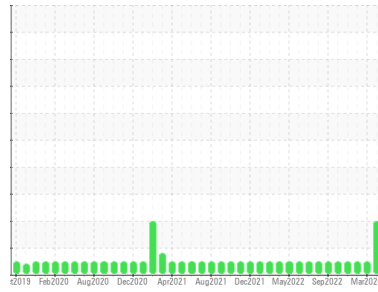




OIL ANALYSIS REPORT

Sample Rating Trend



GLYCOL



Area
Catlettsburg
 Machine Id
[Catlettsburg] Oil - Port Main Engine
 Component
Port Main Engine
 Fluid
ZINC-FREE ENGINE OIL SAE 40 (250 GAL)

DIAGNOSIS

Recommendation

We recommend an early resample to monitor this condition.

Wear

The lead level is abnormal. All other component wear rates are normal.

Contamination

The high sodium (Na) level indicates the possible presence of salt water.

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		WC0859947	WC0769550	WC0769496
Sample Date	Client Info		09 Jul 2024	28 Mar 2024	08 Aug 2023
Machine Age	hrs	Client Info	24081	22332	0
Oil Age	hrs	Client Info	957	22332	19497
Oil Changed	Client Info		Not Chngd	Changed	Not Chngd
Sample Status			ABNORMAL	NORMAL	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<1.0	<1.0	<1.0

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>75	21	9	15
Chromium	ppm	ASTM D5185m	>8	1	<1	2
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>3	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>15	2	2	4
Lead	ppm	ASTM D5185m	>18	▲ 27	1	3
Copper	ppm	ASTM D5185m	>80	11	5	7
Tin	ppm	ASTM D5185m	>14	3	2	5
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m	50	49	41	6
Barium	ppm	ASTM D5185m	5	0	0	0
Molybdenum	ppm	ASTM D5185m	37	49	45	25
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	12	16	34	16
Calcium	ppm	ASTM D5185m	3250	3659	3494	4469
Phosphorus	ppm	ASTM D5185m	50	16	13	35
Zinc	ppm	ASTM D5185m	5	4	4	3
Sulfur	ppm	ASTM D5185m	5750	3136	2583	4431

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>20	9	2	4
Sodium	ppm	ASTM D5185m	>75	● 76	1	3
Potassium	ppm	ASTM D5185m	>20	<1	0	<1
Water	%	ASTM D6304	>0.1	NEG	NEG	NEG
Glycol	%	*ASTM D2982		NEG	NEG	NEG

INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0.6	0.7	0.9
Nitration	Abs/cm	*ASTM D7624	>20	8.2	6.8	10.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	15.7	15.2	15.6

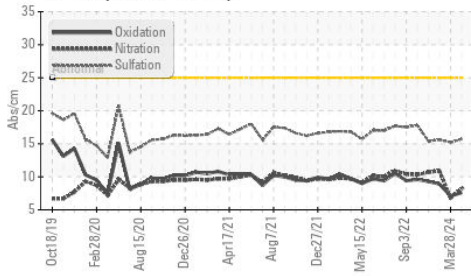
FLUID DEGRADATION

	method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414	>25	7.6	7.1	8.9
Base Number (BN)	mg KOH/g	ASTM D2896	10.5	8.98	10.08	12.56

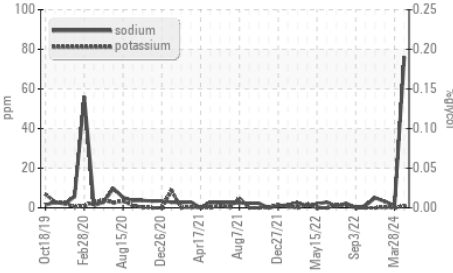


OIL ANALYSIS REPORT

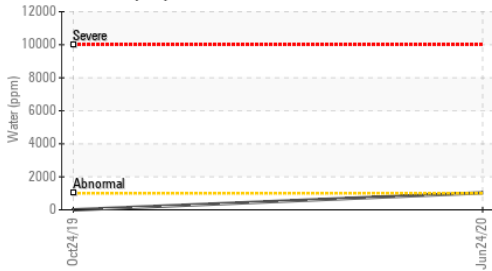
FT-IR (Direct Trend)



