

## **OIL ANALYSIS REPORT**

Sample Rating Trend

NORMAL



Area {UNASSIGNED} Machine Id 913012 Component

**1 Diesel Engine** 

### **DIESEL ENGINE OIL SAE 40 (9 GAL)**

## DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

Fluic

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil.

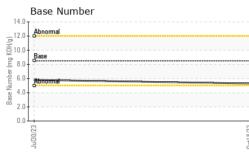
### Fluid Condition

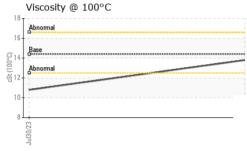
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0097705	GFL0072947	
Sample Date		Client Info		18 Oct 2023	30 Jul 2023	
Machine Age	hrs	Client Info		1914	1684	
Oil Age	hrs	Client Info		600	600	
Oil Changed		Client Info		Changed	Changed	
Sample Status				NORMAL	ABNORMAL	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	0.3	
Glycol		WC Method		NEG	NEG	
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	34	69	
Chromium	ppm	ASTM D5185m	>20	2	2	
Nickel	ppm	ASTM D5185m	>5	6	<u> </u>	
Titanium	ppm	ASTM D5185m		0	<1	
Silver	ppm	ASTM D5185m	>2	۰ <1	0	
Aluminum	ppm	ASTM D5185m	>20	2	7	
Lead	ppm	ASTM D5185m	>20	2 <1	2	
Copper	ppm	ASTM D5185m	>330	35	83	
Tin			>330	2	6	
Vanadium	ppm		>15		<1	
	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0	0	
ADDITIVES						
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	limit/base	current 3	history1 58	nistory2
	ppm ppm					
Boron		ASTM D5185m	250	3	58	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	3 0	58 0	
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	3 0 59	58 0 115	
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	3 0 59 2	58 0 115 6	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	3 0 59 2 907	58 0 115 6 767	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	3 0 59 2 907 1085	58 0 115 6 767 1462	  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	3 0 59 2 907 1085 962	58 0 115 6 767 1462 724	  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	3 0 59 2 907 1085 962 1257	58 0 115 6 767 1462 724 910	    
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	3 0 59 2 907 1085 962 1257 2260	58 0 115 6 767 1462 724 910 2487	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	3 0 59 2 907 1085 962 1257 2260 current	58 0 115 6 767 1462 724 910 2487 history1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25	3 0 59 2 907 1085 962 1257 2260 current 9	58 0 115 6 767 1462 724 910 2487 history1 ▲ 71	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m <b>method</b> ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216	3 0 59 2 907 1085 962 1257 2260 current 9 5 2	58 0 115 6 767 1462 724 910 2487 history1 ▲ 71 5	     history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>limit/base</b> >25 >216 >20	3 0 59 2 907 1085 962 1257 2260 current 9 5 2	58 0 115 6 767 1462 724 910 2487 history1 ▲ 71 5 13	     history2  
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >216 >216 >20 <b>Imit/base</b>	3 0 59 2 907 1085 962 1257 2260 current 9 5 2 2 current	58 0 115 6 767 1462 724 910 2487 history1 ▲ 71 5 13 13 history1 1.2	     history2   history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>Imit/base</b> >216 >216 >20 <b>Imit/base</b>	3 0 59 2 907 1085 962 1257 2260 <u>current</u> 9 5 2 2 <u>current</u> 1.2	58 0 115 6 767 1462 724 910 2487 history1 5 13 history1	     history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 20 <b>limit/base</b> >25 >216 >20 <b>limit/base</b> >4 >20	3 0 59 2 907 1085 962 1257 2260 <i>current</i> 9 5 2 2 <i>current</i> 1.2 1.2	58 0 115 6 767 1462 724 910 2487 history1 ▲ 71 5 13 13 history1 1.2 1.2	     history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	250 10 100 450 3000 1150 1350 4250 20 216 >216 >20 20 imit/base >4 >20 >30	3 0 59 2 907 1085 962 1257 2260 <i>current</i> 9 5 2 2 <i>current</i> 1.2 1.2 1.2 2.3.9	58 0 115 6 767 1462 724 910 2487 history1 ▲ 71 5 13 13 history1 1.2 12.6 24.9	      history2  history2  history2  history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 <b>binit/base</b> >25 >216 >216 >20 <b>binit/base</b> >4 >20	3 0 59 2 907 1085 962 1257 2260 <u>current</u> 9 5 2 2 <u>current</u> 1.2 1.2 1.2 1.2	58 0 115 6 767 1462 724 910 2487 <b>history1</b> ▲ 71 5 13 13 <b>history1</b> 1.2 1.2 12.6 24.9	     history2  history2



