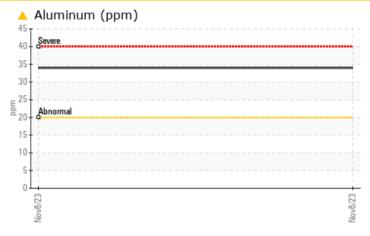
PROBLEM SUMMARY

WEAR

Sample Rating Trend WEAR

Machine Id Loader Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 40 (--- GAL)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST RESULTS								
Sample Status				ABNORMAL				
Aluminum	ppm	ASTM D5185m	>20	<u> </u>				

Customer Id: GFL918 Sample No.: GFL0098412 Lab Number: 06012036 Test Package: FLEET

To manage this report scan the QR code

To discuss the diagnosis or test data: Don Baldridge +1 <u>don.b505@comcast.net</u>

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS					
Action	Status	Date	Done By	Description	
Change Fluid			?	Oil and filter change at the time of sampling has been noted.	
Change Filter			?	Oil and filter change at the time of sampling has been noted.	

HISTORICAL DIAGNOSIS



OIL ANALYSIS REPORT



Machine Id Loader

Component Diesel Engine Fluid DIESEL ENGINE OIL SAE 40 (--- GAL)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

🔺 Wear

The aluminum level is abnormal. All other component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

