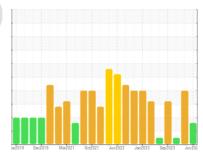


OIL ANALYSIS REPORT

Sample Rating Trend







Machine Id
DEG-2
Component
Diesel Engine

MOBIL MOBILGARD 412 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check for the source of water entry. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a light concentration of water present in the oil.

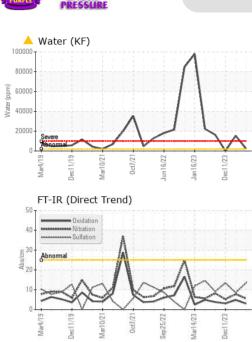
Fluid Condition

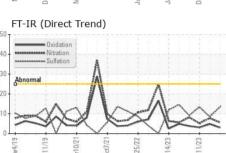
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

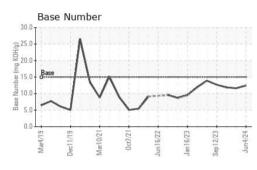
Sample Date Client Info 04 Jun 2024 13 Mar 2024 11 Dec 2023 Machine Age hrs Client Info 0 0 0 0 Oil Age hrs Client Info 0 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status ABNORMAL SEVERE NORMAL CONTAMINATION method limit/base current history1 history2 Fuel WC Method 5 <1.0							
Sample Date	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0	Sample Number		Client Info		RP0043309	RP0039444	RP0038700
Oil Age hrs Client Info N/A	Sample Date		Client Info		04 Jun 2024	13 Mar 2024	11 Dec 2023
Cilient Info	Machine Age	hrs	Client Info		0	0	0
CONTAMINATION	Oil Age	hrs	Client Info		0	0	0
Fuel	Oil Changed		Client Info		N/A	N/A	N/A
WEAR METALS	Sample Status				ABNORMAL	SEVERE	NORMAL
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 4 1 0 Chromium ppm ASTM D5185m >20 0 <1	CONTAMINATION		method	limit/base	current	history1	history2
Iron	Fuel		WC Method	>5	<1.0	1.5	1.5
Chromium ppm ASTM D5185m >20 0 <1 0 Nickel ppm ASTM D5185m >4 0 <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	4	1	0
Description	Chromium	ppm	ASTM D5185m	>20	0	<1	0
Silver	Nickel	ppm	ASTM D5185m	>4	0	<1	0
Aluminum	Titanium	ppm	ASTM D5185m		0	<1	0
Lead ppm ASTM D5185m >40 0 1 0 Copper ppm ASTM D5185m >330 <1 2 0 Tin ppm ASTM D5185m >15 0 <1 <1 Vanadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m 0 0 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 6 2 Barium ppm ASTM D5185m 0 1 0 0 Molybdenum ppm ASTM D5185m 0 1 0 0 Magnesium ppm ASTM D5185m 0 <1 <1 <1 <1 Calcium ppm ASTM D5185m 6350 4785 4371 4418 Phosphorus ppm ASTM D5185m 200 196 19	Silver	ppm	ASTM D5185m	>3	0	0	0
Copper ppm ASTM D5185m >330 <1 2 0 Tin ppm ASTM D5185m >15 0 <1	Aluminum	ppm	ASTM D5185m	>20	<1	2	<1
Tin ppm ASTM D5185m >15 0 <1 <1 <1 O Vanadium ppm ASTM D5185m	Lead	ppm	ASTM D5185m	>40	0	1	0
Vanadium ppm ASTM D5185m <1 <1 0 Cadmium ppm ASTM D5185m 0 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 6 2 Barium ppm ASTM D5185m 0 1 0 0 Molybdenum ppm ASTM D5185m 0 0 <1 0 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 18 13 11 22 Calcium ppm ASTM D5185m 200 196 190 209 Zinc ppm ASTM D5185m 200 196 190 209 Zinc ppm ASTM D5185m 20 196 190 209 Zinc ppm ASTM D5185m 20 196 190 20	Copper	ppm	ASTM D5185m	>330	<1	2	0
Cadmium ppm ASTM D5185m 0 <1 <1 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 6 2 Barium ppm ASTM D5185m 0 1 0 0 Molybdenum ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	0	<1	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 6 2 Barium ppm ASTM D5185m 0 1 0 0 Molybdenum ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron ppm ASTM D5185m 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cadmium	ppm	ASTM D5185m		0	<1	<1
Barium ppm ASTM D5185m 0 1 0 0 Molybdenum ppm ASTM D5185m 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 <1 0 Manganese ppm ASTM D5185m 0 <1 <1 <1 Magnesium ppm ASTM D5185m 18 13 11 22 Calcium ppm ASTM D5185m 6350 4785 4371 4418 Phosphorus ppm ASTM D5185m 200 196 190 209 Zinc ppm ASTM D5185m 20 current history1 history2 Silicon ppm ASTM D5185m >25 8 6 8 Sodium ppm ASTM D5185m >20 0 2 1 Water % ASTM D5185m >20 <td>Boron</td> <td>ppm</td> <td>ASTM D5185m</td> <td>0</td> <td>0</td> <td>6</td> <td>2</td>	Boron	ppm	ASTM D5185m	0	0	6	2
Manganese ppm ASTM D5185m 0 <1 <1 <1 <1 <1 <1 <1 <1 <21 <1 <1 <21 <1 <1 <22 <1 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <21 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <22 <23 <22 <22 <22 <23 <23 <23 <24 <22 <24 <22 <24 <22 <24 <22 <24 <22 <24 <22 <24 <22 <24 <22 <24 <22 <24	Barium	ppm	ASTM D5185m	0	1	0	0
