

# **OIL ANALYSIS REPORT**

Sample Rating Trend



## Machine Id 913002

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

### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

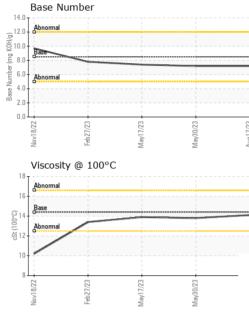
#### Fluid Condition

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

New2022 Feb2023 May2023 May2023 Aug2023									
SAMPLE INFORM	NATION	method	limit/base	current	history1	history2			
Sample Number		Client Info		GFL0082502	GFL0070917	GFL0082533			
Sample Date		Client Info		17 Aug 2023	30 May 2023	17 May 2023			
Machine Age	hrs	Client Info		2061	1538	1469			
Oil Age	hrs	Client Info		523	560	491			
Oil Changed		Client Info		Changed	Changed	N/A			
Sample Status				NORMAL	NORMAL	NORMAL			
CONTAMINATI	ON	method	limit/base	current	history1	history2			
Fuel		WC Method	>5	<1.0	<1.0	<1.0			
Glycol		WC Method		NEG	NEG	NEG			
WEAR METALS	S	method	limit/base	current	history1	history2			
Iron	ppm	ASTM D5185m	>100	15	17	15			
Chromium	ppm	ASTM D5185m	>20	<1	1	<1			
Nickel	ppm	ASTM D5185m	>4	2	3	3			
Titanium	ppm	ASTM D5185m		<1	0	0			
Silver	ppm	ASTM D5185m	>3	<1	<1	0			
Aluminum	ppm	ASTM D5185m	>20	4	2	0			
Lead	ppm	ASTM D5185m	>40	<1	2	0			
Copper	ppm	ASTM D5185m	>330	12	56	29			
Tin	ppm	ASTM D5185m	>15	1	<1	1			
Vanadium	ppm	ASTM D5185m		<1	0	0			
Cadmium	ppm	ASTM D5185m		0	0	0			
ADDITIVES		method	limit/base	current	history1	history2			
Boron	ppm	ASTM D5185m	250	2	8	5			
Barium	ppm	ASTM D5185m	10	0	0	0			
Molybdenum	ppm	ASTM D5185m	100	66	66	66			
Manganese	ppm	ASTM D5185m		<1	<1	<1			
Magnesium	ppm	ASTM D5185m	450	1021	940	918			
Calcium	ppm	ASTM D5185m	3000						
Phosphorus			0000	1214	1195	1197			
i nospilolus	ppm	ASTM D5185m	1150	1214 1035	1195 1043	1197 1043			
Zinc	ppm ppm	ASTM D5185m ASTM D5185m							
•			1150	1035	1043	1043			
Zinc	ppm ppm	ASTM D5185m	1150 1350	1035 1304	1043 1315	1043 1278			
Zinc Sulfur	ppm ppm	ASTM D5185m ASTM D5185m	1150 1350 4250	1035 1304 3358	1043 1315 3500	1043 1278 3090			
Zinc Sulfur CONTAMINAN	ppm ppm TS	ASTM D5185m ASTM D5185m method	1150 1350 4250 limit/base	1035 1304 3358 current	1043 1315 3500 history1	1043 1278 3090 history2			
Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon	ppm ppm TS ppm	ASTM D5185m ASTM D5185m method ASTM D5185m	1150 1350 4250 limit/base >25	1035 1304 3358 current 6	1043 1315 3500 history1 6	1043 1278 3090 history2 5			
Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium	ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	1150 1350 4250 limit/base >25 >216	1035 1304 3358 current 6 6	1043 1315 3500 history1 6 4	1043 1278 3090 history2 5 4			
Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium Potassium	ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m ASTM D5185m ASTM D5185m	1150 1350 4250 <b>limit/base</b> >25 >216 >20	1035 1304 3358 current 6 6 8	1043 1315 3500 history1 6 4 5	1043 1278 3090 history2 5 4 4			
Zinc Sulfur CONTAMINAN <sup>T</sup> Silicon Sodium Potassium INFRA-RED	ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m method	1150 1350 4250 iimit/base >25 >216 >20 iimit/base >3	1035 1304 3358 current 6 6 8 8 current	1043 1315 3500 history1 6 4 5 5 history1	1043 1278 3090 history2 5 4 4 4 history2			
Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method *ASTM D7844	1150 1350 4250 <b>limit/base</b> >25 >216 >20 <b>limit/base</b> >3 >20	1035 1304 3358 current 6 6 8 8 current 0.6	1043 1315 3500 history1 6 4 5 5 history1 0.6	1043 1278 3090 history2 5 4 4 4 history2 0.5			
Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm TS ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	1150 1350 4250 <b>limit/base</b> >25 >216 >20 <b>limit/base</b> >3 >20	1035 1304 3358 current 6 6 6 8 current 0.6 9.5	1043 1315 3500 history1 6 4 5 history1 0.6 10.3	1043 1278 3090 history2 5 4 4 4 history2 0.5 9.3			
Zinc Sulfur CONTAMINANT Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm TS ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D7624	1150 1350 4250 <b>imit/base</b> >25 >216 >20 <b>imit/base</b> >3 >20 >30	1035 1304 3358 current 6 6 8 current 0.6 9.5 22.1	1043 1315 3500 history1 6 4 5 history1 0.6 10.3 21.0	1043 1278 3090 history2 5 4 4 4 history2 0.5 9.3 21.3			