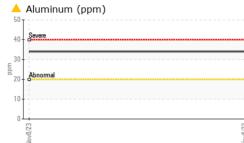
Fluid Condition

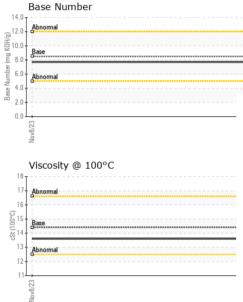
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sample Number Client Info GFL0098412 ··· ··· Sample Date Info 08 Nov 2023 ··· ··· ··· Machine Age hrs Client Info 3100 ··· ··· ··· Oil Age hrs Client Info 3100 ··· ··· ··· Sample Status Client Info Changed ··· ··· ··· ··· CONTAMINATION method limit/base current history1 history1 Fuel WC Method >5 <1.0 ···· ···· ···· Water WC Method >0.2 NEG ···· ···· ···· foronium ppm ASTM DSIS5m<>100 27 ···· ···· ···· Nickel ppm ASTM DSIS5m >20 2 ···· ···· ···· Nickel ppm ASTM DSIS5m >20 ···· ···· ···· ···· Silver ppm					Nov2023		
Sample Date Client Info 06 Nov 2023 Machine Age hrs Client Info 3100 Oil Age hrs Client Info 3100 Sample Status Client Info Changed Sample Status Client Info Imit/base current history1 history1 Water WC Method >0.2 NEG Glycol WC Method >0.2 Notestan ASIM D5185m >100 Si	SAMPLE INFORM		method	limit/base	current	history1	history2
Machine Age hrs Client Info 3100 Oil Age hrs Client Info 3100 Sample Status I ABNORMAL CONTAMINATION method limit/base current history1 history1 Fuel WC Method >0.2 NEG Water WC Method >0.2 NEG WEAR METALS method limit/base current history1 history1 Nickel ppm ASTM D5185m >100 27 Nickel ppm ASTM D5185m >100 27 Silver ppm ASTM D5185m >40 0 Gopper ppm ASTM D5185m >20 34 Copper ppm ASTM D5185m >10 0 <td< td=""><td>Sample Number</td><td></td><td>Client Info</td><td></td><td>GFL0098412</td><td></td><td></td></td<>	Sample Number		Client Info		GFL0098412		
Machine Age hrs Client Info 3100 Oil Age hrs Client Info 3100 Sample Status Client Info Changed CONTAMINATION method Imit/base current history1 Water WC Method >0.2 NEG Glycol WC Method >0.2 NEG WEAR METALS method limit/base current history1 Nickel ppm ASTM DS185m >100 27 Nickel ppm ASTM DS185m >20 2 Nickel ppm ASTM DS185m >40 0 Silver ppm ASTM DS185m >30 0 Copper ppm ASTM DS185m >10 0 Va	•		Client Info		08 Nov 2023		
Oil Age hrs Client Info 3100 Sample Status I I ABNORMAL CONTAMINATION method limit/base current history1 hist Fuel WC Method >5.5 <1.0	•	hrs	Client Info		3100		
Sample Status Method Imit/base current history1 history1 Fuel WC Method >5 <1.0	Oil Age	hrs	Client Info		3100		
CONTAMINATION method limit/base current history1 history1 Fuel WC Method >5 <1.0	Oil Changed		Client Info		Changed		
Fuel WC Method >5 <1.0 Water WC Method >0.2 NEG Glycol WC Method Imit/base current history1 hist WEAR METALS method Imit/base current history1 hist Iron ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >20 2 Aluminum ppm ASTM D5185m >3 0 Aluminum ppm ASTM D5185m >40 0 Silver ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >40 0 Vanadium ppm ASTM D5185m >40 0 Astm D5185m 0	Sample Status				ABNORMAL		
Water WC Method >0.2 NEG Glycol WC Method NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >20 2 Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >20 2 Aluminum ppm ASTM D5185m >3 0 Lead ppm ASTM D5185m >30 5 Copper ppm ASTM D5185m >40 0 Auminum ppm ASTM D5185m >40 0	CONTAMINATI	ON	method	limit/base	current	history1	history2
Glycol WC Method NEG WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >100 27 Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >20 2 Silver ppm ASTM D5185m >3 0 Aluminum ppm ASTM D5185m >30 5 Copper ppm ASTM D5185m >30 5 Cadmium ppm ASTM D5185m >15 0 ADDITIVES method limit/base current history1 history1 Barium ppm ASTM D5185m 100 61 Maganese ppm ASTM D5185m 100	Fuel		WC Method	>5	<1.0		
WEAR METALS method limit/base current history1 hist Iron ppm ASTM D5185m >100 27 Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m <4	Water		WC Method	>0.2	NEG		
ron ppm ASTM D5185m >100 27 Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >4 <1	Glycol		WC Method		NEG		
Chromium ppm ASTM D5185m >20 2 Nickel ppm ASTM D5185m >4 <1	WEAR METALS	S	method	limit/base	current	history1	history2
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Titanium ppm ASTM D5185m <1 Silver ppm ASTM D5185m >3 0 Aluminum ppm ASTM D5185m >20 ▲ 34 Lead ppm ASTM D5185m >20 ▲ 34 Copper ppm ASTM D5185m >40 0 Vanadium ppm ASTM D5185m >15 0 Vanadium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 histor ADbiddenum ppm ASTM D5185m 10 0 Magnesium ppm ASTM D5185m 100 61 Magnesium ppm ASTM D5185m 3000 1100 Calcium ppm ASTM D5185m </td <td>Chromium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>20</td> <td>2</td> <td></td> <td></td>	Chromium	ppm	ASTM D5185m	>20	2		
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Aluminum ppm ASTM D5185m >20 ▲ 34 Lead ppm ASTM D5185m >40 0 Copper ppm ASTM D5185m >330 5 Tin ppm ASTM D5185m >15 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 histor Boron ppm ASTM D5185m 10 0 Molybdenum ppm ASTM D5185m 100 61 Maganese ppm ASTM D5185m 100 61 Magnesium ppm ASTM D5185m 100 Calcium ppm ASTM D5185m 1350 1213 Sulfur ppm ASTM D5185m	Titanium	ppm	ASTM D5185m		<1		
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Copper ppm ASTM D5185m >330 5 Tin ppm ASTM D5185m >15 0 Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 histor Boron ppm ASTM D5185m 250 0 Molybdenum ppm ASTM D5185m 10 0 Magnese ppm ASTM D5185m 100 61 Magnesium ppm ASTM D5185m 100 61 Magnesium ppm ASTM D5185m 100 1100 Calcium ppm ASTM D5185m 1350 1213 Sulfur ppm ASTM D5185m </td <td>Aluminum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>20</td> <td><u> </u></td> <td></td> <td></td>	Aluminum	ppm	ASTM D5185m	>20	<u> </u>		
