

OIL ANALYSIS REPORT

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Bar(92) Bar(92

Sample Rating Trend







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

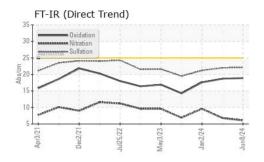
Fluid Condition

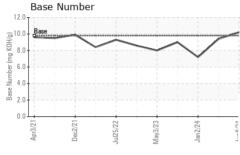
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

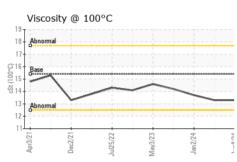
Sample Number Client Info GFL0122360 GFL0122527 GFL0102527 QFL01087 Sample Date Client Info 08 Jun 2024 28 May 2024 02 Jan 202 Machine Age hrs Client Info 18456 18385 17846 Oil Age hrs Client Info 17846 17	110111 101140 (C., (_)					
Sample Date Client Info 08 Jun 2024 28 May 2024 02 Jan 2026 Machine Age hrs Client Info 18456 18385 17846 Oil Age hrs Client Info 17846<	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 18456 18385 17846 Oil Age hrs Client Info 17846 17846 17566 Oil Changed Client Info Changed Not Changd Changed Sample Status Client Info Changed NoRMAL NORMAL ABNORMA MORTHAM NORMAL NORMAL ABNORMA ABNORMA CONTAMINATION method limit/base current history1 history1 Fuel WC Method >0.2 NEG NEG NEG WEAR WEG WC Method NEG NEG NEG Iron ppm ASTM D5185m >20 2 1 2 Iron ppm ASTM D5185m >20 2 1 2 Iron ppm ASTM D5185m >2 <1	Sample Number		Client Info		GFL0122360	GFL0122527	GFL0108719
Oil Age hrs Client Info 17846 17846 17846 17866 17866 17866 Ol Changed Not Changed Changed Not Changed Changed Not Changed Not Changed Not Changed Changed Not Changed Not Changed Changed Nor Changed Changed Nor Changed Changed Nor Cha	Sample Date		Client Info		08 Jun 2024	28 May 2024	02 Jan 2024
Oil Changed Sample Status Client Info Sample Status Changed NORMAL NORMAL NORMAL NORMAL ABNORMAL ABNORMAL NORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL ABNORMAL NORMAL NORMAL NORMAL ABNORMAL NORMAL NOR	Machine Age	hrs	Client Info		18456	18385	17846
NORMAL NORMAL ABNORMAN	Oil Age	hrs	Client Info		17846	17846	17566
CONTAMINATION	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel WC Method >3.0	-				NORMAL	NORMAL	ABNORMAL
Water Glycol WC Method >0.2 NEG NEG NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >90 30 23 45 Chromium ppm ASTM D5185m >20 2 1 2 Nickel ppm ASTM D5185m >2 <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 2 1 2 Nickel ppm ASTM D5185m >2 <1 0 <1 Titanium ppm ASTM D5185m >2 <1 0 <1 Silver ppm ASTM D5185m >2 0 0 0 <1 Aluminum ppm ASTM D5185m >2 0 0 0 6 4 6 Lead ppm ASTM D5185m >40 0 0 5 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 2 2 2 1 1 5 0 0 0 1 3 333 41 4 0 4	WEAR METAL	.S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>90	30	23	45
Titanium	Chromium	ppm	ASTM D5185m	>20	2	1	2
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >20 6 4 6 Lead ppm ASTM D5185m >40 0 0 5 Copper ppm ASTM D5185m >330 41 40 383 Tin ppm ASTM D5185m 0 0 0 2 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 47 56 41 Barium ppm ASTM D5185m 0 47 56 41 Manganesium ppm ASTM D5185m 0 40 40 34 Magnesium ppm ASTM D5185m 1010 593 565	Nickel	ppm	ASTM D5185m	>2	<1	0	<1
Aluminum ppm ASTM D5185m >20 6 4 6 6 Lead ppm ASTM D5185m >20 6 4 6 Copper ppm ASTM D5185m >40 0 0 5 Copper ppm ASTM D5185m >330 41 40	Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Lead ppm ASTM D5185m >40 0 0 5 Copper ppm ASTM D5185m >330 41 40 △ 383 Tin ppm ASTM D5185m >15 0 0 2 Vanadium ppm ASTM D5185m 0 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 47 56 41 Barium ppm ASTM D5185m 0 40 40 34 Molybdenum ppm ASTM D5185m 0 1 <1 4 Magnesium ppm ASTM D5185m 0 1 <1 4 Magnesium ppm ASTM D5185m 1070 1629 1528 1764 Phosphorus ppm ASTM D5185m 1270 1173	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 41 40 ▲ 383 Tin ppm ASTM D5185m >15 0 0 2 Vanadium ppm ASTM D5185m 0 0 0 -1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 47 56 41 Barium ppm ASTM D5185m 0 0 0 11 Molybdenum ppm ASTM D5185m 0 40 40 34 Mangaese ppm ASTM D5185m 0 1 <1	Aluminum	ppm	ASTM D5185m	>20	6	4	6
Tin	Lead	ppm	ASTM D5185m	>40	0	0	5
Vanadium ppm ASTM D5185m 0 0 <1 Cadmium ppm ASTM D5185m 0 0 0 <1 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 47 56 41 Barium ppm ASTM D5185m 0 0 0 11 Molybdenum ppm ASTM D5185m 0 40 40 34 Manganese ppm ASTM D5185m 0 1 <1 4 Magnesium ppm ASTM D5185m 1070 1629 1528 1764 Phosphorus ppm ASTM D5185m 1070 1629 1528 1764 Phosphorus ppm ASTM D5185m 1270 1173 1094 1202 Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current	Copper	ppm	ASTM D5185m	>330	41	40	△ 383
