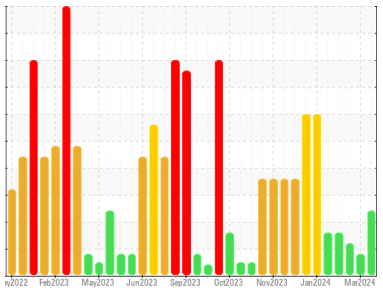
OIL ANALYSIS REPORT

Sample Rating Trend



FUEL

Area
BRUCE B/0B/54300 [START UP]
Machine Id
0B-54300-EPG1-E2
Component
Diesel Engine
Fluid
SHELL ROTELLA T4 15W40 (30 LTR)

DIAGNOSIS

Recommendation
We advise that you check the fuel injection system. We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

Wear
All component wear rates are normal.

Contamination
There is a high amount of fuel present in the oil. The water content is negligible. Tests confirm the presence of fuel in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. Fuel is present in the oil and is lowering the viscosity. The AN level is acceptable for this fluid. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0896801**	WC0896856	WC0896855
Sample Date		Client Info		**06 Jun 2024**	13 Mar 2024	12 Mar 2024
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**SEVERE**	ABNORMAL	ABNORMAL

CONTAMINATION	method	limit/base	current	history1	history2
Glycol	WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185(m)	>200	**4**	2	2
Chromium	ppm	ASTM D5185(m)	>20	**0**	0	0
Nickel	ppm	ASTM D5185(m)	>2	**0**	<1	0
Titanium	ppm	ASTM D5185(m)	>2	**0**	0	0
Silver	ppm	ASTM D5185(m)	>2	**0**	0	0
Aluminum	ppm	ASTM D5185(m)	>30	**<1**	1	1
Lead	ppm	ASTM D5185(m)	>30	**0**	<1	<1
Copper	ppm	ASTM D5185(m)	>30	**1**	<1	<1
Tin	ppm	ASTM D5185(m)	>15	**<1**	0	0
Antimony	ppm	ASTM D5185(m)		**0**	0	0
Vanadium	ppm	ASTM D5185(m)		**0**	0	0
Beryllium	ppm	ASTM D5185(m)		**0**	0	0
Cadmium	ppm	ASTM D5185(m)		**0**	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		**240**	241	240
Barium	ppm	ASTM D5185(m)		**0**	0	0
Molybdenum	ppm	ASTM D5185(m)		**24**	26	27
Manganese	ppm	ASTM D5185(m)		**0**	0	0
Magnesium	ppm	ASTM D5185(m)		**7**	8	7
Calcium	ppm	ASTM D5185(m)		**2093**	2217	2216
Phosphorus	ppm	ASTM D5185(m)		**610**	653	646
Zinc	ppm	ASTM D5185(m)		**695**	719	715
Sulfur	ppm	ASTM D5185(m)		**2210**	2455	2447
Lithium	ppm	ASTM D5185(m)		**<1**	<1	<1

CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185(m)	>30	**18**	21	13
Sodium	ppm	ASTM D5185(m)		**6**	6	5
Potassium	ppm	ASTM D5185(m)	>20	**3**	3	3
Fuel	%	ASTM D7593*	>3.0	▲ **8.5**	▲ 4	▲ 4.5
Water	%	ASTM D6304*	>0.2	**0.031**	0.012	0.035
ppm Water	ppm	ASTM D6304*	>2000	**311**	123	353

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	ASTM D7844*	>3	**0**	0	0
Nitration	Abs/cm	ASTM D7624*	>20	**3.1**	2.8	2.8
Sulfation	Abs/.1mm	ASTM D7415*	>30	**14.8**	14.9	14.9

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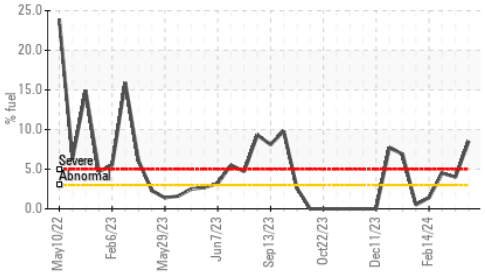
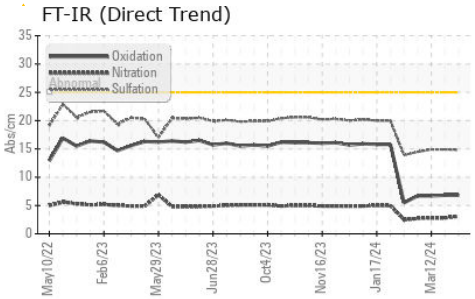
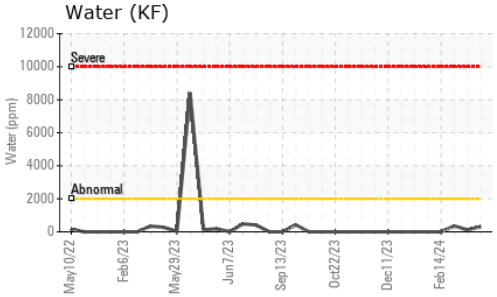
Fuel Dilution