Magnesium ppm ASTM D5185m 18 13 11 22 Calcium ppm ASTM D5185m 6350 4785 4371 4418 Phosphorus ppm ASTM D5185m 200 196 190 209 Zinc ppm ASTM D5185m 200 196 190 209 Zinc ppm ASTM D5185m 380 363 365 376 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m 25 8 6 8 Sodium ppm ASTM D5185m 20 0 2 1 Potassium ppm ASTM D5185m 20 0 2 1 Water % ASTM D6304 >0.2 0 257 1.54 opm ASTM D6304 >2000 2570 15400 Glycol *ASTM D7844 >3	Molybdenum	ppm	ASTM D5185m	0	0	<1	0
Calcium ppm ASTM D5185m 6350 4785 4371 4418 Phosphorus ppm ASTM D5185m 200 196 190 209 Zinc ppm ASTM D5185m 380 363 365 376 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 6 8 Sodium ppm ASTM D5185m >20 0 2 1 Potassium ppm ASTM D5185m >20 0 2 1 Water % ASTM D6304 >0.2 0.257 ▲ 1.54 ppm Water ppm ASTM D6304 >2000 ▲ 2570 ▲ 15400 glycol "ASTM D7844 >3 0.1 0.2 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7	Manganese	ppm	ASTM D5185m	0	<1	<1	<1
Phosphorus ppm ASTM D5185m 200 196 190 209 Zinc ppm ASTM D5185m 380 363 365 376 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 6 8 Sodium ppm ASTM D5185m >25 8 6 8 Sodium ppm ASTM D5185m >20 0 2 1 Potassium ppm ASTM D5185m >20 0 2 1 Water % ASTM D5185m >20 0 2 1 Water % ASTM D5185m >20 0 2 1 Water % ASTM D6304 >0.2 0 0.257 1.54 ppm Water ppm ASTM D6304 >2000 2570 15400 Glycol % *ASTM D7844 <t< td=""><td>Magnesium</td><td>ppm</td><td>ASTM D5185m</td><td>18</td><td>13</td><td>11</td><td>22</td></t<>	Magnesium	ppm	ASTM D5185m	18	13	11	22
Zinc ppm ASTM D5185m 380 363 365 376 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 6 8 Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 0 2 1 Water % ASTM D6304 >0.2 0 2577 1540 ppm Water ppm ASTM D6304 >2000 2570 15400 Glycol % *ASTM D7844 >3 0.1 0.2 0 INFRA-RED method limit/base current history1	Calcium	ppm	ASTM D5185m	6350	4785	4371	4418
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 8 6 8 Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 0 2 1 Water % ASTM D6304 >0.2 ▲ 0.257 ▲ 1.54 ppm Water ppm ASTM D6304 >2000 ▲ 2570 ▲ 15400 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current	Phosphorus	ppm	ASTM D5185m	200	196	190	209
Silicon ppm ASTM D5185m >25 8 6 8 Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 0 2 1 Water % ASTM D6304 >0.2 0.257 ▲ 1.54 ppm Water ppm ASTM D6304 >2000 ▲ 2570 ▲ 15400 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	Zinc	ppm	ASTM D5185m	380	363	365	376
Sodium ppm ASTM D5185m 4 2 4 Potassium ppm ASTM D5185m >20 0 2 1 Water % ASTM D6304 >0.2 ▲ 0.257 ▲ 1.54 ppm Water ppm ASTM D6304 >2000 ▲ 2570 ▲ 15400 glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 2 1 Water % ASTM D6304 >0.2 0.257 1.54 opm Water ppm ASTM D6304 >2000 2570 15400 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	Silicon	ppm	ASTM D5185m	>25	8	6	8
Water % ASTM D6304 >0.2 ▲ 0.257 ▲ 1.54	Sodium	ppm	ASTM D5185m		4	2	4
oppm Water ppm ASTM D6304 >2000 ▲ 2570 ▲ 15400 Glycol % *ASTM D2982 NEG NEG NEG INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	Potassium	ppm	ASTM D5185m	>20	0	2	1
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	Water	%	ASTM D6304	>0.2	<u> </u>	1.54	
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	ppm Water	ppm	ASTM D6304	>2000	2570	15400	
Soot % % *ASTM D7844 >3 0.1 0.2 0 Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	Glycol	%	*ASTM D2982		NEG	NEG	NEG
Nitration Abs/cm *ASTM D7624 >20 5.6 7.8 5.2 Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 13.4 8.5 13.4 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	Soot %	%	*ASTM D7844	>3	0.1	0.2	0
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 3.0 4.8 3.1	Nitration	Abs/cm	*ASTM D7624	>20	5.6	7.8	5.2
Oxidation	Sulfation	Abs/.1mm	*ASTM D7415	>30		8.5	13.4
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	3.0	4.8	3.1
	Base Number (BN)	mg KOH/g	ASTM D2896	15	12.43	11.63	11.87

