

OIL ANALYSIS REPORT

Sample Rating Trend







Sample Number Client Info GFL0096944 GFL0096985 GFL0094247 Sample Date Client Info 29 Jan 202 65 Dec 2023 19 May 2023 Machine Age hrs Client Info 13116 12733 11844 Oil Age Client Info 13116 0 11844 Oil Age No Changed NoRMAL NORMAL Sample Status Imit Method Imit Mass NoRMAL NORMAL CONTAMINATION method Imit Mass current History1 History2 Water WC Method Imit Mass current History1 History2 Ino ppm ASTM 05185n 0 0 <1 1 Innaium ppm ASTM 05185n 0 0 0 1 1 1 9 Chromium ppm ASTM 05185n 0 0 0 1 1 1 Innaium ppm ASTM 05185n 1 2 <1 1	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 13116 12733 11844 Oil Age hrs Client Info Not Changd Not Changd Changed Sample Status Imit Add NorRMAL NorRMAL NorRMAL NorRMAL CONTAMINATION method Imit Imit Imit Imit Imit Imit Imit Imit	Sample Number		Client Info		GFL0096944	GFL0096985	GFL0084247
Oil Age Inss Client Info 13116 0 11844 Oil Changed Client Info Not Changd Not Changd Changed Sample Status Imit base current Instory1 Instory2 Water WC Method NEG NEG NEG Water WC Method NEG NEG NEG WEAR METALS method Imit/base current Instory1 Instory2 Iron ppm ASTM D5185m <1	Sample Date		Client Info		29 Jan 2024	05 Dec 2023	19 May 2023
Oil Changed Sample StatusClient InfoNot Changd NORMALNot Changd NORMALChanged NORMALCONTAMINATIONmethodimit/basecurrenthistory1history2WaterWC MethodNEGNEGNEGWEAR METALSmethodimit/basecurrenthistory1IronppmASTM D5185m<1	Machine Age	hrs	Client Info		13116	12733	11844
Sample Status NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m O <1 1 Nickel ppm ASTM D5185m O O <1 Silver ppm ASTM D5185m O O <1 Silver ppm ASTM D5185m O O O Silver ppm ASTM D5185m O O O Copper ppm ASTM D5185m C1 O C1 Tin ppm ASTM D5185m O O O O Cadmium ppm ASTM D5185m C1 O C1 O Molybdenum ppm ASTM D5185m 41 T 8	Oil Age	hrs	Client Info		13116	0	11844
CONTAMINATIONmethodlimit/basecurrenthistory1history2WaterWC MethodNEGNEGNEGNEGWEAR METALSmethodlimit/basecurrenthistory1history2IronppmASTM D5185m0<1	Oil Changed		Client Info		Not Changd	Not Changd	Changed
Water WC Method NEG NEG NEG WEAR METALS method imit/base current history1 history2 Iron ppm ASTM D5185m <1	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Iron ppm ASTM D5185m <1	Water		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m 0 <1 1 Nickel ppm ASTM D5185m 0 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m 0 0 <1 Titanium ppm ASTM D5185m 0 0 <1	Iron	ppm	ASTM D5185m		<1	14	9
Titanium ppm ASTM D5185m 0 0 <1 Silver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m 1 2 <1	Chromium	ppm	ASTM D5185m		0	<1	1
Silver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m <1	Nickel	ppm	ASTM D5185m		0	0	<1
Atominum ppm ASTM D5185m 1 2 <1 Lead ppm ASTM D5185m <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead ppm ASTM D5185m <1 <1 <1 8 Copper ppm ASTM D5185m 0 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m 0 <1 1 Tin ppm ASTM D5185m <1	Aluminum	ppm	ASTM D5185m		1	2	<1
Tin ppm ASTM D5185m <1 0 <1 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 41 7 8 Barium ppm ASTM D5185m 41 0 0 Molybdenum ppm ASTM D5185m 41 0 0 Magnese ppm ASTM D5185m 47 62 56 Magnesium ppm ASTM D5185m 550 612 648 Calcium ppm ASTM D5185m 730 822 257 Phosphorus ppm ASTM D5185m 868 1016 1096 Sulfur ppm ASTM D5185m 253 2575 2913 CONTAMINANTS method limit/base current history1 history2	Lead	ppm	ASTM D5185m		<1	<1	8
