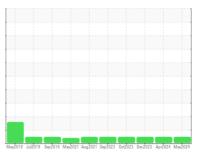


OIL ANALYSIS REPORT

Sample Rating Trend









Machine Id
901143
Component
Diesel Engine
Fluid

DIESEL ENGINE OIL SAE 15W40 (42 LTR)

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

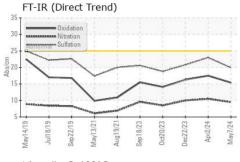
Fluid Condition

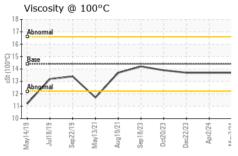
The condition of the oil is acceptable for the time in service.

Client Info GFL0118911 GFL0094418 GFL008677 Sample Date Client Info O7 May 2024 02 Apr 2024 22 Dec 202 Machine Age hrs Client Info O 70							
Cample Date	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Machine Age hrs	Sample Number		Client Info		GFL0118911	GFL0094418	GFL0086774
Dil Age	Sample Date		Client Info		07 May 2024	02 Apr 2024	22 Dec 2023
Client Info	Machine Age	hrs	Client Info		90940	12119	11572
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method fimit/base current history1 history2 history2 history2 NEG NE	Oil Age	hrs	Client Info		0	700	600
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >3.0 <1.0	Oil Changed		Client Info		Changed	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	NORMAL
Water	CONTAMINATION	NC	method	limit/base	current	history1	history2
WEAR METALS	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185(m) >120 5 10 5 Chromium ppm ASTM D5185(m) >20 0 0 0 Nickel ppm ASTM D5185(m) >20 0 0 <1	Water		WC Method	>0.2	NEG	NEG	NEG
Second S	Glycol		WC Method		NEG	NEG	NEG
Chromium	WEAR METALS	5	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185(m)	>120	5	10	5
Titanium	Chromium	ppm	ASTM D5185(m)	>20	0	0	0
Silver	Nickel	ppm	ASTM D5185(m)	>5	0	0	<1
Aluminum	Titanium	ppm	ASTM D5185(m)	>2	1	1	<1
Lead	Silver	ppm	ASTM D5185(m)	>2	0	0	0
Copper	Aluminum	ppm	ASTM D5185(m)	>20	3	4	4
Tin	Lead	ppm	ASTM D5185(m)	>40	0	1	<1
Antimony	Copper	ppm	ASTM D5185(m)	>330	<1	<1	<1
Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 250 45 28 33 Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 90 88 87 Manganese ppm ASTM D5185(m) 100 90 88 87 Magnesium ppm ASTM D5185(m) 450 103 81 71 Calcium ppm ASTM D5185(m) 3000 2164 2105 2142 Phosphorus ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634	Tin	ppm	ASTM D5185(m)	>15	0	0	<1
Beryllium	Antimony	ppm	ASTM D5185(m)		0	0	0
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 250 45 28 33 Barium ppm ASTM D5185(m) 10 0 0 0 Molybdenum ppm ASTM D5185(m) 100 90 88 87 Manganese ppm ASTM D5185(m) 100 0 0 0 Magnesium ppm ASTM D5185(m) 450 103 81 71 Calcium ppm ASTM D5185(m) 3000 2164 2105 2142 Phosphorus ppm ASTM D5185(m) 1150 969 924 934 Zinc ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) >25	Vanadium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES	Beryllium	ppm	ASTM D5185(m)		0	0	0
Boron ppm ASTM D5185(m) 250 45 28 33 33 34 35 35 35 35 35	Cadmium	ppm	ASTM D5185(m)		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 100 90 88 87 Manganese ppm ASTM D5185(m) 0 0 0 0 Magnesium ppm ASTM D5185(m) 450 103 81 71 Calcium ppm ASTM D5185(m) 3000 2164 2105 2142 Phosphorus ppm ASTM D5185(m) 1150 969 924 934 Zinc ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 2 4 4 Potassium ppm ASTM D5185(m) >20 <1 <1 2 INFRA-RED method	Boron	ppm	ASTM D5185(m)	250	45	28	33