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		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
7/23	0/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
May17/23	Ma/30/23 Aug 17/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
 		FLUID PROP	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	14.4	14.1	13.8	13.9
		GRAPHS						
		Ferrous Alloys						
23	23	45 40						
May17/23	May30/23	35 - nickel						
Ň	M	30						
		E <sup>25</sup> <sub>20</sub>						
		15						
		10						
		5		1				
		0						
		Nov18/22 Feb27/23	May17/23	May30/23	Aug17/23			
		Feb2	May	May	Aug			
		Non-ferrous Met	als					
		180						
		need and a second secon						
		140						
		E 100 80						
		60						
		40-		$\langle \rangle$				
		20						
		53 55	23	23	23			
		lov18/22 -eb27/23	ay17/23	lay30/23	ug17/23			
		≥ Viscosity @ 100°	N	M	A	De es Number		
		18			14.0	Base Number		
		17 Abnormal			12.0	Abnormal		
		Base			(1), (1), (1), (1), (1), (1), (1), (1),	Base		
		Abnormal			<u> </u>			
		Abnormal			fin 6.0	Abnormal		 
		12		1	≥ se 4.0•			
		10		1	2.0-			
					0.0			
		94	~	/23	Aug17/23	Nov18/22 Feb27/23	May17/23	May30/23
		18/22 to 18/23 to 18/	2/2	0		5	-	
		Nov18/22 +	May17/23	May30/23	Aug1	Fet	Mar	May
	Laboratory	_				_		
	Laboratory Sample No.	: WearCheck USA -		son Ave., Ca	ry, NC 27513	_	onmental - 657 - Ch	arlottesville Haulir
NAB	Sample No.	_	501 Madis	son Ave., Ca	ry, NC 27513 Aug 2023	_	onmental - 657 - Ch	<b>arlottesville Haulir</b> Richmond Roa
		: WearCheck USA - : GFL0082502 : 05928042	501 Madis Received	son Ave., Ca I : 18 /	ry, NC 27513	_	onmental - 657 - Ch	arlottesville Haulir
THE LABORTORY THE LABORTORY THE LABORTORY	Sample No. Lab Number Unique Number Test Package	: WearCheck USA - : GFL0082502 : <mark>05928042</mark> : 10607989	501 Madis Received Diagnose Diagnost	son Ave., Ca I : 18 / ed : 20 / ician : We	ry, NC 27513 Aug 2023 Aug 2023 s Davis	_	onmental - 657 - Ch 5498 F Contac	<b>arlottesville Haulir</b> Richmond Roa Troy, V

Submitted By: TECHNICIAN ACCOUNT