

Area

OIL ANALYSIS REPORT

GLYCOL

2015 JACOB W#2017 JACOB JACOB JACOB COLORI A/CO

Sample Date Client Info 27 Jun 2024 18 Jun 2024 18 Oct 2023 Machine Age mis Client Info 116026 116026 116026 Oil Age mis Client Info 116026 116026 116026 Sample Status Client Info N/A N/A N/A Changed CONTAMINATION method Imit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM DSIS5m >50 & 89 & 811 15 Chromium ppm ASTM DSIS5m >2 2 0 1 Nickel ppm ASTM DSIS5m >3 0 0 0 1 Silver ppm ASTM DSIS5m >30 18 4 2 <1 Quinnum ppm ASTM DSIS5m >30 0 0<	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Date Client Info 27 Jun 2024 18 Jun 2024 18 Oct 2023 Machine Age mis Client Info 116026 116026 116026 Oil Age mis Client Info 116026 116026 116026 Oil Changed Client Info N/A N/A N/A Changed Sample Status Client Info N/A N/A N/A Changed Water WC Method >0.1 NEG NEG NEG WEAR METALS method imit/base current history1 history1 Nickel ppm ASTM D5185m >2 2 0 1 Nickel ppm ASTM D5185m >2 2 0 0 1 -1 1 -1 1 <td>Sample Number</td> <td></td> <td>Client Info</td> <td></td> <th>GFL0123351</th> <td>GFL0123394</td> <td>GFL0082477</td>	Sample Number		Client Info		GFL0123351	GFL0123394	GFL0082477
Machine Age mls Client Info 116026 116026 116026 116026 Oil Age mls Client Info N/A N/A Changed Sample Status Client Info N/A N/A Changed Sample Status Client Info N/A N/A Changed CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG Wetar method limit/base current history1 history2 Iron ppm ASTM D5185n >550 A 89 A 81 15 Chromium ppm ASTM D5185n >4 11 10 <1			Client Info		27 Jun 2024	18 Jun 2024	18 Oct 2023
Oil Age mis Client Info 116026 116026 116026 116026 Oil Changed Client Info N/A N/A Changed Sample Status Image ABNORMAL SEVERE NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >4 11 10 <1	Machine Age	mls			116026	116026	116026
Sample Status Image ABNORMAL SEVERE NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185n >50 A 89 A 81 15 Chromium ppm ASTM D5185n >22 2 0 1 Nickel ppm ASTM D5185n >3 0 0 0 Silver ppm ASTM D5185n >3 0 0 0 Gopper ppm ASTM D5185n >3 18 22 1 Cadmium ppm ASTM D5185n >4 <1	-	mls	Client Info		116026	116026	116026
Sample Status Image ABNORMAL SEVERE NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185n >50 A 89 A 81 15 Chromium ppm ASTM D5185n >22 2 0 1 Nickel ppm ASTM D5185n >3 0 0 0 Silver ppm ASTM D5185n >3 0 0 0 Gopper ppm ASTM D5185n >3 18 22 1 Cadmium ppm ASTM D5185n >4 <1	Oil Changed		Client Info		N/A	N/A	Changed
Water WC Method >0.1 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >4 89 81 15 Chromium ppm ASTM D5185m >2 2 0 1 Nickel ppm ASTM D5185m >2 2 0 0 0 Aluminum ppm ASTM D5185m >3 0 0 0 0 Aluminum ppm ASTM D5185m >30 18 22 <1	Sample Status				ABNORMAL	SEVERE	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 ▲ 89 ▲ 81 15 Chromium ppm ASTM D5185m >22 2 0 11 10 <1 Nickel ppm ASTM D5185m >22 2 0 0 <1 <1 Silver ppm ASTM D5185m >33 0 0 0 <1 <1 Silver ppm ASTM D5185m >33 0 0 0 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron ppm ASTM 05185m >50 ▲ 89 ▲ 81 15 Chromium ppm ASTM 05185m >4 ▲ 11 ▲ 10 <1	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium ppm ASTM D5185m >4 ▲ 11 ▲ 10 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >2 2 2 2 0 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 9 7 3 Lead ppm ASTM D5185m >30 18 22 <1	Iron	ppm	ASTM D5185m	>50	<u> </u>	A 81	15
Titanium ppm ASTM D5185m 0 <1 <1 Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >30 18 22 <1	Chromium	ppm	ASTM D5185m	>4	<u> </u>	1 0	<1
