

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



DETROIT DETROIT 80837416

Component

Genset

ALPHA 15W40 (8 GAL)

DI			

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

Fuel content negligible. There is no indication of any contamination in the oil.

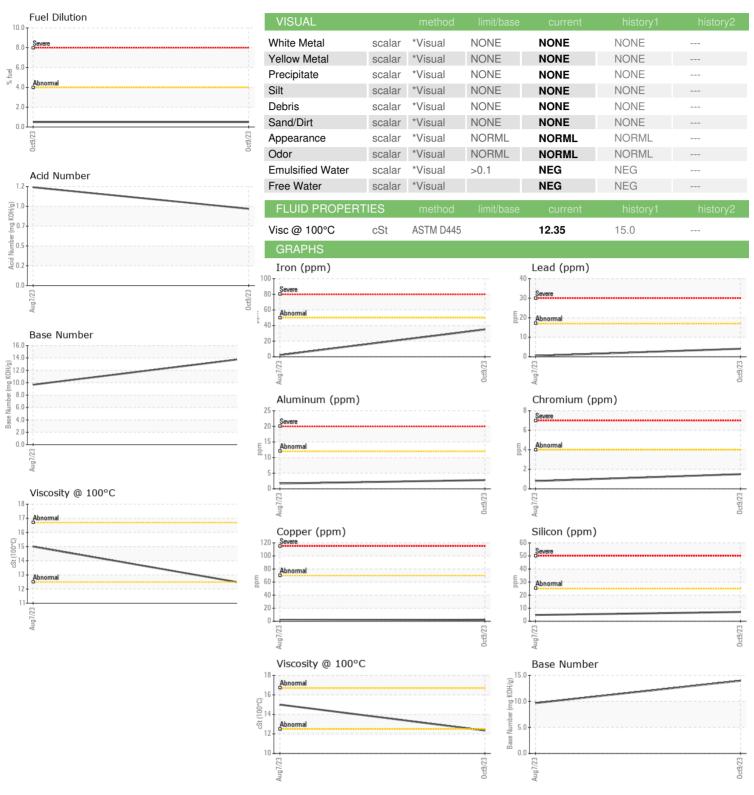
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The AN level is acceptable for this fluid.

