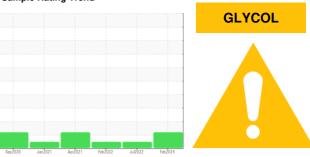


OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id 2129 Component

Diesel Engine

DIESEL ENGINE OIL SAE 5W30 (--- QTS)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

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

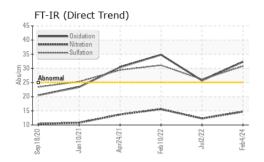
Fluid Condition

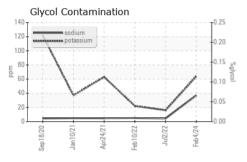
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is acceptable for the time in service.

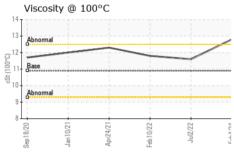
Sample Number Client Info WC0876654 WC06886997 WC0639584 Sample Date Client Info 04 Feb 2024 02 Jul 2022 10 Feb 2023 11 Feb 2023 10 Feb 2023 11 Feb 2023 12 Fe			Sep 2020	Jan 2021 Apr 2021	Feb2022 Jul2022	Feb 2024	
Sample Date Client Info 04 Feb 2024 02 Jul 2022 10 Feb 2022 Machine Age mls Client Info 466806 312087 268826 Oil Age mls Client Info 50000 50000 50000 Oil Changed Client Info 50000 50000 50000 Changed Sample Status Client Info Changed NC Change	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 466806 312087 265826 Oil Age mls Client Info 50000 50000 100000 Oil Changed Client Info 50000 50000 100000 Sample Status Well Not Changed Not Changed ABNORMAL NORMAL CONTAMINATION method Immitbase current history1 history2 Fuel WC Method >5 <1.0	Sample Number		Client Info		WC0876654	WC0686097	WC0639584
Oil Age mls Client Info 50000 50000 100000 Oil Changed Client Info Changed Not Changed Changed Changed Not Changed Changed Changed Changed Not Changed Changed Not Changed Changed Not Changed Changed Not Changed Changed Changed Not Changed Change	Sample Date		Client Info		04 Feb 2024	02 Jul 2022	10 Feb 2022
Oil Changed Sample Status Client Info Changed ABNORMAL NORMAL NORMAL NORMAL Changed NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0 <1.0 <1.0 <1.0 Water WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ASTM D5185m >100 71 29 50 Chromium ppm ASTM D5185m >20 <1 <1 <1 Chromium ppm ASTM D5185m >20 <1 <1 <1 <1 Silver ppm ASTM D5185m >20 10 6 10 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	Machine Age	mls	Client Info		466806	312087	265826
CONTAMINATION	Oil Age	mls	Client Info		50000	50000	100000
CONTAMINATION method limit/base current history1 history2 Fuel WC Method >5 <1.0	Oil Changed		Client Info		Changed	Not Changd	Changed
Fuel	Sample Status				ABNORMAL	NORMAL	NORMAL
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 71 29 50 Chromium ppm ASTM D5185m >20 <1	CONTAMINATION	١	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 71 29 50 Chromium ppm ASTM D5185m >20 -1 <1	Fuel		WC Method	>5	<1.0	<1.0	<1.0
Iron	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >4 0 0 0 <1	Iron	ppm	ASTM D5185m	>100	71	29	50
Description	Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>4	0	0	<1
Aluminum ppm ASTM D5185m >20 10 6 10 Lead ppm ASTM D5185m >40 0 1 2 Copper ppm ASTM D5185m >330 6 4 7 Tin ppm ASTM D5185m <1	Titanium	ppm	ASTM D5185m		0	0	<1
Aluminum ppm ASTM D5185m >20 10 6 10 Lead ppm ASTM D5185m >40 0 1 2 Copper ppm ASTM D5185m >330 6 4 7 Tin ppm ASTM D5185m >15 0 1 1 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 10 0 0 0 Boron ppm ASTM D5185m 10 0 0 0	Silver	ppm	ASTM D5185m	>3	0	<1	<1
Copper ppm ASTM D5185m >330 6 4 7 Tin ppm ASTM D5185m >15 0 1 1 Antimony ppm ASTM D5185m <1	Aluminum	ppm	ASTM D5185m	>20	10	6	10
Tin ppm ASTM D5185m >15 0 1 1 1 Antimony ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>40	0	1	2
Antimony ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Copper	ppm	ASTM D5185m	>330	6	4	7
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 250 8 15 10 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 73 71 65 Manganese ppm ASTM D5185m 100 73 71 65 Manganesium ppm ASTM D5185m 450 1160 1137 1192 Calcium ppm ASTM D5185m 3000 1185 1004 951 Phosphorus ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1	Tin	ppm	ASTM D5185m	>15	0	1	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 8 15 10 Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 73 71 65 Manganese ppm ASTM D5185m 100 1160 1137 1192 Calcium ppm ASTM D5185m 450 1160 1137 1192 Calcium ppm ASTM D5185m 3000 1185 1004 951 Phosphorus ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Solium ppm ASTM D5185m 37	Antimony	ppm	ASTM D5185m				<1
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	0	0
Boron	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 10 0 0 0 Molybdenum ppm ASTM D5185m 100 73 71 65 Manganese ppm ASTM D5185m 100 1160 1137 1192 Calcium ppm ASTM D5185m 450 1160 1137 1192 Calcium ppm ASTM D5185m 3000 1185 1004 951 Phosphorus ppm ASTM D5185m 1350 1425 1313 1319 Zinc ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2942 <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 100 73 71 65 Manganese ppm ASTM D5185m < 1 <1 <1 Magnesium ppm ASTM D5185m 450 1160 1137 1192 Calcium ppm ASTM D5185m 3000 1185 1004 951 Phosphorus ppm ASTM D5185m 1150 1151 1045 1083 Zinc ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >25 15 10 7 Potassium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D282 NEG </td <th>Boron</th> <td>ppm</td> <td>ASTM D5185m</td> <td>250</td> <th>8</th> <td>15</td> <td>10</td>	Boron	ppm	ASTM D5185m	250	8	15	10
Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 450 1160 1137 1192 Calcium ppm ASTM D5185m 3000 1185 1004 951 Phosphorus ppm ASTM D5185m 1150 1151 1045 1083 Zinc ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4	Barium	ppm	ASTM D5185m	10	0	0	0
Magnesium ppm ASTM D5185m 450 1160 1137 1192 Calcium ppm ASTM D5185m 3000 1185 1004 951 Phosphorus ppm ASTM D5185m 1150 1151 1045 1083 Zinc ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2882 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3	Molybdenum	ppm	ASTM D5185m	100	73	71	65
Calcium ppm ASTM D5185m 3000 1185 1004 951 Phosphorus ppm ASTM D5185m 1150 1151 1045 1083 Zinc ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >20 64 16 22 Regular NEG NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 </td <th>Manganese</th> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th><1</th> <td><1</td> <td><1</td>	Manganese	ppm	ASTM D5185m		<1	<1	<1
Phosphorus ppm ASTM D5185m 1150 1151 1045 1083 Zinc ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D5185m >20 64 16 22 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base<	Magnesium	ppm	ASTM D5185m	450	1160	1137	1192
Zinc ppm ASTM D5185m 1350 1425 1313 1319 Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D5185m >20 64 16 22 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base	Calcium	ppm	ASTM D5185m	3000	1185	1004	951
Sulfur ppm ASTM D5185m 4250 3618 3756 2678 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m 37 4 5 Potassium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25	Phosphorus	ppm	ASTM D5185m	1150	1151	1045	1083
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m 37 4 5 Potassium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Zinc	ppm	ASTM D5185m	1350	1425	1313	1319
Silicon ppm ASTM D5185m >25 15 10 7 Sodium ppm ASTM D5185m 37 4 5 Potassium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Sulfur	ppm	ASTM D5185m	4250	3618	3756	2678
Sodium ppm ASTM D5185m 37 4 5 Potassium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 64 16 22 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Silicon	ppm	ASTM D5185m	>25	15	10	7
Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Sodium	ppm	ASTM D5185m		37	4	5
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Potassium	ppm	ASTM D5185m	>20	<u>^</u> 64	16	22
Soot % % *ASTM D7844 >3 1.4 0.7 1 Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Glycol	%	*ASTM D2982		NEG	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 14.7 12.3 15.6 Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 30.8 26.1 31.1 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Soot %	%	*ASTM D7844	>3	1.4	0.7	1
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Nitration	Abs/cm	*ASTM D7624	>20	14.7	12.3	15.6
Oxidation Abs/.1mm *ASTM D7414 >25 32.3 25.7 34.8	Sulfation	Abs/.1mm	*ASTM D7415	>30	30.8	26.1	31.1
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	32.3	25.7	34.8
	Base Number (BN)	mg KOH/g		8.5	3.9	5.9	3.3