Silver ppm ASTM D5185m >3 0 0 0 Aluminum ppm ASTM D5185m >9 9 4 7 3 Lead ppm ASTM D5185m >30 18 4 22 <1 Copper ppm ASTM D5185m >35 2 2 <1 0 Vanadium ppm ASTM D5185m >4 <1 0 0 0 Cadmium ppm ASTM D5185m >4 <10 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 62 63 52 Magnese ppm ASTM D5185m 569 641 562 Calcium ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m 800 818 914 764 Sulfur ppm ASTM D51	Nickel	ppm	ASTM D5185m	>2	2	2	0
Aluminum ppm ASTM D5185m >9 9 4 7 3 Lead ppm ASTM D5185m >30 18 22 <1	Titanium	ppm	ASTM D5185m		0	<1	<1
Lead ppm ASTM D5185m >30 18 22 <1 Copper ppm ASTM D5185m >35 2 2 <1	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >35 2 2 <1 Tin ppm ASTM D5185m >4 <1	Aluminum	ppm	ASTM D5185m	>9	9	<u> </u>	3
Tin ppm ASTM D5185m >4 <1 0 0 Vanadium ppm ASTM D5185m 0 0 <1	Lead	ppm	ASTM D5185m	>30	18	A 22	<1
Vanadium ppm ASTM D5185m 0 <1 <1 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 11 8 15 Barium ppm ASTM D5185m 0 0 0 0 Molybdenum ppm ASTM D5185m 622 63 52 Manganese ppm ASTM D5185m 662 641 562 Magnesium ppm ASTM D5185m 1694 1991 1665 Calcium ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m 800 818 914 764 Sulfur ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m >20 634 470 4 Solitum	Copper	ppm	ASTM D5185m	>35	2	2	<1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 11 8 15 Barium ppm ASTM D5185m 11 8 15 Barium ppm ASTM D5185m 62 63 52 Manganese ppm ASTM D5185m 622 63 52 Manganesum ppm ASTM D5185m 62 641 562 Calcium ppm ASTM D5185m 1694 1991 1665 Phosphorus ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m 800 818 914 764 Sulfur ppm ASTM D5185m 800 818 914 764 Solifon ppm ASTM D5185m 800 818 914 764 Sulfur ppm ASTM D518	Tin	ppm	ASTM D5185m	>4	<1	0	0
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m11815BariumppmASTM D5185m626352ManganeseppmASTM D5185m626352MagnesiumppmASTM D5185m569641562CalciumppmASTM D5185m569641562CalciumppmASTM D5185m169419911665PhosphorusppmASTM D5185m800818914764ZincppmASTM D5185m242533662423CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>+10016147SodiumppmASTM D5185m>206344704Glycol%*ASTM D2982<	Vanadium	ppm	ASTM D5185m		0	<1	<1
Boron ppm ASTM D5185m 11 8 15 Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 62 63 52 Manganese ppm ASTM D5185m 1 2 <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 0 Molybdenum ppm ASTM D5185m 62 63 52 Manganese ppm ASTM D5185m 1 2 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 62 63 52 Manganese ppm ASTM D5185m 1 2 <1	Boron	ppm	ASTM D5185m		11	8	15
Maganese ppm ASTM D5185m 1 2 <1 Magnesium ppm ASTM D5185m 569 641 562 Calcium ppm ASTM D5185m 1694 1991 1665 Phosphorus ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 2425 3366 2423 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >20 634 470 4 Glycol % *ASTM D2982 0.06 0.100 INFRA-RED method limit/base current history1 history2	Barium	ppm	ASTM D5185m		0	0	0
Magnesium ppm ASTM D5185m 569 641 562 Calcium ppm ASTM D5185m 1694 1991 1665 Phosphorus ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 2425 3366 2423 CONTAMINANTS method limit/base current history1 history2 Solium ppm ASTM D5185m >4100 16 14 7 Sodium ppm ASTM D5185m >20 634 470 4 Glycol % *ASTM D7844 0 0 0	Molybdenum	ppm	ASTM D5185m		62	63	52
Calcium ppm ASTM D5185m 1694 1991 1665 Phosphorus ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 2425 3366 2423 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 16 14 7 Sodium ppm ASTM D5185m >20 634 470 4 Glycol % *ASTM D7845 0.006 0.100 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.6 11.4	Manganese	ppm	ASTM D5185m		1	2	<1
Phosphorus ppm ASTM D5185m 800 818 914 764 Zinc ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 2425 3366 2423 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 16 14 7 Sodium ppm ASTM D5185m >+20 634 470 4 Glycol % *ASTM D2982 0.06 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.mm *ASTM D7624 >20 11.6 11.4 8.8 FLUID DEGRADATION method limit/base current	Magnesium	ppm			569	641	562
