



OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
LGS00180
 Component
Middle Biogas Engine
 Fluid
CITGO PACEMAKER GAS ENGINE LFG LA 40 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0803413	WC0803471	WC0803467
Sample Date		Client Info		17 Jun 2024	11 Jun 2024	28 May 2024
Machine Age	hrs	Client Info		61841	61691	61660
Oil Age	hrs	Client Info		167	17	282
Filter Age	hrs	Client Info		167	313	282
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	ABNORMAL

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>45	3	5	15
Chromium	ppm	ASTM D5185m	>2	0	0	<1
Nickel	ppm	ASTM D5185m	>2	0	0	▲ 3
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>5	0	0	0
Aluminum	ppm	ASTM D5185m	>10	<1	1	2
Lead	ppm	ASTM D5185m	>5	0	0	<1
Copper	ppm	ASTM D5185m	>14	<1	<1	2
Tin	ppm	ASTM D5185m	>13	1	<1	4
Vanadium	ppm	ASTM D5185m		0	<1	<1
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

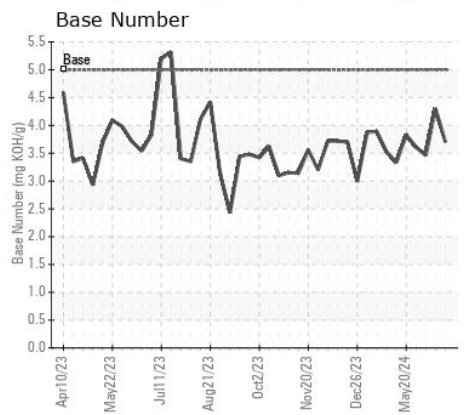
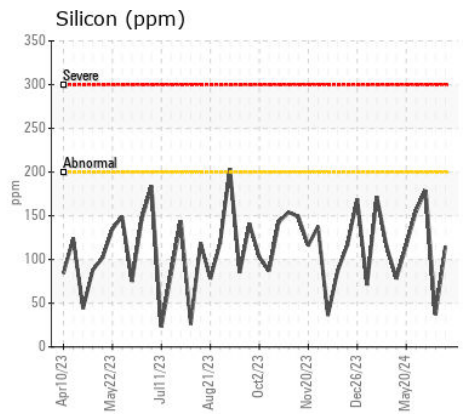
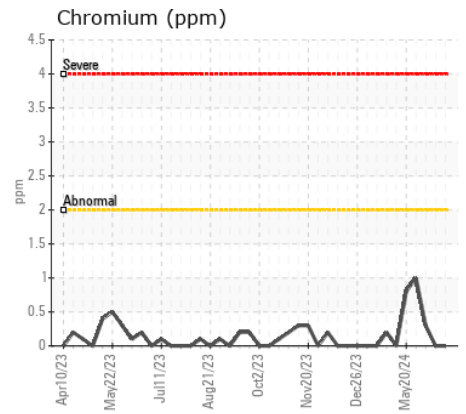
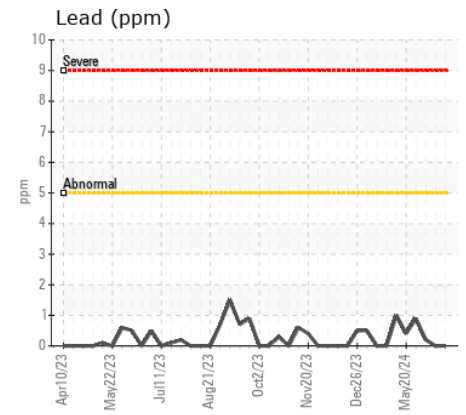
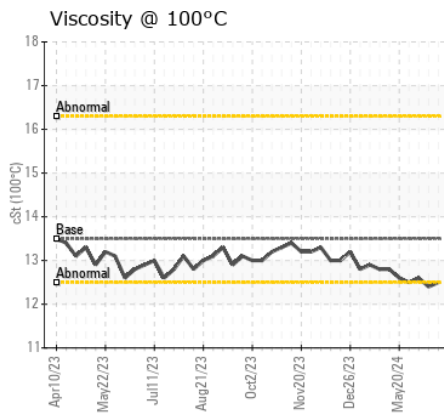
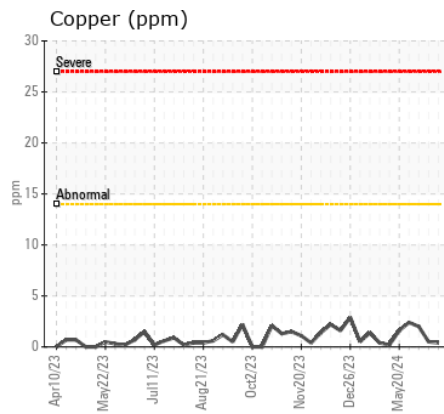
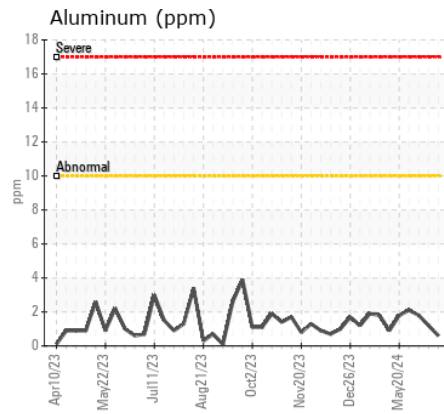
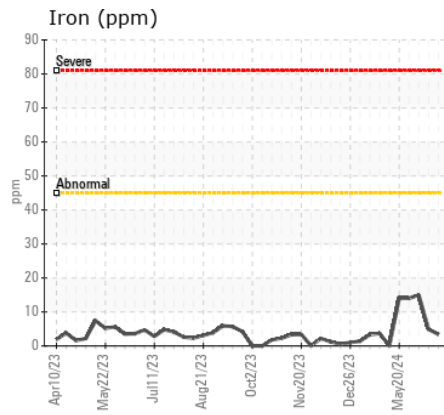
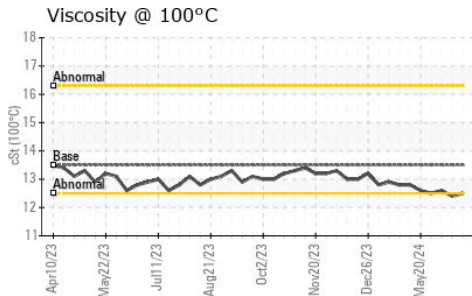
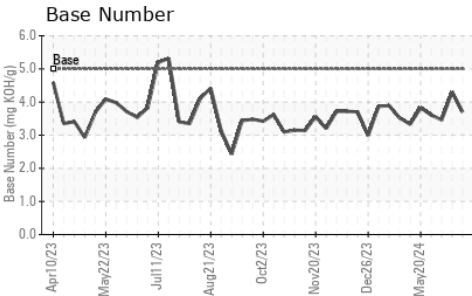
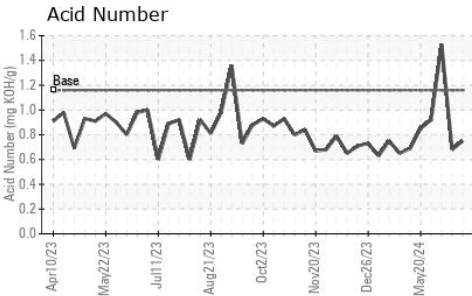
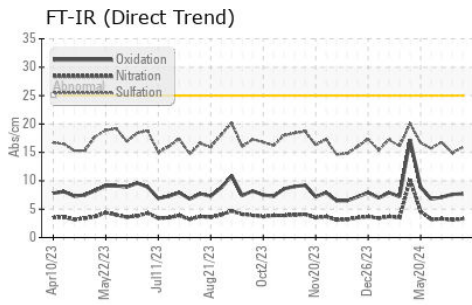
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>200	115	37	179
Potassium	ppm	ASTM D5185m	>20	0	1	0
Fuel		WC Method	>4.0	<1.0	<1.0	<1.0
Water		WC Method	>0.1	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844		0	0	0
Nitration	Abs/cm	*ASTM D7624	>20	3.3	3.1	3.3
Sulfation	Abs/.1mm	*ASTM D7415	>30	15.9	14.9	16.8
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	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG

FLUID CONDITION

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

Sodium	ppm	ASTM D5185m		<1	<1	<1
Boron	ppm	ASTM D5185m		2	<1	0
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m		4	5	2
Manganese	ppm	ASTM D5185m		0	<1	<1
Magnesium	ppm	ASTM D5185m		29	60	21
Calcium	ppm	ASTM D5185m		1453	1653	1552
Phosphorus	ppm	ASTM D5185m		286	325	307
Zinc	ppm	ASTM D5185m		346	403	390
Sulfur	ppm	ASTM D5185m		3272	3176	3756
Oxidation	Abs/.1mm	*ASTM D7414	>25	7.7	7.6	7.1
Acid Number (AN)	mg KOH/g	ASTM D8045	1.16	0.75	0.681	1.53
Base Number (BN)	mg KOH/g	ASTM D2896	5	3.70	4.30	3.46
Visc @ 100°C	cSt	ASTM D445	13.5	12.5	12.4	12.6



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0803413
Lab Number : 06215914
Unique Number : 11088778
Test Package : MOB 2
Received : 20 Jun 2024
Tested : 22 Jun 2024
Diagnosed : 23 Jun 2024 - Don Baldrige

BLACK OAK
 5054 HWY HH
 HARTVILLE, MO
 US 65667

Certificate L2367
 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)
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