



OIL ANALYSIS REPORT

WEAR	ABNORMAL
CONTAMINATION	ABNORMAL
FLUID CONDITION	NORMAL

Machine Id
FTL-50
Component
Diesel Engine
Fluid
SHELL ROTELLA T 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. Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		KL0007299	KL0007306	KL0008830
Sample Date		Client Info		16 Nov 2023	27 Oct 2023	28 Jul 2022
Machine Age	mls	Client Info		280000	278215	262115
Oil Age	mls	Client Info		1785	0	0
Filter Age	mls	Client Info		1785	0	0
Oil Changed		Client Info		Changed	N/A	Not Changd
Filter Changed		Client Info		Changed	N/A	Not Changd
Sample Status				ABNORMAL	SEVERE	ABNORMAL

WEAR

Cylinder, crank, or cam shaft wear is indicated.

Iron	ppm	ASTM D5185m	>100	▲ 117	▲ 177	▲ 181
Chromium	ppm	ASTM D5185m	>20	12	▲ 33	2
Nickel	ppm	ASTM D5185m	>4	<1	<1	0
Titanium	ppm	ASTM D5185m		2	5	<1
Silver	ppm	ASTM D5185m	>3	0	0	0
Aluminum	ppm	ASTM D5185m	>20	▲ 17	▲ 70	5
Lead	ppm	ASTM D5185m	>40	2	4	5
Copper	ppm	ASTM D5185m	>330	2	3	2
Tin	ppm	ASTM D5185m	>15	<1	2	<1
Vanadium	ppm	ASTM D5185m		<1	<1	0
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE

CONTAMINATION

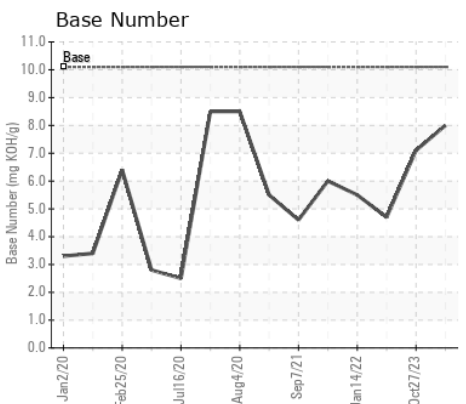
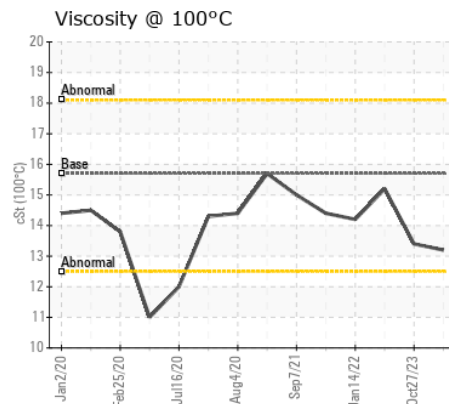
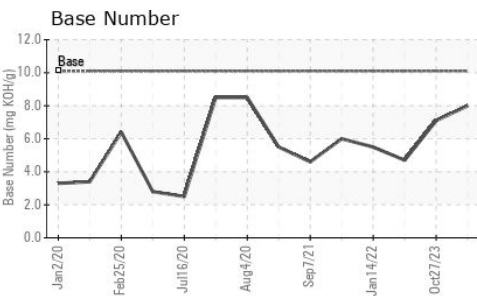
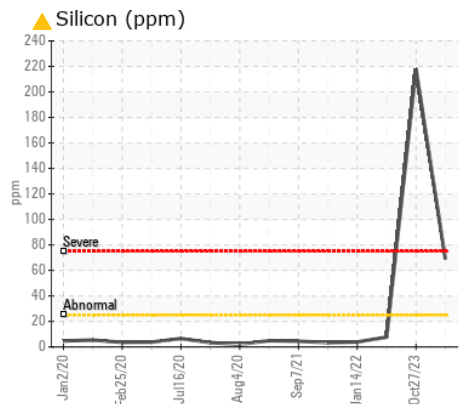
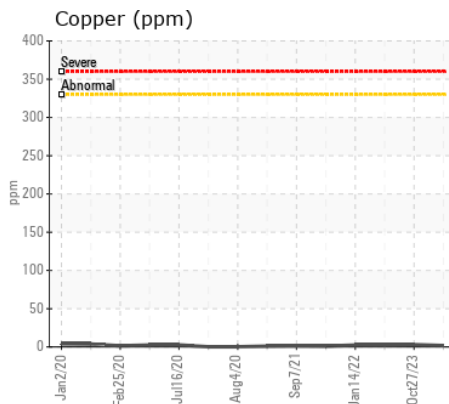
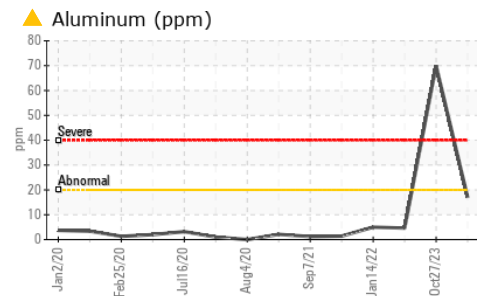
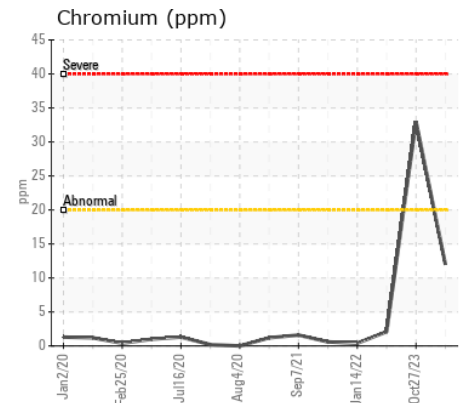
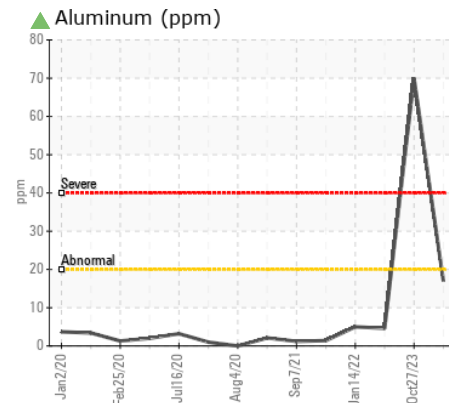
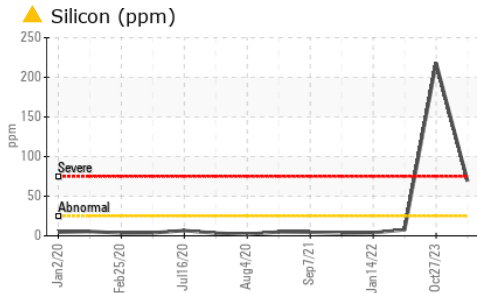
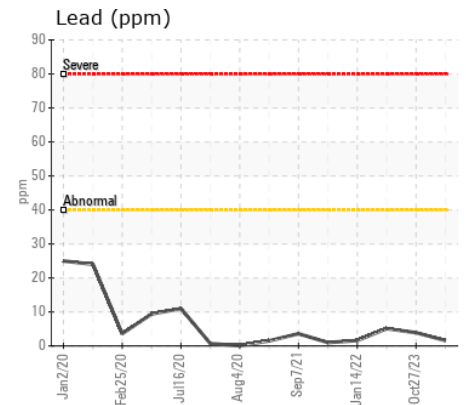
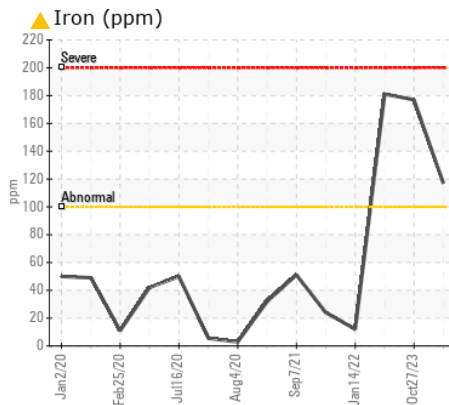
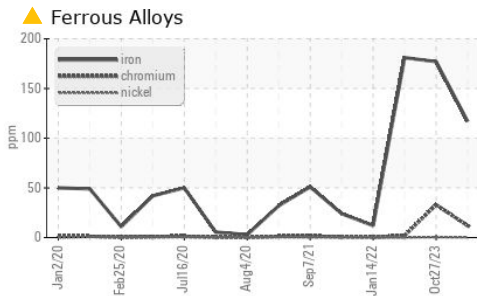
Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

Silicon	ppm	ASTM D5185m	>25	▲ 69	218	8
Potassium	ppm	ASTM D5185m	>20	7	21	7
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	0.2	0.7	1.4
Nitration	Abs/cm	*ASTM D7624	>20	6.5	9.6	12.7
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.1	22.3	34.4
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 acceptable for the time in service.

Sodium	ppm	ASTM D5185m		2	4	6
Boron	ppm	ASTM D5185m	316	82	44	52
Barium	ppm	ASTM D5185m	0.0	0	0	0
Molybdenum	ppm	ASTM D5185m	1.2	42	68	22
Manganese	ppm	ASTM D5185m		1	2	1
Magnesium	ppm	ASTM D5185m	24	328	358	104
Calcium	ppm	ASTM D5185m	2292	1717	1658	2254
Phosphorus	ppm	ASTM D5185m	1064	891	843	998
Zinc	ppm	ASTM D5185m	1160	1205	1130	1279
Sulfur	ppm	ASTM D5185m	4996	3288	2855	3349
Oxidation	Abs/.1mm	*ASTM D7414	>25	14.2	16.5	28.6
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	8	7.1	4.7
Visc @ 100°C	cSt	ASTM D445	15.7	13.2	13.4	15.2



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KL0007299
Lab Number : 06016083
Unique Number : 10755227
Test Package : MOB1+

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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)