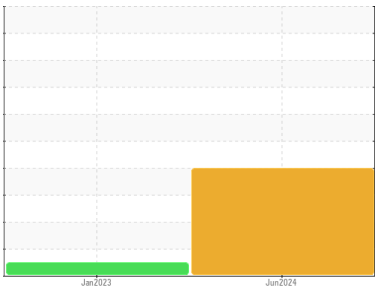
OIL ANALYSIS REPORT

Sample Rating Trend



DIRT

Machine Id
910 (S/N KCB74101)
Component
Diesel Engine
Fluid
SHELL ROTELLA T 15W40 (--- QTS)

DIAGNOSIS

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 recommend an early resample to monitor this condition.

Wear
Cylinder, crank, or cam shaft wear is indicated. Bearing and/or bushing wear is indicated.

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

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.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0917135**	WC0613710	---
Sample Date		Client Info		**17 Jun 2024**	12 Jan 2023	---
Machine Age	mls	Client Info		**311155**	262614	---
Oil Age	mls	Client Info		**0**	0	---
Oil Changed		Client Info		**Changed**	Changed	---
Sample Status				**ABNORMAL**	NORMAL	---

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>5	**<1.0**	<1.0	---
Water		WC Method	>0.2	**NEG**	NEG	---
Glycol		WC Method		**NEG**	NEG	---

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	▲ **166**	20	---
Chromium	ppm	ASTM D5185m	>20	**2**	1	---
Nickel	ppm	ASTM D5185m	>4	**<1**	0	---
Titanium	ppm	ASTM D5185m		**<1**	<1	---
Silver	ppm	ASTM D5185m	>3	**0**	0	---
Aluminum	ppm	ASTM D5185m	>20	● **4**	<1	---
Lead	ppm	ASTM D5185m	>40	▲ **51**	<1	---
Copper	ppm	ASTM D5185m	>330	**95**	3	---
Tin	ppm	ASTM D5185m	>15	**4**	<1	---
Vanadium	ppm	ASTM D5185m		**<1**	0	---
Cadmium	ppm	ASTM D5185m		**0**	0	---

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	316	**8**	38	---
Barium	ppm	ASTM D5185m	0.0	**0**	0	---
Molybdenum	ppm	ASTM D5185m	1.2	**62**	56	---
Manganese	ppm	ASTM D5185m		**2**	<1	---
Magnesium	ppm	ASTM D5185m	24	**902**	667	---
Calcium	ppm	ASTM D5185m	2292	**1242**	1152	---
Phosphorus	ppm	ASTM D5185m	1064	**984**	907	---
Zinc	ppm	ASTM D5185m	1160	**1286**	1066	---
Sulfur	ppm	ASTM D5185m	4996	**2954**	2795	---

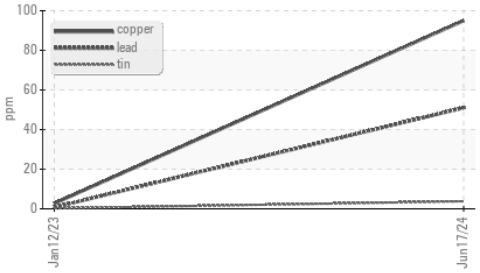
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	▲ **29**	8	---
Sodium	ppm	ASTM D5185m		**14**	<1	---
Potassium	ppm	ASTM D5185m	>20	**11**	2	---

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	**1.6**	0.9	---
Nitration	Abs/cm	*ASTM D7624	>20	**10.5**	6.9	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	**23.7**	19.0	---

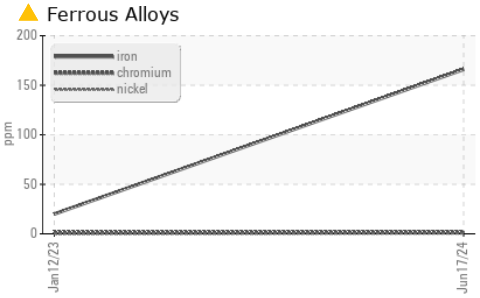
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**18.6**	12.9	---
Base Number (BN)	mg KOH/g	ASTM D2896	10.1	**5.9**	8.4	---