Manganese ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 450 103 81 71 Calcium ppm ASTM D5185(m) 3000 2164 2105 2142 Phosphorus ppm ASTM D5185(m) 1150 969 924 934 Zinc ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) <1	Barium	ppm	ASTM D5185(m)	10	0	0	0
Magnesium ppm ASTM D5185(m) 450 103 81 71 Calcium ppm ASTM D5185(m) 3000 2164 2105 2142 Phosphorus ppm ASTM D5185(m) 1150 969 924 934 Zinc ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) <1	Molybdenum	ppm	ASTM D5185(m)	100	90	88	87
Calcium ppm ASTM D5185(m) 3000 2164 2105 2142 Phosphorus ppm ASTM D5185(m) 1150 969 924 934 Zinc ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) <1	Manganese	ppm	ASTM D5185(m)		0	0	0
Phosphorus ppm ASTM D5185(m) 1150 969 924 934 Zinc ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) <1	Magnesium	ppm	ASTM D5185(m)	450	103	81	71
Zinc ppm ASTM D5185(m) 1350 1160 1126 1141 Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) <1	Calcium	ppm	ASTM D5185(m)	3000	2164	2105	2142
Sulfur ppm ASTM D5185(m) 4250 2925 2634 2926 Lithium ppm ASTM D5185(m) 4250 2925 2634 2926 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 2 4 4 Sodium ppm ASTM D5185(m) >158 4 6 4 Potassium ppm ASTM D5185(m) >20 <1 <1 2 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.2 0.4 0.3 Nitration Abs/cm ASTM D7624* >20 9.5 10.5 10.0	Phosphorus	ppm	ASTM D5185(m)	1150	969	924	934
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 2 4 4 Sodium ppm ASTM D5185(m) >158 4 6 4 Potassium ppm ASTM D5185(m) >20 <1	Zinc	ppm	ASTM D5185(m)	1350	1160	1126	1141
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >25 2 4 4 Sodium ppm ASTM D5185(m) >158 4 6 4 Potassium ppm ASTM D5185(m) >20 <1	Sulfur	ppm	ASTM D5185(m)	4250	2925	2634	2926
Silicon ppm ASTM D5185(m) >25 2 4 4 Sodium ppm ASTM D5185(m) >158 4 6 4 Potassium ppm ASTM D5185(m) >20 <1 <1 2 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.2 0.4 0.3 Nitration Abs/cm ASTM D7624* >20 9.5 10.5 10.0	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) >158 4 6 4 Potassium ppm ASTM D5185(m) >20 <1 <1 2 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.2 0.4 0.3 Nitration Abs/cm ASTM D7624* >20 9.5 10.5 10.0	CONTAMINANT	ΓS	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 <1 <1 2 INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.2 0.4 0.3 Nitration Abs/cm ASTM D7624* >20 9.5 10.5 10.0	Silicon	ppm	ASTM D5185(m)	>25	2	4	4
INFRA-RED method limit/base current history1 history2 Soot % % ASTM D7844* >4 0.2 0.4 0.3 Nitration Abs/cm ASTM D7624* >20 9.5 10.5 10.0	Sodium	ppm	ASTM D5185(m)	>158	4	6	4
Soot % % ASTM D7844* >4 0.2 0.4 0.3 Nitration Abs/cm ASTM D7624* >20 9.5 10.5 10.0	Potassium	ppm	ASTM D5185(m)	>20	<1	<1	2
Nitration Abs/cm ASTM D7624* >20 9.5 10.5 10.0	INFRA-RED		method	limit/base	current	history1	history2
	Soot %	%	ASTM D7844*	>4	0.2	0.4	0.3
Sulfation Abs/.1mm ASTM D7415* >30 19.9 23.0 20.8	Nitration	Abs/cm	ASTM D7624*	>20	9.5	10.5	10.0
	Sulfation	Abs/.1mm	ASTM D7415*	>30	19.9	23.0	20.8