Tin ppm ASTM D5185m >15 0 Vanadium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 histor Boron ppm ASTM D5185m 250 0 ADDITIVES method limit/base current history1 histor Boron ppm ASTM D5185m 10 0 Molybdenum ppm ASTM D5185m 100 61 Manganese ppm ASTM D5185m 100 61 Magnesium ppm ASTM D5185m 100 Calcium ppm ASTM D5185m 3000 1100 Sulfur ppm ASTM D5185m 1350 1213 Sulfur ppm ASTM D5185m 20	Lead	ppm	ASTM D5185m	>40	0		
VanadiumppmASTM D5185m0CadmiumppmASTM D5185m0ADDITIVESmethodlimit/basecurrenthistory1history1BoronppmASTM D5185m2500BariumppmASTM D5185m100MolybdenumppmASTM D5185m10061MaganeseppmASTM D5185m450910MagnesiumppmASTM D5185m30001100CalciumppmASTM D5185m1501213PhosphorusppmASTM D5185m42502967SulfurppmASTM D5185m>2510CONTAMINANTSmethodlimit/basecurrenthistory1history1SoliconppmASTM D5185m>202INFRA-REDmethodlimit/basecurrenthistory1history1NitrationAbs/m*ASTM D7624>208.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1OxidationAbs/.1mm*ASTM D7414>2516.5	Copper	ppm	ASTM D5185m	>330	5		
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Boron ppm ASTM D5185m 250 0 Barium ppm ASTM D5185m 10 0 Molybdenum ppm ASTM D5185m 100 61 Manganese ppm ASTM D5185m 100 61 Magnesium ppm ASTM D5185m 450 910 Calcium ppm ASTM D5185m 3000 1100 Calcium ppm ASTM D5185m 3000 1005 Calcium ppm ASTM D5185m 1350 1213 Zinc ppm ASTM D5185m 4250 2967 Sulfur ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m >20 2 INFRA-RED method	Cadmium	ppm	ASTM D5185m		0		
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Molybdenum ppm ASTM D5185m 100 61 Manganese ppm ASTM D5185m 450 910 Magnesium ppm ASTM D5185m 450 910 Calcium ppm ASTM D5185m 3000 1100 Calcium ppm ASTM D5185m 150 1005 Phosphorus ppm ASTM D5185m 1350 1213 Sulfur ppm ASTM D5185m 4250 2967 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 2 Sodium ppm ASTM D5185m >20 2 INFRA-RED method limit/base current history1 history1 Nitration Abs/cm<*ASTM D7844	Boron	ppm	ASTM D5185m	250	0		
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Magnesium ppm ASTM D5185m 450 910 Calcium ppm ASTM D5185m 3000 1100 Phosphorus ppm ASTM D5185m 1150 1005 Zinc ppm ASTM D5185m 1350 1213 Sulfur ppm ASTM D5185m 4250 2967 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m >20 2 INFRA-RED method limit/base current history1 histor Soot % % *ASTM D7624 >3 0.5 Sulfation Abs/cm *ASTM D7624 >20 8.6 FLUID DEGRADATION method	Molybdenum	ppm	ASTM D5185m	100	61		
Calcium ppm ASTM D5185m 3000 1100 Phosphorus ppm ASTM D5185m 1150 1005 Zinc ppm ASTM D5185m 1350 1213 Sulfur ppm ASTM D5185m 4250 2967 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m >216 0 Potassium ppm ASTM D5185m >20 2 INFRA-RED method limit/base current history1 histor Soot % % *ASTM D7844 >3 0.5 Sulfation Abs/.1mm *ASTM D7624 >20 8.6 FLUID DEGRADATION method li	•	ppm	ASTM D5185m		<1		
Phosphorus ppm ASTM D5185m 1150 1005 Zinc ppm ASTM D5185m 1350 1213 Sulfur ppm ASTM D5185m 4250 2967 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m >25 10 Sodium ppm ASTM D5185m >216 0 Potassium ppm ASTM D5185m >20 2 INFRA-RED method limit/base current history1 histor Soot % % *ASTM D7844 >3 0.5 Sulfation Abs/.1mm *ASTM D7624 >20 8.6 FLUID DEGRADATION method	Magnesium	ppm	ASTM D5185m	450	910		
ZincppmASTM D5185m13501213SulfurppmASTM D5185m42502967CONTAMINANTSmethodlimit/basecurrenthistory1historSiliconppmASTM D5185m>2510SodiumppmASTM D5185m>2160PotassiumppmASTM D5185m>202INFRA-REDmethodlimit/basecurrenthistory1historNitrationAbs/cm*ASTM D7844>30.5SulfationAbs/cm*ASTM D7624>208.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1historOxidationAbs/.1mm*ASTM D7414>2516.5	Calcium	ppm	ASTM D5185m	3000	1100		
SulfurppmASTM D5185m42502967CONTAMINANTSmethodlimit/basecurrenthistory1history1SiliconppmASTM D5185m>2510SodiumppmASTM D5185m>2160PotassiumppmASTM D5185m>202INFRA-REDmethodlimit/basecurrenthistory1history1NitrationAbs/cm*ASTM D7844>30.5SulfationAbs/cm*ASTM D7624>208.6FLUID DEGRADATIONmethodlimit/basecurrenthistory1history1OxidationAbs/.1mm*ASTM D7414>2516.5	Phosphorus	ppm	ASTM D5185m	1150	1005		
CONTAMINANTSmethodlimit/basecurrenthistory1historSiliconppmASTM D5185m>2510SodiumppmASTM D5185m>2160PotassiumppmASTM D5185m>202INFRA-REDmethodlimit/basecurrenthistory1historSoot %%*ASTM D7844>30.5NitrationAbs/cm*ASTM D7624>208.6SulfationAbs/.1mm*ASTM D7615>3019.7FLUID DEGRADATIONmethodlimit/basecurrenthistory1historOxidationAbs/.1mm*ASTM D7414>2516.5	Zinc	ppm	ASTM D5185m	1350	1213		
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Soot % % *ASTM D7844 >3 0.5 Nitration Abs/cm *ASTM D7624 >20 8.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 histor Oxidation Abs/.1mm *ASTM D7414 >25 16.5		ppm			2		
Nitration Abs/cm *ASTM D7624 >20 8.6 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 history1 Oxidation Abs/.1mm *ASTM D7414 >25 16.5						history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 histor Oxidation Abs/.1mm *ASTM D7414 >25 16.5							
FLUID DEGRADATION method limit/base current history1 histor Oxidation Abs/.1mm *ASTM D7414 >25 16.5							
Oxidation Abs/.1mm *ASTM D7414 >25 16.5				>30	19.7		
	FLUID DEGRAD	ATION		limit/base		history1	history2
				>25			
Base Number (BN) mg KOH/g ASTM D2896 8.5 7.7	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	7.7		



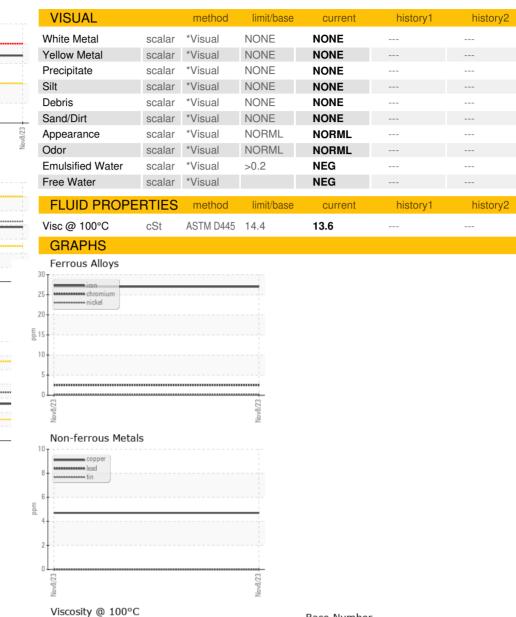
OIL ANALYSIS REPORT







(200-0) St (100-0) 6.0 13 Base 4.0 Abnorma 12 2.0 11-0.0 Vov8/23 nv8/73 Lov8/22 Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 918 - Hartland HC Sample No. Received : 20 Nov 2023 630 E Industrial Drive : GFL0098412 Lab Number :06012036 Diagnosed : 21 Nov 2023 Hartland, WI Unique Number : Don Baldridge : 10751180 Diagnostician Test Package : FLEET Contact: David McCall Certificate L2367 To discuss this sample report, contact Customer Service at 1-800-237-1369. david.mccall@gflenv.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (262)369-3069 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)



Base Number

14.0 12.0 (B/HOX Bu).

18

16

Ba

US 53029

F: