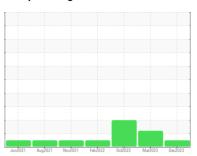


# **OIL ANALYSIS REPORT**

## **Sample Rating Trend**









# DIAGNOSIS

## Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

## Contamination

Tests indicate that there is no fuel present in the oil. There is no indication of any contamination in the oil.

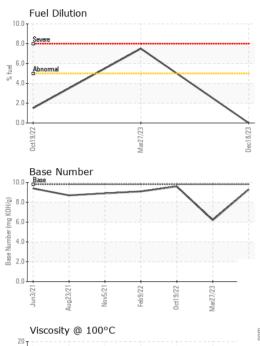
## **Fluid Condition**

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

ON SHP 15W40 (	- GAL)	Jun2021	Aug2021 Nov2021	Feb 2022 Oct2022 Mar2023	Dec2023	
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0105728	GFL0073930	GFL0057268
Sample Date		Client Info		18 Dec 2023	27 Mar 2023	19 Oct 2022
Machine Age	hrs	Client Info		12703	12703	11676
Oil Age	hrs	Client Info		12703	11676	10540
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	ABNORMAL	ABNORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
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	>80	4	43	26
Chromium	ppm	ASTM D5185m	>5	<1	2	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	_	0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>30	2	2	2
Lead	ppm	ASTM D5185m	>30	0	6	4
Copper	ppm	ASTM D5185m	>150	12	145	<u>↑</u> 175
Tin		ASTM D5185m	>5	0	5	3
Antimony	ppm	ASTM D5185m	>5			
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	<1
Caulliulli						
	ррш	AOTIVI DOTOSIII		U	0	<b>\</b> 1
ADDITIVES	ррш	method	limit/base	current	history1	history2
	ppm		limit/base			
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current	history1	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0	current 18 0	history1 2 0	history2 10 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 18 0 61	history1 2 0 54	history2 10 0 59
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 18 0 61	history1 2 0 54	history2 10 0 59 <1
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current  18 0 61 0 879	history1 2 0 54 1 819	history2  10  0  59  <1  821
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium	ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070	current  18  0  61  0  879  986	history1 2 0 54 1 819 990	history2  10  0  59  <1  821  1182
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus	ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150	current  18  0  61  0  879  986  843	history1  2  0  54  1  819  990  855	history2  10  0  59  <1  821  1182  972
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	current  18  0  61  0  879  986  843  1117	history1  2  0  54  1  819  990  855  1130	history2  10  0  59  <1  821  1182  972  1208
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  Sulfur	ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  18  0  61  0  879  986  843  1117  2778	history1  2  0  54  1  819  990  855  1130  2245	history2  10  0  59  <1  821  1182  972  1208  3248
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  18 0 61 0 879 986 843 1117 2778 current	history1  2  0  54  1  819  990  855  1130  2245  history1	history2  10 0 59 <1 821 1182 972 1208 3248 history2
ADDITIVES  Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current  18 0 61 0 879 986 843 1117 2778 current	history1  2  0  54  1  819  990  855  1130  2245  history1  6	history2  10 0 59 <1 821 1182 972 1208 3248 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	current  18  0  61  0  879  986  843  1117  2778  current  8  0	history1  2  0  54  1  819  990  855  1130  2245  history1  6  6	history2  10  0  59  <1  821  1182  972  1208  3248  history2  10  74
ADDITIVES  Boron  Barium  Molybdenum  Manganese  Magnesium  Calcium  Phosphorus  Zinc  Sulfur  CONTAMINAN  Silicon  Sodium  Potassium	ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20	current  18  0  61  0  879  986  843  1117  2778  current  8  0  1	history1  2  0  54  1  819  990  855  1130  2245  history1  6  0	history2  10  0  59  <1  821  1182  972  1208  3248  history2  10  74  3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >5	current  18 0 61 0 879 986 843 1117 2778 current 8 0 1	history1  2  0  54  1  819  990  855  1130  2245  history1  6  6  0  7.5	history2  10 0 59 <1 821 1182 972 1208 3248 history2 10 74 3
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method  ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >5 limit/base	current  18  0  61  0  879  986  843  1117  2778  current  8  0  1  0.0  current	history1  2  0  54  1  819  990  855  1130  2245  history1  6  6  0  ▲ 7.5  history1  0.3	history2  10 0 59 <1 821 1182 972 1208 3248 history2 10 74 3 ▲ 1.5 history2 0.2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	method  ASTM D5185m ASTM D7624	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20	current  18 0 61 0 879 986 843 1117 2778 current 8 0 1 0.0 current 0.1 4.5	history1  2  0  54  1  819  990  855  1130  2245  history1  6  6  0  ▲ 7.5  history1  0.3  11.2	history2  10 0 59 <1 821 1182 972 1208 3248  history2  10 74 3  ▲ 1.5  history2  0.2 9.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	method ASTM D5185m ASTM D76244 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20 >3	current  18  0  61  0  879  986  843  1117  2778  current  8  0  1  0.0  current  0.1  4.5  17.8	history1  2  0  54  1  819  990  855  1130  2245  history1  6  6  0  ▲ 7.5  history1  0.3  11.2  22.3	history2  10 0 59 <1 821 1182 972 1208 3248 history2 10 74 3 ▲ 1.5 history2 0.2 9.4 22.4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRAE	ppm	method  ASTM D5185m ASTM D7624 *ASTM D7624 *ASTM D7624 *ASTM D7615  method	0 0 0 1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20 >3 limit/base	current  18 0 61 0 879 986 843 1117 2778 current 8 0 1 0.0 current 0.1 4.5 17.8 current	history1  2  0  54  1  819  990  855  1130  2245  history1  6  6  0  ▲ 7.5  history1  0.3  11.2  22.3  history1	history2  10 0 59 <1 821 1182 972 1208 3248 history2 10 74 3 ▲ 1.5 history2 0.2 9.4 22.4 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	method ASTM D5185m ASTM D76244 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1070 1150 1270 2060 limit/base >20 >5 limit/base >3 >20 >3	current  18  0  61  0  879  986  843  1117  2778  current  8  0  1  0.0  current  0.1  4.5  17.8	history1  2  0  54  1  819  990  855  1130  2245  history1  6  6  0  ▲ 7.5  history1  0.3  11.2  22.3	history2  10 0 59 <1 821 1182 972 1208 3248 history2 10 74 3 ▲ 1.5 history2 0.2 9.4 22.4