# **OIL ANALYSIS REPORT**





	VISUAL		method				history2
	White Metal	scalar	*Visual	NONE	NONE	NONE	
	Yellow Metal	scalar	*Visual	NONE	NONE	NONE	
	Precipitate	scalar	*Visual	NONE	NONE	NONE	
	Silt	scalar	*Visual	NONE	NONE	NONE	
	Debris	scalar	*Visual	NONE	NONE	NONE	
	Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	
0ct18/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	
0ct1	Odor	scalar	*Visual	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	
	FLUID PROP	PERTIES	method	limit/base	current	history1	history2
	Visc @ 100°C	cSt	ASTM D445	14.4	13.8	10.8	
	GRAPHS						
	Ferrous Alloys						
	70 iron						
	60 - chromium	-					
	50 - nickel		_				
	_ 40-		Contraction of the local division of the loc				
	e <sup>40</sup> 30			And			
	20						
	10-						
	0	*****	*****				
	Jul30/23			0ct18/23			
	Jul			Oct			
	Non-ferrous Me	tals					
	<sup>90</sup> T						
	80 copper						
	sessesses lead						
	70 -						
	70						
	70						
	70 - tin 60 - tin 60 - tin						
	70- 60- 50- 40- 30-	<u> </u>		/			
	70- 60- 50- 40- 30- 20-	<u> </u>	<u> </u>	/			
	70- 60- 50- 40- 30-		<u> </u>	/			
	70 - Line		<u> </u>	823			
	70- 60- 50- 40- 30- 20-			Oct 8/23			
	70 - Line	0°C		Oct 8/23	Dage Mused		
	70- 10- 10- 10- 10- 10- 10- 10- 1	1ºC		Oct18/23	Base Numbe	2 <b>1</b>	
	70 10 10 10 10 10 10 10 10 10 1	0°C		14	.0	۲ <b>۲</b>	
	70- 10- 10- 10- 10- 10- 10- 10- 1	0°C		14	.0 .0 <mark>Abnormal</mark>	2 <b>Г</b>	
	70 10 10 10 10 10 10 10 10 10 1	<sup>0</sup> ℃		14	.0 .0 <mark>Abnormal</mark>	21.	
	70 10 10 10 10 10 10 10 10 10 1	)°C		14	.0 .0 <mark>Abnormal</mark>	21	
	70 10 10 10 10 10 10 10 10 10 1	)°C		14	.0 .0 <mark>Abnormal</mark>	217	
	70 10 10 10 10 10 10 10 10 10 1	0°C		14	.0 .0 <mark>Abnormal</mark>	21.	
	70 Image: Second s	0°C		14 12 (0)HOX HOX BW Jagurry 8 4	Abnormal Base Base Base Base	21.	
	Viscosity @ 100	роС		14 12 (0H0) 00 00 00 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0 Abnormal 0 Base 0 Base 0 Abnormal 0 Abnormal	21	
	70 Image: Construction of the second se	)₀C		14 12 (6)(10) 10) 14 12 (6)(10) 10) 14 12 12 14 12 12 12 14 12 12 14 12 12 14 12 12 14 12 12 14 12 12 14 12 12 14 12 14 12 14 14 12 14 14 14 14 14 14 14 14 14 14 14 14 14	Abnomal Base Base Abnomal Abnomal	21	
	Viscosity @ 100	р <sub>о</sub> С		14 12 (0H0) 00 00 00 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0 Abnormal 0 Base 0 Base 0 Abnormal 0 Abnormal	21	
	Viscosity @ 100			14 12 (0/HOX BW) 80 10 10 10 10 10 10 10 10 10 10 10 10 10	Abnormal Base Base Abnormal Abnormal		
atory	Viscosity @ 100	- 501 Madia		14 12 (0)(10) 10) 10) 10) 10) 10) 10) 10) 10) 10)	Abnormal Base Base Abnormal Abnormal	invironmental - 4	105 - Arbor Hil
atory le No.	Viscosity @ 100 Viscosity @ 100	- 501 Madia Received	<b>d</b> :16	14 12 (0/HOX BW) 80 10 10 10 10 10 10 10 10 10 10 10 10 10	Abnormal Base Base Abnormal Abnormal	invironmental - 4	<b>105 - Arbor Hil</b> 7400 Napier F
atory le No. umber	Viscosity @ 100	- 501 Madia Received Diagnose	d :16 ed :19	14 12 (HD) BU BU BU BU BU BU BU BU BU BU BU BU BU B	Abnormal Base Base Abnormal Abnormal	invironmental - 4	105 - Arbor Hill 7400 Napier F DRTHVILLE, N US 4816
atory le No.	Viscosity @ 100 boomal Construction Viscosity @ 100 Construction Co	- 501 Madia Received	d :16 ed :19	14 12 (0)(10) 10) 10) 10) 10) 10) 10) 10) 10) 10)	Abnormal Base Base Abnormal Abnormal	invironmental - 4	<b>105 - Arbor Hil</b> 7400 Napier F ORTHVILLE, N

To discuss this san \* - 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)

Certificate L2367

Ł

F: