



OIL ANALYSIS REPORT

WEAR	SEVERE
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL



Machine Id
BELL B45E B93A645EP03408183
Component
Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (--- GAL)

RECOMMENDATION

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Oil and filter change at the time of sampling has been noted. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		BE0018051	BE0018050	BE0018049
Sample Date		Client Info		18 Sep 2023	30 Jun 2023	11 Apr 2023
Machine Age	hrs	Client Info		1514	1020	502
Oil Age	hrs	Client Info		0	0	0
Filter Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				SEVERE	NORMAL	NORMAL

WEAR

Piston, ring and cylinder wear is indicated.

PQ		ASTM D8184	>79	22	14	9
Iron	ppm	ASTM D5185m	>100	217	11	64
Chromium	ppm	ASTM D5185m	>20	25	<1	4
Nickel	ppm	ASTM D5185m	>4	<1	<1	2
Titanium	ppm	ASTM D5185m		1	0	<1
Silver	ppm	ASTM D5185m	>3	<1	0	0
Aluminum	ppm	ASTM D5185m	>20	12	3	26
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	58	3	225
Tin	ppm	ASTM D5185m	>15	2	<1	2
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

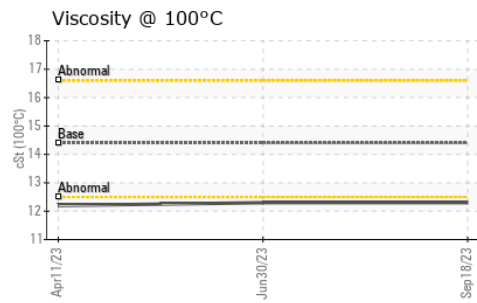
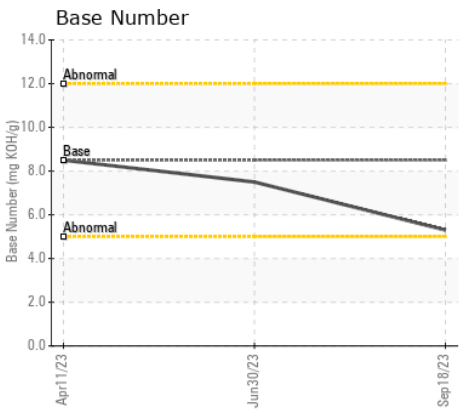
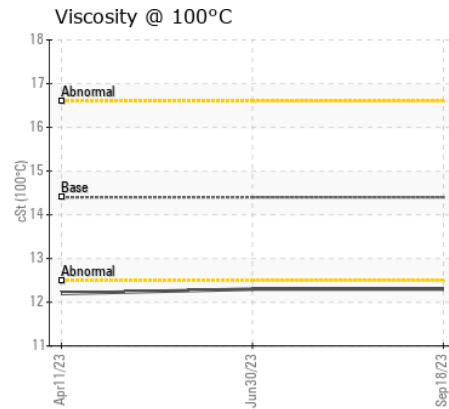
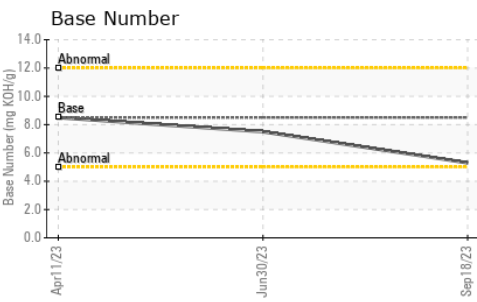
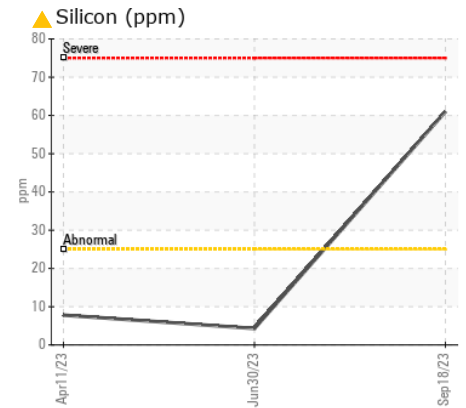
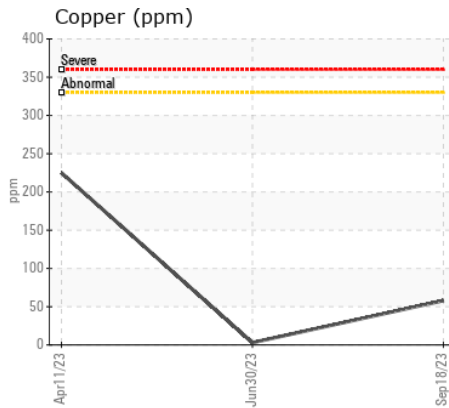
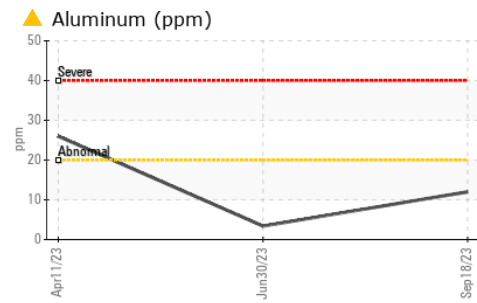
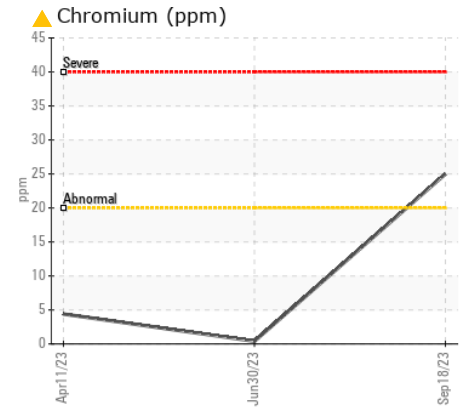
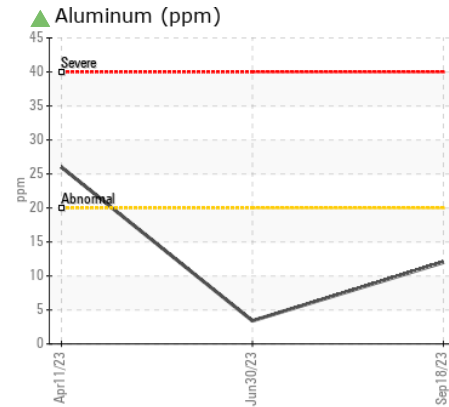
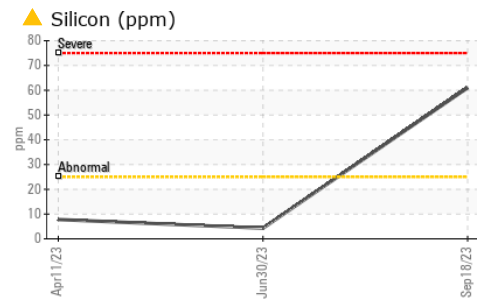
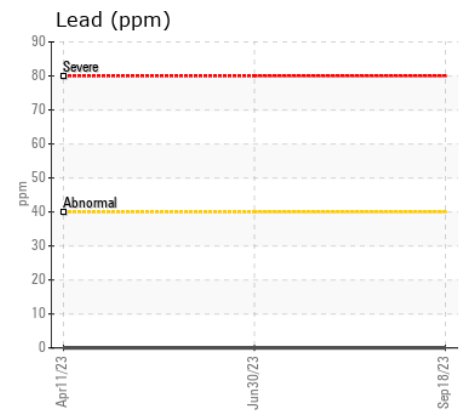
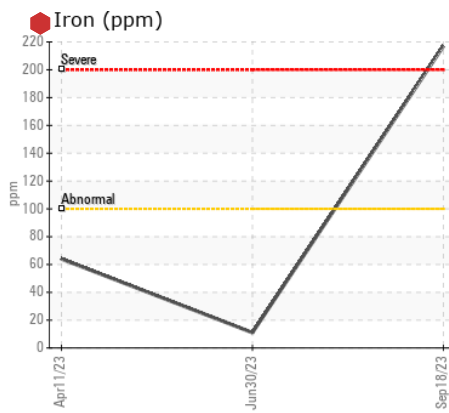
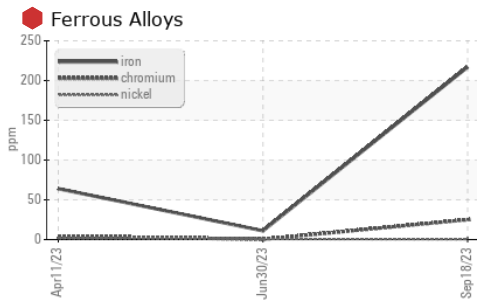
Elemental level of silicon (Si) above normal indicating ingress of dirt/seal material.