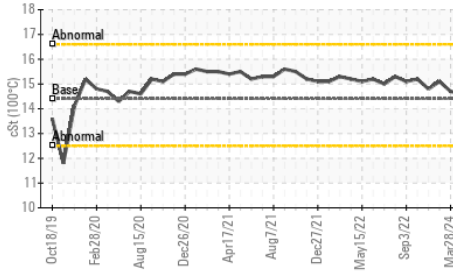
Glycol Contamination



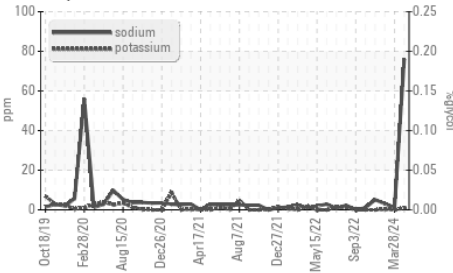
Water (KF)



Viscosity @ 100°C



Glycol Contamination

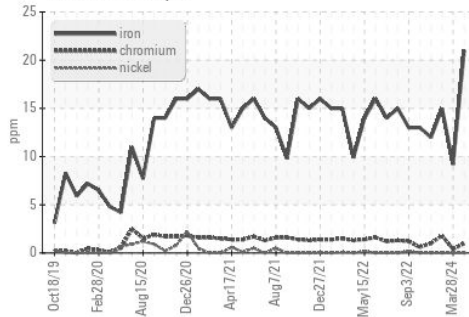


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	LIGHT	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

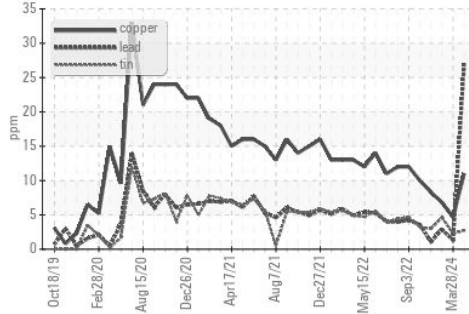
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.6	14.7

GRAPHS

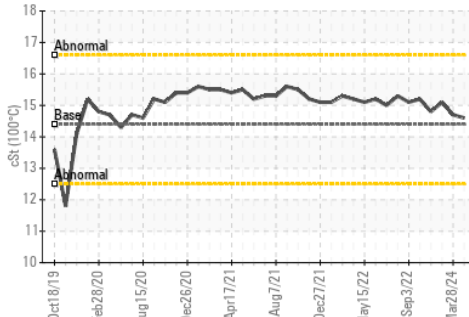
Ferrous Alloys



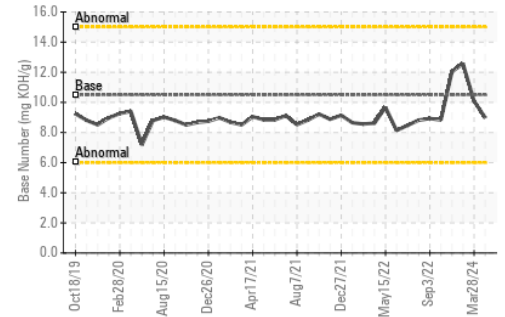
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : WC0859947

Lab Number : 06236288

Unique Number : 11125122

Test Package : IND 2 (Additional Tests: Glycol, KF)

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)

Received : 15 Jul 2024

Tested : 16 Jul 2024

Diagnosed : 16 Jul 2024 - Sean Felton

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US 41169

Contact: Barry Bridges

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