

# **PROBLEM SUMMARY**

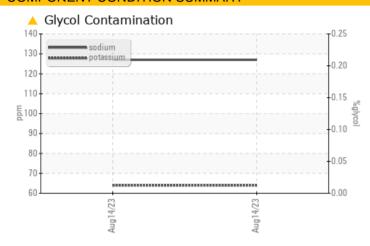
# {UNASSIGNED} 948016

Component
Natural Gas Engine

NOT GIVEN (--- GAL)

# Sample Rating Trend COOL CHEMICALS

# **COMPONENT CONDITION SUMMARY**



# RECOMMENDATION

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS								
Sample Status				ABNORMAL				
Sodium	ppm	ASTM D5185m		<b>127</b>				
Potassium	ppm	ASTM D5185m	>20	<b>64</b>				

Customer Id: GFL924 Sample No.: GFL0059623 Lab Number: 05924749 Test Package: FLEET



To manage this report scan the QR code

To discuss the diagnosis or test data: Jonathan Hester +1 919-379-4092 x4092 ihester@wearcheckusa.com

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

RECOMMENDED ACTIONS							
Action	Status	Date	Done By	Description			
Resample			?	We recommend an early resample to monitor this condition.			
Check Glycol Access			?	We advise that you check for the source of the coolant leak.			

# HISTORICAL DIAGNOSIS



# **OIL ANALYSIS REPORT**

# {UNASSIGNED} 948016

**Natural Gas Engine** 

**NOT GIVEN (--- GAL)** 

Sample Rating Trend



# **DIAGNOSIS**

## Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend an early resample to monitor this condition.

## Wear

All component wear rates are normal.

# Contamination

Sodium and/or potassium levels are high.

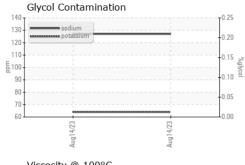
## Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil.