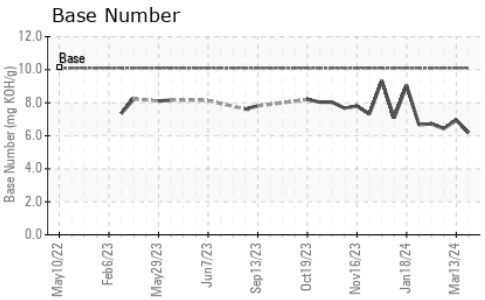
FT-IR (Direct Trend)



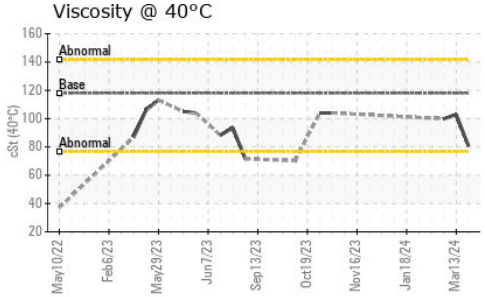
Water (KF)



Base Number



Viscosity @ 40°C



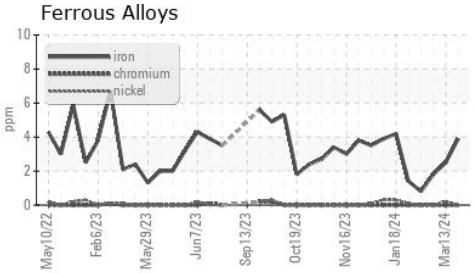
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	ASTM D7414*	>25	**6.8**	6.8	6.7
Acid Number (AN)	mg KOH/g	ASTM D974*		**1.65**	1.63	2.45
Base Number (BN)	mg KOH/g	ASTM D2896*	10.1	**6.19**	6.94	6.43

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	**NONE**	NONE	NONE
Precipitate	scalar	Visual*	NONE	**NONE**	NONE	NONE
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
Free Water	scalar	Visual*		**NEG**	NEG	NEG

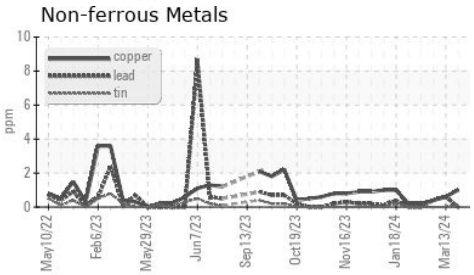
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	118	**80.6**	103	99.8
Visc @ 100°C	cSt	ASTM D7279(m)	15	▲ **10.9**	12.8	▲ 12.3
Viscosity Index (VI)	Scale	ASTM D2270*	133	**122**	119	115

GRAPHS

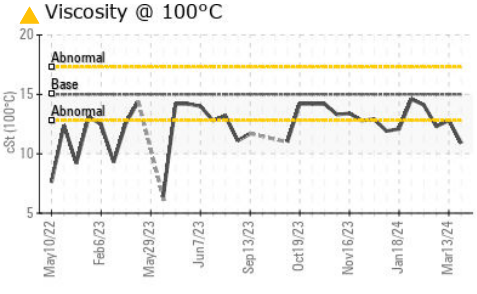
Ferrous Alloys



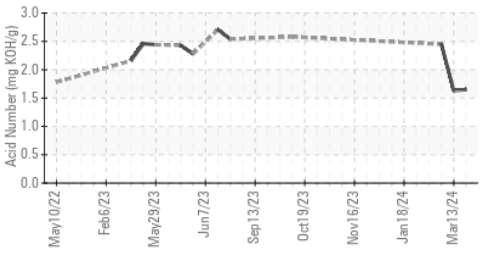
Non-ferrous Metals



▲ Viscosity @ 100°C



Acid Number



ISO 17025:2017 Accredited Laboratory

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0896801 **Received** : 11 Jun 2024
Lab Number : 02640981 **Tested** : 12 Jun 2024
Unique Number : 5798520 **Diagnosed** : 12 Jun 2024 - Kevin Marson
Test Package : MOB 2 (Additional Tests: KF, KV40, PercentFuel, PrtCount, Tan Auto, TAN Man, Visual)

To discuss this sample report, contact Customer Service at 1-800-268-2131.
Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
Validity of results and interpretation are based on the sample and information as supplied.

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