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 41 7 8 Barium ppm ASTM D5185m 41 7 8 Barium ppm ASTM D5185m 41 0 0 Molybdenum ppm ASTM D5185m 41 0 0 Maganese ppm ASTM D5185m 41 0 <1 Magnesium ppm ASTM D5185m 550 612 648 Calcium ppm ASTM D5185m 758 730 822 Zinc ppm ASTM D5185m 2533 2575 2913 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 5 6 7 2	Copper	ppm	ASTM D5185m		0	<1	1
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m4178BariumppmASTM D5185m4178BariumppmASTM D5185m476256ManganeseppmASTM D5185m476256MagnesiumppmASTM D5185m550612648CalciumppmASTM D5185m550612648CalciumppmASTM D5185m758730822ZincppmASTM D5185m225325752913CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m567SodiumppmASTM D5185m022INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%'ASTM D76246.211.711.9SulfationAbs/m'ASTM D76246.211.711.9SulfationAbs/m'ASTM D741519.023.027.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/Imm'ASTM D741415.018.523.0	Tin	ppm	ASTM D5185m		<1	0	<1
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m4178BariumppmASTM D5185m4100MolybdenumppmASTM D5185m476256ManganeseppmASTM D5185m476256MagnesiumppmASTM D5185m410<1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 41 7 8 Barium ppm ASTM D5185m <1	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 47 62 56 Manganese ppm ASTM D5185m <1	Boron	ppm	ASTM D5185m		41	7	8
Maganese ppm ASTM D5185m <1 0 <1 Magnesium ppm ASTM D5185m 550 612 648 Calcium ppm ASTM D5185m 1307 1493 1759 Phosphorus ppm ASTM D5185m 758 730 822 Zinc ppm ASTM D5185m 868 1016 1096 Sulfur ppm ASTM D5185m 2253 2575 2913 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 5 6 7 Sodium ppm ASTM D5185m 0 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/mm *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.1mm *ASTM D7415 19.0 2	Barium	ppm	ASTM D5185m		<1	0	0
Magnesium ppm ASTM D5185m 550 612 648 Calcium ppm ASTM D5185m 1307 1493 1759 Phosphorus ppm ASTM D5185m 758 730 822 Zinc ppm ASTM D5185m 758 730 822 Zinc ppm ASTM D5185m 868 1016 1096 Sulfur ppm ASTM D5185m 2253 2575 2913 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 5 6 7 Sodium ppm ASTM D5185m 3 12 9 Potassium ppm ASTM D5185m 0 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.tmm *ASTM D7415 19.0 23.0 <td>•</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th></th> <td></td> <td>56</td>	•	ppm	ASTM D5185m				56
Calcium ppm ASTM D5185m 1307 1493 1759 Phosphorus ppm ASTM D5185m 758 730 822 Zinc ppm ASTM D5185m 758 730 822 Zinc ppm ASTM D5185m 868 1016 1096 Sulfur ppm ASTM D5185m 2253 2575 2913 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 5 6 7 Sodium ppm ASTM D5185m 3 12 9 Potassium pm ASTM D5185m 0 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.1mm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current	Manganese	ppm	ASTM D5185m		<1	0	<1
Phosphorus ppm ASTM D5185m 758 730 822 Zinc ppm ASTM D5185m 868 1016 1096 Sulfur ppm ASTM D5185m 2253 2575 2913 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 5 6 7 Sodium ppm ASTM D5185m 3 12 9 Potassium ppm ASTM D5185m 0 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.1mm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414	0	ppm			550		648