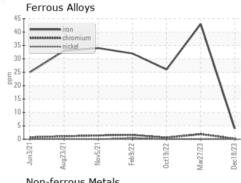
## **OIL ANALYSIS REPORT**

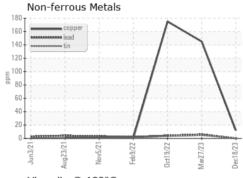


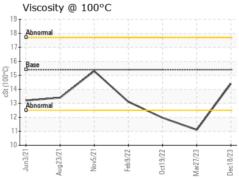
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPE	RTIFS	method	limit/base	current	historv1	historv2

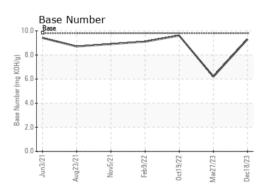
I LOID I ITOI	LITTILO					
Visc @ 100°C	cSt	ASTM D445	15.4	14.4	<b>▲</b> 11.1	<b>▲</b> 11.96

## **GRAPHS**











cSt (100°C)



Laboratory Sample No. Lab Number **Unique Number** 

: 10795465

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0105728 : 06040236

Recieved Diagnosed

: 20 Dec 2023 Diagnostician : Wes Davis

: 22 Dec 2023

Test Package : FLEET ( Additional Tests: PercentFuel ) 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.

GFL Environmental - 415 - Michigan East

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com T: (586)825-9514

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)