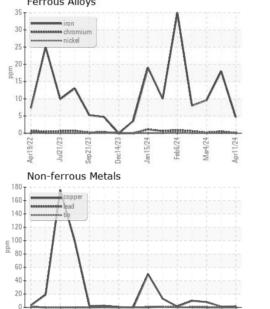
13 Abnor

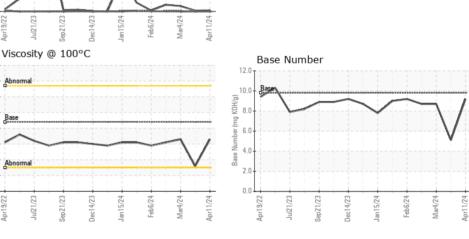
12 11

Apr19/22

Jul21/23

Jul21/23





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 410 - Michigan West Sample No. : GFL0104451 Received : 16 Apr 2024 39000 Van Born Rd Lab Number : 06150082 Tested : 17 Apr 2024 Wayne, MI US 48184 Unique Number : 10980160 Diagnosed : 17 Apr 2024 - Wes Davis Test Package : FLEET Contact: Belal Dgheish Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. bdgheish@gflenv.com T: (734)714-2340 * - 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:

Report Id: GFL410 [WUSCAR] 06150082 (Generated: 04/17/2024 12:18:21) Rev: 1

Submitted By: seel also GFL468 - Laura Wilson