ZincppmASTM D5185m86810161096SulfurppmASTM D5185m225325752913CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m567SodiumppmASTM D5185m3129PotassiumppmASTM D5185m022INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D784400.10.1NitrationAbs/cm*ASTM D76246.211.711.9SulfationAbs/.imm*ASTM D741519.023.027.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.imm*ASTM D741415.018.523.0	Calcium	ppm	ASTM D5185m		1307	1493	1759
SulfurppmASTM D5185m225325752913CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m567SodiumppmASTM D5185m3129PotassiumppmASTM D5185m022INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D784400.10.1NitrationAbs/cm*ASTM D76246.211.711.9SulfationAbs/limm*ASTM D741519.023.027.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.1mm*ASTM D741415.018.523.0	Phosphorus	ppm			758		
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m567SodiumppmASTM D5185m3129PotassiumppmASTM D5185m022INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D784400.10.1NitrationAbs/cm*ASTM D76246.211.711.9SulfationAbs/.tmm*ASTM D741519.023.027.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.tmm*ASTM D741415.018.523.0	-	ppm	ASTM D5185m		868	1016	1096
Silicon ppm ASTM D5185m 5 6 7 Sodium ppm ASTM D5185m 3 12 9 Potassium ppm ASTM D5185m 0 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.imm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.imm *ASTM D7414 15.0 18.5 23.0	Sulfur	ppm	ASTM D5185m		2253	2575	2913
Sodium ppm ASTM D5185m 3 12 9 Potassium ppm ASTM D5185m 0 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.1mm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 15.0 18.5 23.0	CONTAMINAN	TS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m 0 2 2 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.1mm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 15.0 18.5 23.0	Silicon	ppm	ASTM D5185m		5	6	7
INFRA-REDmethodlimit/basecurrenthistory1history2Soot %%*ASTM D784400.10.1NitrationAbs/cm*ASTM D76246.211.711.9SulfationAbs/.tmm*ASTM D741519.023.027.1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2OxidationAbs/.tmm*ASTM D741415.018.523.0	Sodium	ppm	ASTM D5185m		3	12	9
Soot % % *ASTM D7844 0 0.1 0.1 Nitration Abs/cm *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.1mm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 15.0 18.5 23.0	Potassium	ppm	ASTM D5185m		0	2	2
Nitration Abs/cm *ASTM D7624 6.2 11.7 11.9 Sulfation Abs/.1mm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 15.0 18.5 23.0			method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 19.0 23.0 27.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 15.0 18.5 23.0			methou				
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 15.0 18.5 23.0		%			0	0.1	0.1
Oxidation Abs/.1mm *ASTM D7414 15.0 18.5 23.0	Soot %		*ASTM D7844				
	Soot % Nitration	Abs/cm	*ASTM D7844 *ASTM D7624	_	6.2	11.7	11.9
Base Number (BN) mg KOH/g ASTM D2896 8.2 4.8 3.5	Soot % Nitration Sulfation	Abs/cm Abs/.1mm	*ASTM D7844 *ASTM D7624 *ASTM D7415		6.2 19.0	11.7 23.0	11.9 27.1
	Soot % Nitration Sulfation FLUID DEGRAE	Abs/cm Abs/.1mm	*ASTM D7844 *ASTM D7624 *ASTM D7415 method		6.2 19.0 current	11.7 23.0 history1	11.9 27.1 history2