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 47 56 41 Barium ppm ASTM D5185m 0 0 0 11 Molybdenum ppm ASTM D5185m 0 40 40 34 Manganese ppm ASTM D5185m 0 1 <1	Tin	ppm	ASTM D5185m	>15	0	0	2
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 47 56 41 Barium ppm ASTM D5185m 0 0 0 11 Molybdenum ppm ASTM D5185m 60 40 40 34 Manganese ppm ASTM D5185m 0 1 <1	Vanadium	ppm	ASTM D5185m		0	0	<1
Boron ppm ASTM D5185m 0 0 0 0 0 11	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 11 Molybdenum ppm ASTM D5185m 60 40 40 34 Manganese ppm ASTM D5185m 0 1 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 40 40 34 Manganese ppm ASTM D5185m 0 1 <1 4 Magnesium ppm ASTM D5185m 1010 593 565 414 Calcium ppm ASTM D5185m 1070 1629 1528 1764 Phosphorus ppm ASTM D5185m 1150 946 914 1009 Zinc ppm ASTM D5185m 1270 1173 1094 1202 Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 </td <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <th>47</th> <td>56</td> <td>41</td>	Boron	ppm	ASTM D5185m	0	47	56	41
Manganese ppm ASTM D5185m 0 1 <1 4 Magnesium ppm ASTM D5185m 1010 593 565 414 Calcium ppm ASTM D5185m 1070 1629 1528 1764 Phosphorus ppm ASTM D5185m 1150 946 914 1009 Zinc ppm ASTM D5185m 1270 1173 1094 1202 Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7415	Barium	ppm	ASTM D5185m	0	0	0	11
Magnesium ppm ASTM D5185m 1010 593 565 414 Calcium ppm ASTM D5185m 1070 1629 1528 1764 Phosphorus ppm ASTM D5185m 1150 946 914 1009 Zinc ppm ASTM D5185m 1270 1173 1094 1202 Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m 8 6 26 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7415 >30	Molybdenum	ppm	ASTM D5185m	60	40	40	34
Calcium ppm ASTM D5185m 1070 1629 1528 1764 Phosphorus ppm ASTM D5185m 1150 946 914 1009 Zinc ppm ASTM D5185m 1270 1173 1094 1202 Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m 8 6 26 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base <t< td=""><td>Manganese</td><td>ppm</td><td>ASTM D5185m</td><td>0</td><th>1</th><td><1</td><td>4</td></t<>	Manganese	ppm	ASTM D5185m	0	1	<1	4
Phosphorus ppm ASTM D5185m 1150 946 914 1009 Zinc ppm ASTM D5185m 1270 1173 1094 1202 Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m >25 20 18 20 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION m	Magnesium	ppm	ASTM D5185m	1010	593	565	414
Zinc ppm ASTM D5185m 1270 1173 1094 1202 Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m 8 6 26 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM	Calcium	ppm	ASTM D5185m	1070	1629	1528	1764
Sulfur ppm ASTM D5185m 2060 3231 3072 2977 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m 8 6 26 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	Phosphorus	ppm	ASTM D5185m	1150	946	914	1009
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m 8 6 26 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	Zinc	ppm	ASTM D5185m	1270	1173	1094	1202
Silicon ppm ASTM D5185m >25 20 18 20 Sodium ppm ASTM D5185m 8 6 26 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	Sulfur	ppm	ASTM D5185m	2060	3231	3072	2977
Sodium ppm ASTM D5185m 8 6 26 Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 4 0 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	Silicon	ppm	ASTM D5185m	>25	20	18	20
INFRA-RED	Sodium	ppm	ASTM D5185m		8	6	26
Soot % % *ASTM D7844 > 6 0.3 0.3 0.7 Nitration Abs/cm *ASTM D7624 > 20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 > 30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 > 25 18.9 18.7 17.6	Potassium	ppm	ASTM D5185m	>20	4	0	4
Nitration Abs/cm *ASTM D7624 >20 6.1 6.8 9.6 Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 22.1 22.0 21.2 FLUID DEGRADATION method limit/base current history1 history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	Soot %	%	*ASTM D7844	>6	0.3	0.3	0.7
FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 18.9 18.7 17.6	Nitration	Abs/cm	*ASTM D7624	>20	6.1	6.8	9.6
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	22.1	22.0	21.2
	FLUID DEGRA	OITAC	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 9.8 10.2 9.4 7.2	Oxidation	Abs/.1mm	*ASTM D7414	>25	18.9	18.7	17.6
	Base Number (BN)	mg KOH/g	ASTM D2896	9.8	10.2	9.4	7.2