SAMPLE INFORMATION method limit/bass current history history							
Sample Number				Aug2023	0ct2023		
Sample Date	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 2263 1724 Oil Age hrs Client Info 539 290 Oil Changed Client Info Changed Changed Sample Status Image: Client Info Changed Changed CONTAMINATION method Imitibase current history1 history2 Iron ppm ASTM D5185m >50 35 2 Chromitim ppm ASTM D5185m >50 35 2 Nickel ppm ASTM D5185m >2 0 <1 Nickel ppm ASTM D5185m >2 0 <1 Silver ppm ASTM D5185m >5 0 <1 Aluminum ppm ASTM D5185m >70 2 1 Capper ppm ASTM D5185m >70 2 1	Sample Number		Client Info		WC0617420	WC05918211	
Oil Age hrs Client Info 539 290	Sample Date		Client Info		09 Oct 2023	07 Aug 2023	
Oil Changed Sample Status Client Info Changed NORMAL Changed NORMAL CONTAMINATION method limit/base current history1 history2 Glycol WC Method NEG NEG WEAR METALS method limit/base ourrent history1 history2 Iron ppm ASTM D5185m >50 35 2 Chromium ppm ASTM D5185m >50 35 2 Nickel ppm ASTM D5185m >2 0 <1	Machine Age	hrs	Client Info		2263	1724	
Sample Status	Oil Age	hrs	Client Info		539	290	
CONTAMINATION	Oil Changed		Client Info		Changed	Changed	
WEAR METALS	Sample Status				NORMAL	NORMAL	
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 35 2 Nickel ppm ASTM D5185m >4 2 <1 Nickel ppm ASTM D5185m >5 0 <1 Titanium ppm ASTM D5185m >5 0 <1 Aluminum ppm ASTM D5185m >5 0 <1 Aluminum ppm ASTM D5185m >12 3 2 Lead ppm ASTM D5185m >70 2 1 Copper ppm ASTM D5185m 0 <1 Vanadium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 <1 Barium ppm ASTM D5185m 0 0 Mangaesium	CONTAMINATION	١	method	limit/base	current	history1	history2
Iron	Glycol		WC Method		NEG	NEG	
Chromium ppm ASTM D5185m >4 2 -1 Nickel ppm ASTM D5185m >2 0 <1 Titanium ppm ASTM D5185m >5 0 <1 Aluminum ppm ASTM D5185m >5 0 <1 Aluminum ppm ASTM D5185m >12 3 2 Lead ppm ASTM D5185m >17 4 <1 Copper ppm ASTM D5185m >70 2 1 Vanadium ppm ASTM D5185m 0 <1 Vanadium ppm ASTM D5185m 0 <1 Vanadium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 <1 ADDITIVES method limit/base current history1 history2 Barium <th>WEAR METALS</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	WEAR METALS		method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>50	35	2	
Titanium	Chromium	ppm	ASTM D5185m	>4	2	<1	
Stilver	Nickel	ppm	ASTM D5185m	>2	0	<1	
Aluminum ppm ASTM D5185m >12 3 2 Lead ppm ASTM D5185m >17 4 <1	Titanium	ppm	ASTM D5185m		0	0	
Lead ppm ASTM D5185m >17 4 <1	Silver	ppm	ASTM D5185m	>5	0	<1	
Copper ppm ASTM D5185m >70 2 1 Tin ppm ASTM D5185m >15 2 <1 Vanadium ppm ASTM D5185m 0 <1 Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 214 68 Manganese ppm ASTM D5185m 214 68 Magnesium ppm ASTM D5185m 70 1011 Calcium ppm ASTM D5185m 1038 1117 Phosphorus ppm ASTM D5185m 1014 1362 Sulfur ppm ASTM D5185m 3731	Aluminum	ppm	ASTM D5185m	>12	3	2	
Tin	Lead	ppm	ASTM D5185m	>17	4	<1	
Vanadium ppm ASTM D5185m 0 <1	Copper	ppm	ASTM D5185m	>70	2	1	
Cadmium ppm ASTM D5185m 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 1 5 Barium ppm ASTM D5185m 0 0 Molybdenum ppm ASTM D5185m 214 68 Manganese ppm ASTM D5185m <1	Tin	ppm	ASTM D5185m	>15	2	<1	
ADDITIVES	Vanadium	ppm	ASTM D5185m		0	<1	
Boron	Cadmium	ppm	ASTM D5185m		0	0	
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 214 68 Manganese ppm ASTM D5185m <1 0 Magnesium ppm ASTM D5185m 70 1011 Calcium ppm ASTM D5185m 4037 1257 Phosphorus ppm ASTM D5185m 1038 1117 Zinc ppm ASTM D5185m 1014 1362 Sulfur ppm ASTM D5185m 3731 3543 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m >20 2 <1 Potassium ppm ASTM D5185m >20 2 <1 Fuel % ASTM D585m >20 2 <1 Fuel % A							
Manganese ppm ASTM D5185m <1	Boron	ppm	ASTM D5185m		1	5	
Magnesium ppm ASTM D5185m 70 1011 Calcium ppm ASTM D5185m 4037 1257 Phosphorus ppm ASTM D5185m 1038 1117 Zinc ppm ASTM D5185m 1014 1362 Sulfur ppm ASTM D5185m 3731 3543 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m >20 2 <1 Potassium ppm ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 Fuel							
Calcium ppm ASTM D5185m 4037 1257 Phosphorus ppm ASTM D5185m 1038 1117 Zinc ppm ASTM D5185m 1014 1362 Sulfur ppm ASTM D5185m 3731 3543 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m >20 2 <1 Potassium ppm ASTM D5185m >20 2 <1 Fuel % ASTM D3524 >4.0 0.5 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 8.2 6.7 Nitration Abs/.1mm *ASTM D7615 >30 35.2 18.5	Barium	ppm	ASTM D5185m		0	0	
Phosphorus ppm ASTM D5185m 1038 1117 Zinc ppm ASTM D5185m 1014 1362 Sulfur ppm ASTM D5185m 3731 3543 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m >20 2 <1 Potassium ppm ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 0.5 <1.0 Soot % % *ASTM D7844 0.5 0.2	Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m		0 214	0 68	
Zinc ppm ASTM D5185m 1014 1362 Sulfur ppm ASTM D5185m 3731 3543 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m 4 2 Potassium ppm ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.5 0.2 Nitration Abs/.1mm *ASTM D7415 >30 35.2 18.5 FL	Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		0 214 <1	0 68 0 1011	