Area (P658099) Machine Id 3819C

Component Natural Gas Engine Fluid PETRO CANADA 10W40 (8 GAL)

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.



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Dec31/18

Feb25/20

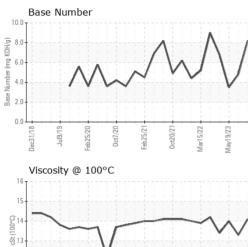
Jul9/19

OIL ANALYSIS REPORT

scalar *Visual

VISUAL

White Metal



	White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
$(\land \land$	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
	Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
····V	Silt	scalar	*Visual	NONE	NONE	NONE	NONE
	Debris	scalar	*Visual	NONE	NONE	NONE	NONE
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Feb 25/21 0ct20/21 Mar15/22 Aay19/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Feb 25/21 0ct20/21 Mar15/22 May19/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
	Emulsified Water	scalar	*Visual		NEG	NEG	NEG
	Free Water	scalar	*Visual		NEG	NEG	NEG
	FLUID PROPE		method	limit/base	current	history1	history2
$\sim \sim \sim$	Visc @ 100°C	cSt	ASTM D445		14.1	13.3	14.0
	GRAPHS						
	Ferrous Alloys						
21	iron						
Feb25/21 0ct20/21 Mar15/22 May19/23	80 - nickel						
Ma Mi O							
	60- E						
	40						
	1 1		A				
	20			-			
		<u>~</u>	~	-			
		5/21-	0/21-	9/23 .			
	Dec31/18 Jul9/19 Feb25/20	Uctr//zU Feb25/21	0ct20/21 Mar15/22	May 19/23			
	Non-ferrous Meta	als		-			
	²⁵ T	,					
	copper]						
	20 - tin						
	15						
	udd						
	10						
				٨			
	5			1			
		AA		-			
	Dec31/18 Jul9/19 Feb25/20	Uct//2U Feb25/21	0ct20/21 Mar15/22	May 19/23			
	Pebi Ju	Teb Uc	0ct Mar	May			
	Viscosity @ 100°	С			Base Number		
	15.5	111111		10.0			
	15						Λ
	14.5			(B) 8.0		Λ	
C O	5125		\sim	8.0 6.0 Base Number (mg KOH/g) 4.0		()	1
000	B 13.5			er V			$\sqrt{1}$
c.	12.5			4.0	/ V	W	·V
	12			ase B			
	11.5			°° 2.0			
	11.3+			0.0			
	11		2)/23	Dec31/18 Jul9/19 Feb25/20	7/20 5/21	5/22
	11	u/zU	5/2	0.7			
	114	Uct//2U Feb25/21	0ct20/21 Mar15/22	May19/23	Deci Ju Feb2	0ct7/20 Feb25/21 0ct20/21	Mar15/22 May19/23
	Dec31//18				0 E		
Laboratory	: WearCheck USA -	501 Madis	son Ave., Ca	ary, NC 27513	0 E	onmental - 031 - Gre	enville/Spartanbu
Laboratory Sample No.	: WearCheck USA - : GFL0096944	501 Madia	son Ave., Ca d : 01	ary, NC 27513 Feb 2024	0 E	onmental - 031 - Gre	enville/Spartanbu
Laboratory Sample No. Lab Number	: WearCheck USA - : GFL0096944 : 06076590	501 Madia Recieved	son Ave., Ca d : 01 ed : 01	ary, NC 27513 Feb 2024 Feb 2024	0 E	onmental - 031 - Gre	enville/Spartanbu ioch Church F Piedmont, S
Laboratory Sample No. Lab Number Unique Number	: WearCheck USA - : GFL0096944 : 06076590 : 10858681	501 Madia	son Ave., Ca d : 01 ed : 01	ary, NC 27513 Feb 2024	GFL Envir	ronmental - 031 - Gre 1635 Anti	enville/Spartanbu ioch Church F Piedmont, S US 2967
Laboratory Sample No. Lab Number Unique Number Test Package	: WearCheck USA - : GFL0096944 : 06076590 : 10858681 : FLEET	501 Madis Recieved Diagnose Diagnose	son Ave., Ca d : 01 ed : 01 tician : We	ary, NC 27513 Feb 2024 Feb 2024 es Davis	GFL Envir	ronmental - 031 - Gre 1635 Anti ntact: TECHNIC	eenville/Spartanbu ioch Church F Piedmont, S US 296 IAN ACCOUN
Laboratory Sample No. Lab Number Unique Number	: WearCheck USA - : GFL0096944 : 06076590 : 10858681 : FLEET contact Customer Serv	501 Madis Recieved Diagnose Diagnost	son Ave., Ca d : 01 ed : 01 tician : We	ary, NC 27513 Feb 2024 Feb 2024 es Davis <i>9.</i>	GFL Envir	ronmental - 031 - Gre 1635 Anti	eenville/Spartanbo ioch Church F Piedmont, S US 296 IAN ACCOUN

NONE

NONE

NONE

NONE