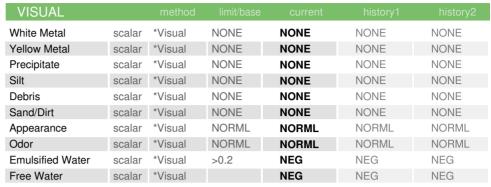


OIL ANALYSIS REPORT



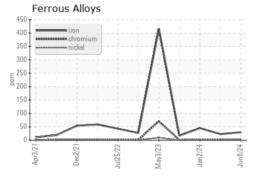




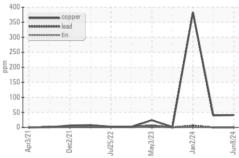


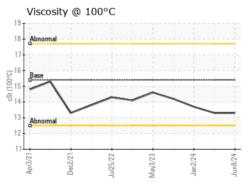
FLUID PROPE	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.3	13.3	13.7

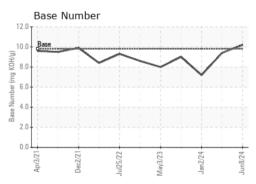
GRAPHS



Non-ferrous Metals











Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 Sample No. Lab Number : 06215348

: GFL0122360 Unique Number : 11088212 Test Package : FLEET

Received : 20 Jun 2024 **Tested** : 21 Jun 2024

Diagnosed : 21 Jun 2024 - Sean Felton

6200 Elmridge Sterling Heights, MI US 48313 Contact: Frank Wolak fwolak@gflenv.com

T: (586)825-9514

GFL Environmental - 415 - Michigan East

Certificate 12367

To discuss this sample report, contact Customer Service at 1-800-237-1369.

 st - 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)

Report Id: GFL415 [WUSCAR] 06215348 (Generated: 06/21/2024 15:55:30) Rev: 1

Submitted By: Frank Wolak