Zinc ppm ASTM D5185m 880 1046 1191 997 Sulfur ppm ASTM D5185m 2425 3366 2423 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >+100 16 14 7 Sodium ppm ASTM D5185m >+100 16 14 7 Sodium ppm ASTM D5185m >+20 634 470 4 Glycol % *ASTM D2982 0.06 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.tmm *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.tmm *ASTM D7415 >30 24.8 <td>Calcium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>1694</th> <td>1991</td> <td>1665</td>	Calcium	ppm	ASTM D5185m		1694	1991	1665
SulfurppmASTM D5185m242533662423CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>+10016147SodiumppmASTM D5185m>+10016147SodiumppmASTM D5185m>2046344704Glycol%*ASTM D2982<	Phosphorus	ppm				914	
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>+10016147SodiumppmASTM D5185m>+10016147SodiumppmASTM D5185m>2046344704Glycol%*ASTM D298240.060.10INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844000NitrationAbs/cm*ASTM D7624>2011.611.48.8SulfationAbs/lim*ASTM D7415>3024.824.918.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.imm*ASTM D7414>2519.119.416.0	Zinc	ppm		880		1191	997
Silicon ppm ASTM D5185m >+100 16 14 7 Sodium ppm ASTM D5185m >+100 16 14 7 Sodium ppm ASTM D5185m >20 4 34 28 5 Potassium ppm ASTM D5185m >20 4 634 470 4 Glycol % *ASTM D2982 A 0.06 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.mm *ASTM D7415 >30 24.8 24.9 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.1 19.4 16.0	Sulfur	ppm	ASTM D5185m		2425	3366	2423
Sodium ppm ASTM D5185m 34 28 5 Potassium ppm ASTM D5185m >20 634 470 4 Glycol % *ASTM D2982 0.06 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.imm *ASTM D7415 >30 24.8 24.9 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.imm *ASTM D7414 >25 19.1 19.4 16.0	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 634 470 4 Glycol % *ASTM D2982 0.06 0.10 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.8 24.9 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.1 19.4 16.0	Silicon	ppm	ASTM D5185m	>+100	16	14	7
Glycol%*ASTM D29820.060.10INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844000NitrationAbs/cm*ASTM D7624>2011.611.48.8SulfationAbs/.1mm*ASTM D7415>3024.824.918.8FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2519.119.416.0	Sodium	ppm	ASTM D5185m		<u> </u>	<u> </u>	5
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D7844000NitrationAbs/cm*ASTM D7624>2011.611.48.8SulfationAbs/.1mm*ASTM D7415>3024.824.918.8FLUID DEGRADATION methodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D7414>2519.119.416.0				>20			4
Soot % % *ASTM D7844 0 0 0 Nitration Abs/cm *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.8 24.9 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.1 19.4 16.0	Glycol	%	*ASTM D2982		A 0.06	▲ 0.10	
Nitration Abs/cm *ASTM D7624 >20 11.6 11.4 8.8 Sulfation Abs/.1mm *ASTM D7415 >30 24.8 24.9 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.1 19.4 16.0	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 24.8 24.9 18.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.1 19.4 16.0	Soot %	%	*ASTM D7844		0	0	0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 19.1 19.4 16.0	Nitration	Abs/cm	*ASTM D7624	>20	11.6	11.4	8.8
Oxidation Abs/.1mm *ASTM D7414 >25 19.1 19.4 16.0	Sulfation	Abs/.1mm	*ASTM D7415	>30	24.8	24.9	18.8
	FLUID DEGRA		method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	19.1	19.4	16.0
	Base Number (BN)	mg KOH/a	ASTM D2896		5.0	4.2	6.4