Silicon	ppm	ASTM D5185m	>25	61	4	8
Potassium	ppm	ASTM D5185m	>20	7	2	32
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>3	0.8	0.3	0.6
Nitration	Abs/cm	*ASTM D7624	>20	8.8	6.5	11.2
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.0	18.7	23.5
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	>0.2	NEG	NEG	NEG

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil.

Sodium	ppm	ASTM D5185m	>158	1	0	2
Boron	ppm	ASTM D5185m	250	<1	15	15
Barium	ppm	ASTM D5185m	10	0	0	0
Molybdenum	ppm	ASTM D5185m	100	47	59	5
Manganese	ppm	ASTM D5185m		6	<1	6
Magnesium	ppm	ASTM D5185m	450	351	366	93
Calcium	ppm	ASTM D5185m	3000	1540	1584	2389
Phosphorus	ppm	ASTM D5185m	1150	886	899	648
Zinc	ppm	ASTM D5185m	1350	1134	1050	797
Sulfur	ppm	ASTM D5185m	4250	2651	2823	1646
Oxidation	Abs/.1mm	*ASTM D7414	>25	15.5	13.7	20.4
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	5.3	7.5	8.5
Visc @ 40°C	cSt	ASTM D445	115	89.5	87.2	73.5
Visc @ 100°C	cSt	ASTM D445	14.4	12.3	12.3	12.2
Viscosity Index (VI)	Scale	ASTM D2270	126	131	136	163



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : BE0018051
Lab Number : 05958553
Unique Number : 10659766
Test Package : MOBCE
Received : 22 Sep 2023
Tested : 23 Sep 2023
Diagnosed : 24 Sep 2023 - Doug Bogart

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 Lexington, NC
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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)