



OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
BLUEBIRD 231
Component
Front Diesel Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (19 QTS)

RECOMMENDATION

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

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		RW0005663	RW0004491	RWM2275585
Sample Date		Client Info		22 May 2024	06 Dec 2023	01 Mar 2019
Machine Age	mls	Client Info		192000	180097	96000
Oil Age	mls	Client Info		12000	12000	12000
Filter Age	mls	Client Info		12000	12000	12000
Oil Changed		Client Info		Changed	Changed	Changed
Filter Changed		Client Info		Changed	Changed	Changed
Sample Status				ABNORMAL	NORMAL	NORMAL

WEAR

Moderate concentration of visible metal present. All component wear rates are normal.

Iron	ppm	ASTM D5185m	>130	32	36	32
Chromium	ppm	ASTM D5185m	>10	1	1	1
Nickel	ppm	ASTM D5185m	>4	<1	<1	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	<1
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	7	12	12
Lead	ppm	ASTM D5185m	>20	<1	0	0
Copper	ppm	ASTM D5185m	>125	2	1	6
Tin	ppm	ASTM D5185m	>4	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
White Metal	scalar	*Visual	NONE	▲ MODER	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

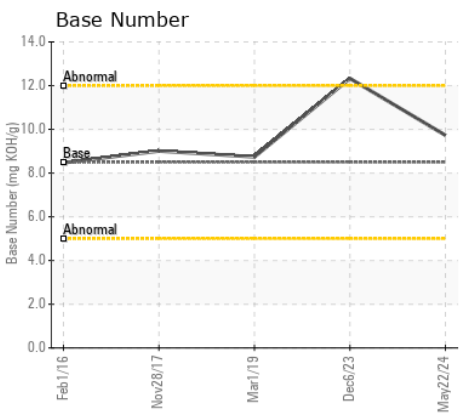
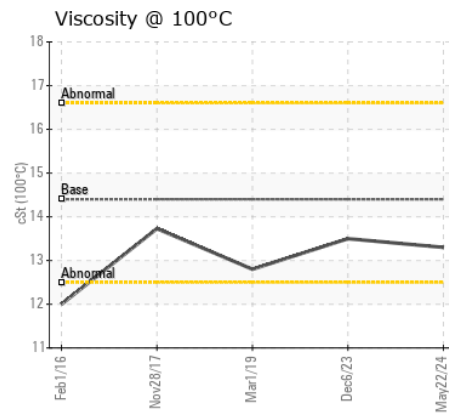
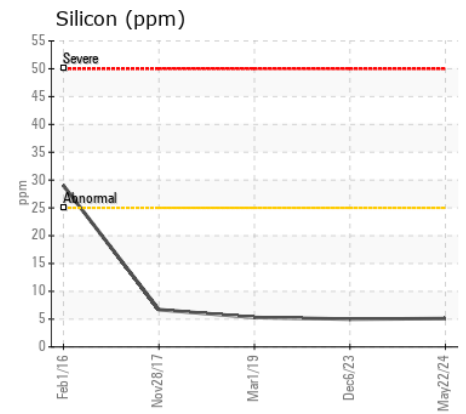
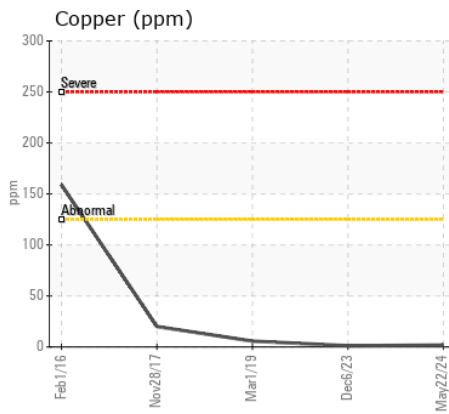
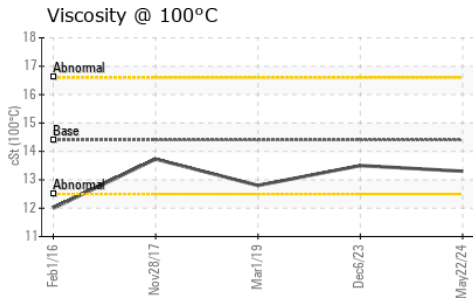
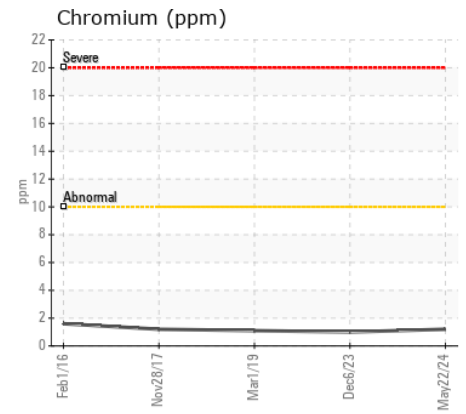
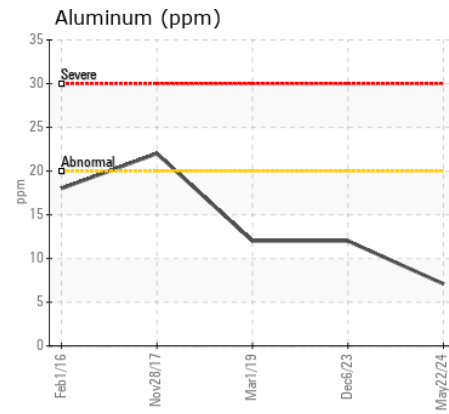
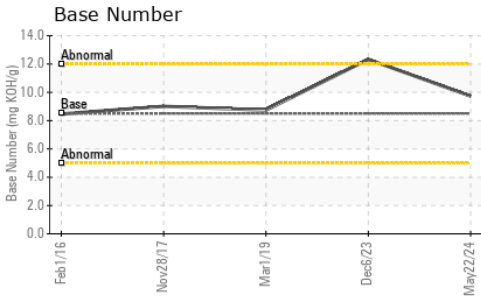
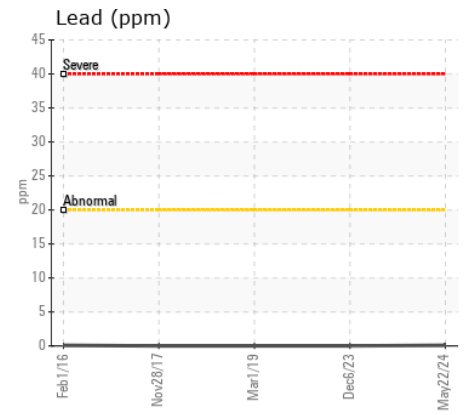
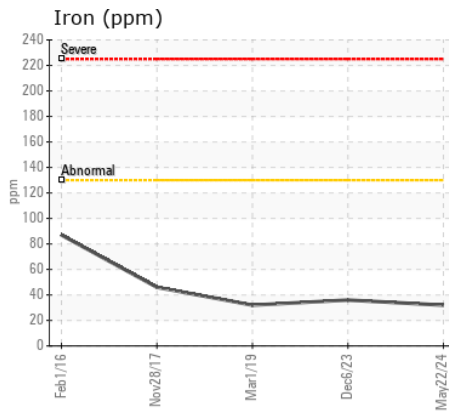
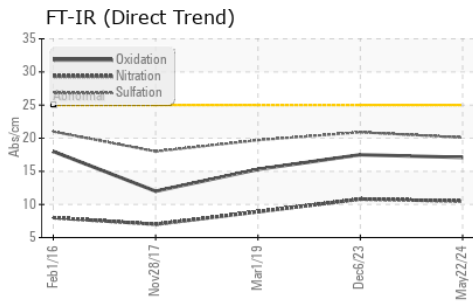
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	5	5	5
Potassium	ppm	ASTM D5185m	>20	4	10	24
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
Soot %	%	*ASTM D7844	>6	0.8	1	0.8
Nitration	Abs/cm	*ASTM D7624	>20	10.5	10.8	8.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	20.1	20.9	19.7
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. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m	>158	2	2	3
Boron	ppm	ASTM D5185m	250	8	8	7
Barium	ppm	ASTM D5185m	10	1	0	0
Molybdenum	ppm	ASTM D5185m	100	63	59	56
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	450	926	897	785
Calcium	ppm	ASTM D5185m	3000	1159	1178	1351
Phosphorus	ppm	ASTM D5185m	1150	1144	1077	995
Zinc	ppm	ASTM D5185m	1350	1295	1320	1152
Sulfur	ppm	ASTM D5185m	4250	3206	3084	2608
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.1	17.5	15.3
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	9.73	12.33	8.74
Visc @ 100°C	cSt	ASTM D445	14.4	13.3	13.5	12.8



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : RW0005663
Lab Number : 06194691
Unique Number : 11056814
Test Package : MOB 2
Received : 29 May 2024
Tested : 31 May 2024
Diagnosed : 31 May 2024 - Don Baldrige

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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)