(YA115787) 3493C Component Natural Gas Engine Fluid CHEVRON DELO 400 NG (30 GAL)

DIAGNOSIS

Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. We recommend that you drain the oil and perform a filter service on this component if not already done. We recommend an early resample to monitor this condition.

🔺 Wear

Piston, ring and cylinder wear is indicated.

Contamination

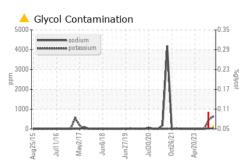
Sodium and/or potassium levels are high. Test for glycol is positive.

Fluid Condition

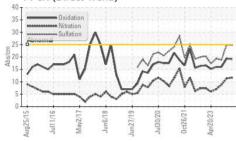
The BN result indicates that there is suitable alkalinity remaining in the oil. The oil is no longer serviceable due to the presence of contaminants.

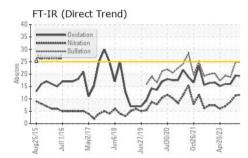


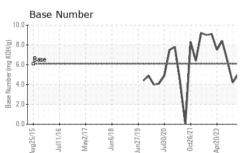
OIL ANALYSIS REPORT

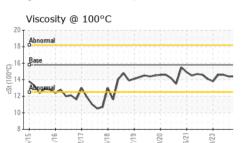


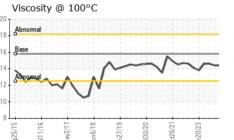


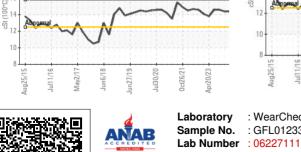


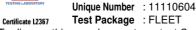














* - Denotes test methods that are outside of the ISO 17025 scope of accreditation

: GFL0123351

Bolivia, NC US 28422 Contact: DONALD CRAVEN dcraven@gflenv.com T: -4179

7.	
ecision rule (JCGM 106:2012)	F: (910)253-

Statements of conformity to specifications are based on the simple acceptance de

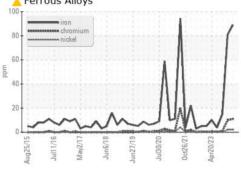
Report Id: GFL007 [WUSCAR] 06227111 (Generated: 07/09/2024 15:44:39) Rev: 1

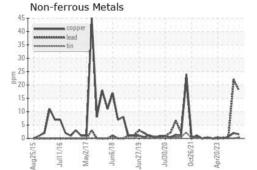
Submitted By: DONALD CRAVEN

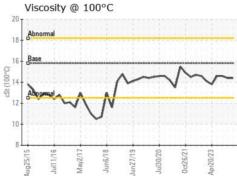
Page 2 of 2

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	>0.1	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	15.8	14.4	14.4	14.6
GRAPHS						

Ferrous Alloys







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

Received

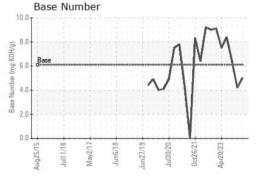
Diagnosed

Tested

: 03 Jul 2024

: 05 Jul 2024

: 06 Jul 2024 - Don Baldridge



2809 Galloway Road

GFL Environmental - 007 - Brunswick