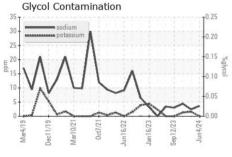


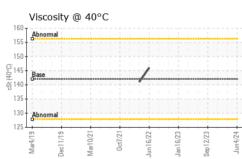
OIL ANALYSIS REPORT







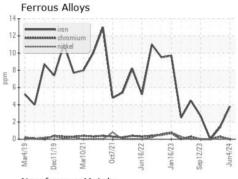


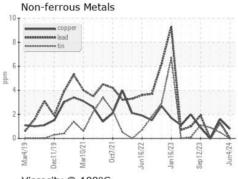


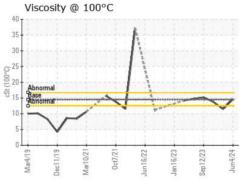
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	MILKY	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	0.2%	▲ 0.2%	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FILIID PROPERTIES		method	limit/haca	current	hietory1	hietory2

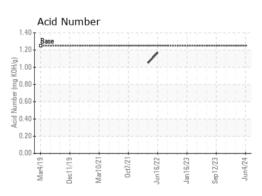
I LOID I NOI LI	TILO	memou	IIIIII/Dase	Current	HISTOLAL	HISTOLYZ
Visc @ 100°C	cSt	ASTM D445	14.5	14.6	11.5	13.76

GRAPHS













Laboratory Sample No.

: RP0043309 Lab Number : 06200350 Unique Number : 11062473

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 05 Jun 2024 **Tested**

: 10 Jun 2024 Diagnosed : 10 Jun 2024 - Jonathan Hester

Test Package : IND 2 (Additional Tests: FT-IR, Glycol, KV100, TBN) Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

US 02215 Contact: ROBERT ST SAUVEUR robert.stsauveur@engie.com T: (401)651-9381

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

ENGIE-MATEP 474 BROOKLINE AVE

BOSTON, MA