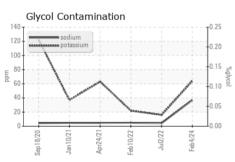


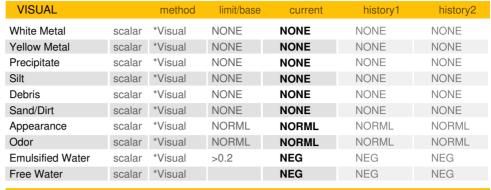
OIL ANALYSIS REPORT





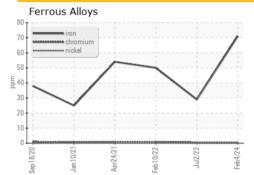


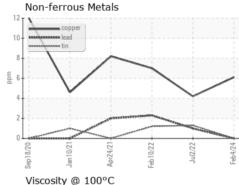


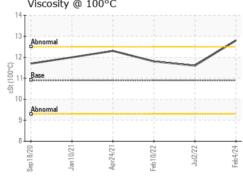


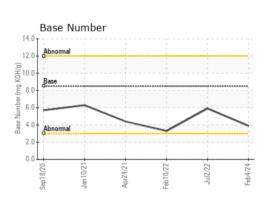
I LOID I NOI LITTILO		memou	IIIIII/Dase	Current	HISTOLAL	TIIS(U) y Z	
Visc @ 100°C	cSt	ASTM D445	10.9	12.8	11.6	11.8	

GRAPHS













Certificate 12367

Sample No.

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

: WC0876654 Lab Number : 06135532 Unique Number: 10954997

Received **Tested** Diagnosed

: 01 Apr 2024 : 04 Apr 2024

: 04 Apr 2024 - Sean Felton

MABE TRUCKING PO BOX 1081 EDEN, NC US 27289 Contact: MAINTENANCE

Test Package : FLEET (Additional Tests: Glycol) To discuss this sample report, contact Customer Service at 1-800-237-1369.

maintenancemanager@mabetrucking.com T:

 st - 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)

F: (336)635-1791