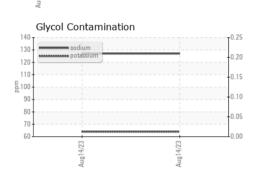
		Aug.2023					
Sample Date         Client Info         14 Aug 2023             Machine Age         hrs         Client Info         0             Oil Age         hrs         Client Info         0             Oil Changed         Client Info         N/A             Sample Status         MBNORMAL             WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         14             Chromium         ppm         ASTM D5185m         >4         2             Chromium         ppm         ASTM D5185m         >2         <1             Silver         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >30         11             Lead         ppm         ASTM D5185m         >3	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         0	Sample Number		Client Info		GFL0059623		
Oil Age         hrs         Client Info         N/A             Oil Changed         Client Info         N/A             Sample Status         ABNORMAL             WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         14             Chromium         ppm         ASTM D5185m         >4         2             Nickel         ppm         ASTM D5185m         >4         2             Silver         ppm         ASTM D5185m         >3         0             Aluminum         ppm         ASTM D5185m         >9         4             Aluminum         ppm         ASTM D5185m         >9         4             Lead         ppm         ASTM D5185m         >35         <1             Copper         ppm         ASTM D5185m         >4         <1             Cadaium         ppm <td>Sample Date</td> <td></td> <td>Client Info</td> <td></td> <td>14 Aug 2023</td> <td></td> <td></td>	Sample Date		Client Info		14 Aug 2023		
Coli Changed   Client Info   N/A	Machine Age	hrs	Client Info		0		
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         14             Chromium         ppm         ASTM D5185m         >4         2             Nickel         ppm         ASTM D5185m         >2         <1	Oil Age	hrs	Client Info		0		
WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >50         14             Chromium         ppm         ASTM D5185m         >4         2             Nickel         ppm         ASTM D5185m         >2         <1	Oil Changed		Client Info		N/A		
Description   Description	Sample Status				ABNORMAL		
Chromium	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	14		
Description	Chromium	ppm	ASTM D5185m	>4	2		
Silver	Nickel	ppm	ASTM D5185m	>2	<1		
Aluminum	Titanium	ppm	ASTM D5185m		0		
Lead	Silver	ppm	ASTM D5185m	>3	0		
Copper	Aluminum	ppm	ASTM D5185m	>9	4		
Tin	_ead	ppm	ASTM D5185m	>30	11		
Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         15              Barium         ppm         ASTM D5185m         0              Molybdenum         ppm         ASTM D5185m         64              Magnesium         ppm         ASTM D5185m         655              Magnesium         ppm         ASTM D5185m         1779              Calcium         ppm         ASTM D5185m         792              Phosphorus         ppm         ASTM D5185m         3227              Zinc         ppm         ASTM D5185m         3227              CONTAMINANTS         method         limit/base         current         hi	Copper	ppm	ASTM D5185m	>35	<1		
Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         15             Barium         ppm         ASTM D5185m         0             Molybdenum         ppm         ASTM D5185m         64             Manganese         ppm         ASTM D5185m         655             Magnesium         ppm         ASTM D5185m         1779             Calcium         ppm         ASTM D5185m         792             Phosphorus         ppm         ASTM D5185m         3227             Zinc         ppm         ASTM D5185m         3227             Sulfur         ppm         ASTM D5185m         >+100         7             CONTAMINANTS         method         limit/base         current         history1         history2           Solium         ppm         ASTM D5185m         >20<	Tin	ppm	ASTM D5185m	>4	<1		
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         15             Barium         ppm         ASTM D5185m         64             Molybdenum         ppm         ASTM D5185m         64             Manganese         ppm         ASTM D5185m         655             Magnesium         ppm         ASTM D5185m         1779             Calcium         ppm         ASTM D5185m         792             Phosphorus         ppm         ASTM D5185m         1062             Zinc         ppm         ASTM D5185m         3227             Sulfur         ppm         ASTM D5185m         >+100         7             CONTAMINANTS         method         limit/base         current         history1         history2           Solicon         ppm         ASTM D5185m         >+100         7             Potassium         ppm         ASTM D	Vanadium	ppm	ASTM D5185m		0		
Boron	Cadmium	ppm	ASTM D5185m		0		
Barium ppm ASTM D5185m 0 Manganese ppm ASTM D5185m 64 Manganese ppm ASTM D5185m 655 Manganesium ppm ASTM D5185m 655	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         64             Manganese         ppm         ASTM D5185m         <1	Boron	ppm	ASTM D5185m		15		
Manganese         ppm         ASTM D5185m         <1             Magnesium         ppm         ASTM D5185m         655             Calcium         ppm         ASTM D5185m         1779             Phosphorus         ppm         ASTM D5185m         792             Zinc         ppm         ASTM D5185m         1062             Sulfur         ppm         ASTM D5185m         3227             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         7             Sodium         ppm         ASTM D5185m         >20         64             Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Sulfation         Abs/:mm <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td></td> <td></td>	Barium	ppm	ASTM D5185m		0		
Magnesium         ppm         ASTM D5185m         655             Calcium         ppm         ASTM D5185m         1779             Phosphorus         ppm         ASTM D5185m         792             Zinc         ppm         ASTM D5185m         1062             Sulfur         ppm         ASTM D5185m         3227             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         7             Sodium         ppm         ASTM D5185m         >+100         7             Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Sulfation         Abs/.1mm         *ASTM D7624         >20         12.4             FLUID DE	Molybdenum	ppm			64		
Calcium         ppm         ASTM D5185m         1779             Phosphorus         ppm         ASTM D5185m         792             Zinc         ppm         ASTM D5185m         1062             Sulfur         ppm         ASTM D5185m         3227             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         7             Sodium         ppm         ASTM D5185m         >+100         7             Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Sulfation         Abs/.1mm         *ASTM D7624         >20         12.4             FUID DEGRADATION         method         limit/base         current         history1         history2 <t< td=""><td>-</td><td>ppm</td><td>ASTM D5185m</td><td></td><td>&lt;1</td><td></td><td></td></t<>	-	ppm	ASTM D5185m		<1		
Phosphorus         ppm         ASTM D5185m         792             Zinc         ppm         ASTM D5185m         1062             Sulfur         ppm         ASTM D5185m         3227             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         7             Sodium         ppm         ASTM D5185m         >+100         7             Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Sulfation         Abs/.1mm         *ASTM D7624         >20         12.4             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3 </td <td></td> <td>ppm</td> <td></td> <td></td> <td></td> <td></td> <td></td>		ppm					
Zinc	Calcium	ppm	ASTM D5185m				
Sulfur         ppm         ASTM D5185m         3227             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         7             Sodium         ppm         ASTM D5185m         >20         64             Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Sulfation         Abs/.mm         *ASTM D7624         >20         12.4             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3		ppm					
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >+100         7             Sodium         ppm         ASTM D5185m         ▲ 127             Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         12.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         26.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3		ppm					
Silicon         ppm         ASTM D5185m         >+100         7             Sodium         ppm         ASTM D5185m         ▲ 127             Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         12.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         26.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3	Sulfur	ppm	ASTM D5185m		3227		
Sodium	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         64             INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         12.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         26.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3	Silicon	ppm	ASTM D5185m	>+100	7		
INFRA-RED	Sodium	ppm	ASTM D5185m		<u> </u>		
Soot %         %         *ASTM D7844         0             Nitration         Abs/cm         *ASTM D7624         >20         12.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         26.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3	Potassium	ppm	ASTM D5185m	>20	<u>^</u> 64		
Nitration         Abs/cm         *ASTM D7624         >20         12.4             Sulfation         Abs/.1mm         *ASTM D7415         >30         26.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         26.8             FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         23.3	Soot %	%	*ASTM D7844		0		
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 23.3	Nitration	Abs/cm	*ASTM D7624	>20	12.4		
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30	26.8		
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 3.8	Oxidation	Abs/.1mm	*ASTM D7414	>25	23.3		
	Dana Niverskay (DNI)	та КОЦ/а	VSTM DOSOS		20		



# **OIL ANALYSIS REPORT**



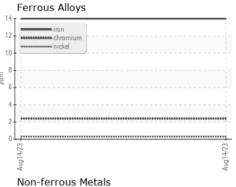
60			0.00
	1/23	1/23	
	Aug14	Aug14//	
	Ā	Ā	
Vice	osity @ 100°C		
16	usity @ 100 C		
107			
15 - Abnor			
14+			
13-			
13			
3			
12-			
	mal		

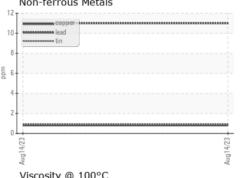


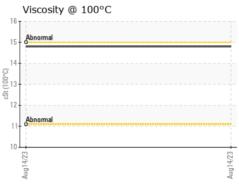
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE		
Yellow Metal	scalar	*Visual	NONE	NONE		
Precipitate	scalar	*Visual	NONE	NONE		
Silt	scalar	*Visual	NONE	NONE		
Debris	scalar	*Visual	NONE	NONE		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
<b>Emulsified Water</b>	scalar	*Visual	>0.1	NEG		
Free Water	scalar	*Visual		NEG		

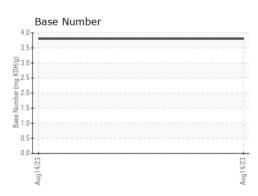
FLUID PROP	ERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445		14.8		

## **GRAPHS**













Laboratory Sample No. Lab Number Unique Number : 10604696

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0059623 : 05924749

Received : 15 Aug 2023 Diagnosed

: 16 Aug 2023 Diagnostician : Jonathan Hester

Test Package : FLEET ( Additional Tests: Glycol ) 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. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

GFL Environmental - 924 - Madison HC

300 Raemisch Road Waunakee, WI US 53597 Contact: Ben Briggs ben.briggs@gflenv.com T: (608)770-9196

Report Id: GFL924 [WUSCAR] 05924749 (Generated: 08/16/2023 13:02:54) Rev: 1