OIL ANALYSIS REPORT

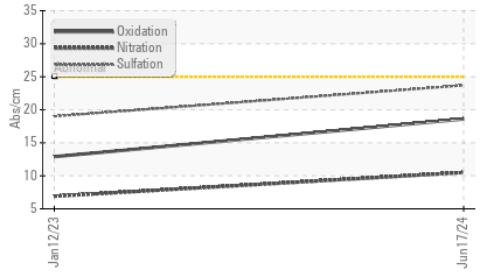
Non-ferrous Metals



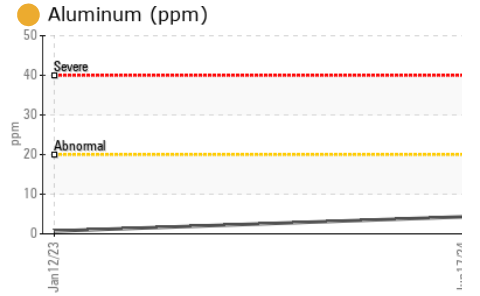
Ferrous Alloys



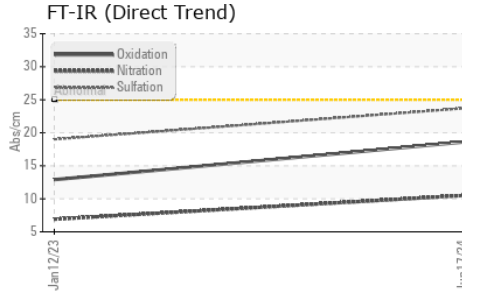
FT-IR (Direct Trend)



Aluminum (ppm)



FT-IR (Direct Trend)

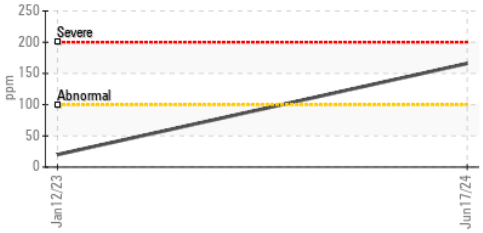


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	---
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	---
Silt	scalar	*Visual	NONE	**NONE**	NONE	---
Debris	scalar	*Visual	NONE	**NONE**	NONE	---
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	---
Appearance	scalar	*Visual	NORML	**NORML**	NORML	---
Odor	scalar	*Visual	NORML	**NORML**	NORML	---
Emulsified Water	scalar	*Visual	>0.2	**NEG**	NEG	---
Free Water	scalar	*Visual		**NEG**	NEG	---

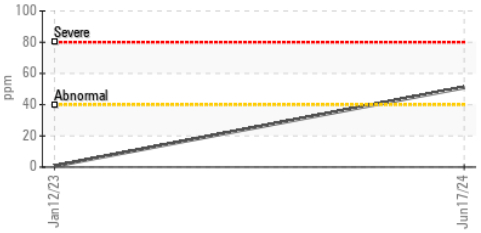
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.7	**13.7**	13.9	---

GRAPHS

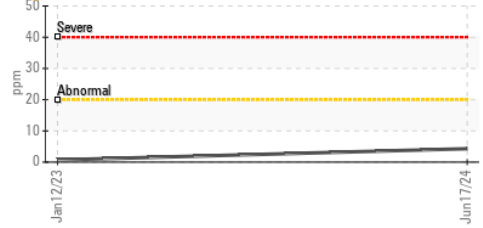
Iron (ppm)



Lead (ppm)

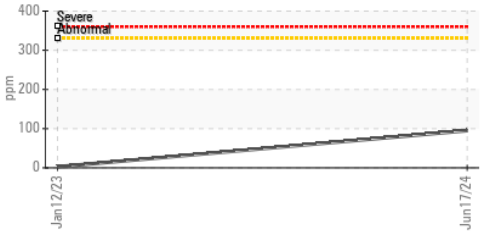


Aluminum (ppm)

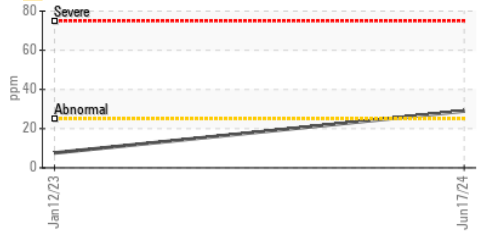


Chromium (ppm)

Copper (ppm)

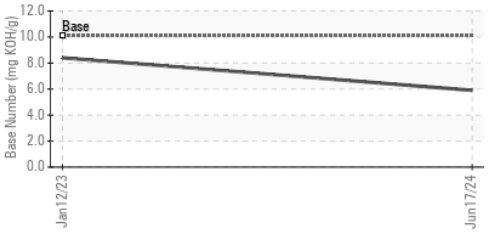


Silicon (ppm)



Viscosity @ 100°C

Base Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0917135 **Received** : 21 Jun 2024
Lab Number : 06217642 **Tested** : 25 Jun 2024
Unique Number : 11090506 **Diagnosed** : 25 Jun 2024 - Don Baldridge
Test Package : MOB 1 (Additional Tests: TBN)

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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