Sulfur ppm ASTM D5185m 3731 3543 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m >20 2 <1 Potassium ppm ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 Fuel % ASTM D5185m >20 2 <1 Fuel % ASTM D3524 >4.0 0.5 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 8.2 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 35.2 18.5	Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		0 214 <1 70	0 68 0 1011 1257	
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m >20 2 Potassium ppm ASTM D5185m >20 2 -1 Fuel % ASTM D3524 >4.0 0.5 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 8.2 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 35.2 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045	Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		0 214 <1 70 4037 1038	0 68 0 1011 1257 1117	
Silicon ppm ASTM D5185m >25 7 5 Sodium ppm ASTM D5185m 4 2 Potassium ppm ASTM D5185m >20 2 <1	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		0 214 <1 70 4037 1038 1014	0 68 0 1011 1257 1117 1362	
Sodium ppm ASTM D5185m 4 2 Potassium ppm ASTM D5185m >20 2 <1 Fuel % ASTM D3524 >4.0 0.5 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 8.2 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 35.2 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		0 214 <1 70 4037 1038 1014	0 68 0 1011 1257 1117 1362	
Potassium ppm ASTM D5185m >20 2 <1	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 ASTM D5185m	limit/base	0 214 <1 70 4037 1038 1014 3731	0 68 0 1011 1257 1117 1362 3543	
Fuel % ASTM D3524 >4.0 0.5 <1.0	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	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		0 214 <1 70 4037 1038 1014 3731 current	0 68 0 1011 1257 1117 1362 3543 history1	 history2
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 8.2 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 35.2 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m		0 214 <1 70 4037 1038 1014 3731 current	0 68 0 1011 1257 1117 1362 3543 history1	 history2
Soot % % *ASTM D7844 0.5 0.2 Nitration Abs/cm *ASTM D7624 >20 8.2 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 35.2 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	>25	0 214 <1 70 4037 1038 1014 3731 current 7	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1	 history2
Nitration Abs/cm *ASTM D7624 >20 8.2 6.7 Sulfation Abs/.1mm *ASTM D7415 >30 35.2 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	>25 >20	0 214 <1 70 4037 1038 1014 3731 current 7 4	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1	 history2
Sulfation Abs/.1mm *ASTM D7415 >30 35.2 18.5 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	>25 >20 >4.0	0 214 <1 70 4037 1038 1014 3731 current 7 4 2 0.5	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1	history2
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	>25 >20 >4.0	0 214 <1 70 4037 1038 1014 3731 current 7 4 2 0.5 current	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1 <1.0	history2 history2
Oxidation Abs/.1mm *ASTM D7414 >25 36.4 14.9 Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844	>25 >20 >4.0 limit/base	0 214 <1 70 4037 1038 1014 3731 current 7 4 2 0.5 current 0.5	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1 <1.0 history1 0.2	history2 history2
Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	>25 >20 >4.0 limit/base	0 214 <1 70 4037 1038 1014 3731 current 7 4 2 0.5 current 0.5 8.2	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1 <1.0 history1 0.2 6.7	history2 history2
Acid Number (AN) mg KOH/g ASTM D8045 0.93 1.19	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D76145	>25 >20 >4.0 limit/base >20 >30	0 214 <1 70 4037 1038 1014 3731 current 7 4 2 0.5 current 0.5 8.2 35.2	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1 <1.0 history1 0.2 6.7 18.5	history2 history2
· / · ·	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7624 *ASTM D7624 *ASTM D7624 *ASTM D7415 method	>25 >20 >4.0 limit/base >20 >30 limit/base	0 214 <1 70 4037 1038 1014 3731 current 7 4 2 0.5 current 0.5 8.2 35.2 current	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1 <1.0 history1 0.2 6.7 18.5	history2 history2 history2 history2
	Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm	ASTM D5185m ASTM D7824 *ASTM D7844 *ASTM D7624 *ASTM D7624 *ASTM D7415 method *ASTM D7414	>25 >20 >4.0 limit/base >20 >30 limit/base	0 214 <1 70 4037 1038 1014 3731 current 7 4 2 0.5 current 0.5 8.2 35.2 current 36.4	0 68 0 1011 1257 1117 1362 3543 history1 5 2 <1 <1.0 history1 0.2 6.7 18.5 history1 14.9	history2 history2 history2 history2 history2



OIL ANALYSIS REPORT







Certificate L2367

Laboratory Sample No. Lab Number

Unique Number

: 05993758 : 10722118

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : WC0617420 Received : 30 Oct 2023 : 03 Nov 2023 Diagnosed Diagnostician : Jonathan Hester

Test Package: MOB 2 (Additional Tests: FuelDilution, PercentFuel) 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. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

WENGERD BROTHERS LLC

93 E MAIN ST PALATINE BRIDGE, NY US 13428

Contact: E. WENGERD ewengerd@ibyfax.com T: (518)646-6456