OIL ANALYSIS REPORT





FLUID DEGRA	DATION	method				history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	15.4	17.5	16.3
VISUAL		method				history2
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPE	RTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D7279(m)	14.4	13.7	13.7	13.7
GRAPHS						

GRAP	PHS																		
Iron (p	pm)									Lea	ıd (p	pm)							
Severe									100-	Seve	ere								
200									80 -					-				-	
Abnormal									60 -	Ahn	omal								
100									40 -	- 0	ormal			-				-	
50-									20 -										
0461	61/6	3/21-	12/6	- 62/	- 62/	1/23	1/24	124	0 -	61/9	- 61/4	9/19	3/21	12/6		1/23	1/23	1/24	124
May14/19 Jul18/19	Sep22/19	May13/21	Aug19/21	Sep18/23	0ct20/23	Dec22/23	Apr2/24	May7/24		May14/19	Jul18/19	Sep22/19	May13/21	Aug19/21	Sep18/23	0ct20/23	Dec22/23	Apr2/24	Mav7/24
Alumin	um (ppm))							Chr	romi	ım ()					
Severe									50-	Seve	ere								
10 -									40 -					-		-		-	
Abnormal									ag 30 -	Δhn	ormal								
20 - Abnormal									20 -	- 0	ormal			-				-	
10-									10-										
0 61/	- 61/	3/21-	12/8	-23	/23+	/23	124	124	0 -	61/	- 61/	119	3/21	12/6	/23	/23	123	/24	724
May14/19 Jul18/19	Sep22/19	May13/21	Aug19/21	Sep18/23	0ct20/23	Dec22/23	Apr2/24.	May7/24		May14/19	Jul18/19	Sep22/19	May13/21	Aug19/21.	Sep18/23	0ct20/23	Dec22/23	Apr2/24	May7/24
Copper	(ppr	n)									con (ppm)						
Severe Abnormal									80 - 70 -	Seve	ere								
10									60 - 50 -	1									
0									튎 40 -	1									
0						::I:			30 - 20 -	Abn	rmal								
0									10-		1								
0 419	61/7	3/21-	9/21-	3/23)/23	2/23	Apr2/24 -	May7/24	0 -	£/19	9/19	61/2	3/21	9/21	3/23	1/23	2/23	Apr2/24 -	May7/24
May14/19	Sep22/19	May13/21	Aug19/21	Sep18/23	0ct20/23	Dec22/23	Apri	Мау		May14/19	Jul18/19	Sep22/19	May13/21	Aug19/21	Sep18/23	Oct20/23	Dec22/23	Apri	May
Viscosit	у @	100°	С						7.0	Soc	ot %								
7 Abnormal									6.0	Seve	ere								
16									5.0	Aba									
Base					-				≈4.0 83.0	Aun	ormal							-	
Abnormal	7								2.0										
11		~							1.0										
10 49 61	- 61/	3/21	12/6	123	1/23	123	724	724	0.0	119	- 61/	61/6	3/21	12/6	123+	1/23	1/23	1/24	724



CALA ISO 17025:2017 Accredited Laboratory

Laboratory

Sample No. : GFL0118911 Lab Number : 02634056 Unique Number : 5775209 Test Package : MOB 1

To discuss this sample report, contact Customer Service at 1-800-268-2131.

Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received : 08 May 2024 **Tested** Diagnosed

: 08 May 2024 : 08 May 2024 - Wes Davis

SANDHILL DISPOSAL & RECYCLING DIVIS, 19 COMMERCE ROAD

ORANGEVILLE, ON CA L9W 3X5 Contact: GLENN COOK gcook@gflenv.com T: (519)940-4167

GFL Environmental - 222 - Sandhill

Validity of results and interpretation are based on the sample and information as supplied. Report Id: GFL222 [WCAMIS] 02634056 (Generated: 05/08/2024 16:43:42) Rev: 1

Submitted By: Kim Thompson