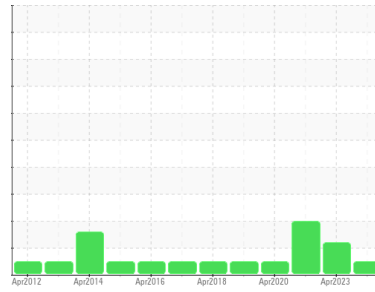




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
[IVY CITY]
 Machine Id
ALSTOM 3544
 Component
Hydraulic System
 Fluid
ESSO UNIVIS N 32 (55 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the component. The amount and size of particulates present in the system is acceptable.

Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number	Client Info			WC0909822	WC0667665	WC0643754
Sample Date	Client Info			30 Mar 2024	06 Apr 2023	01 Apr 2022
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				NORMAL	ABNORMAL	ABNORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Water	WC Method		>0.1	NEG	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	<1	0	1
Chromium	ppm	ASTM D5185m	>10	<1	0	2
Nickel	ppm	ASTM D5185m	>10	2	4	17
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	2	<1	0
Lead	ppm	ASTM D5185m	>10	16	9	11
Copper	ppm	ASTM D5185m	>75	10	9	8
Tin	ppm	ASTM D5185m	>10	0	0	<1
Antimony	ppm	ASTM D5185m		---	---	---
Vanadium	ppm	ASTM D5185m		0	<1	0
Cadmium	ppm	ASTM D5185m		0	0	0

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	.1	0	0	<1
Barium	ppm	ASTM D5185m		0	0	0
Molybdenum	ppm	ASTM D5185m	.3	0	0	0
Manganese	ppm	ASTM D5185m		0	<1	0
Magnesium	ppm	ASTM D5185m	0	<1	3	0
Calcium	ppm	ASTM D5185m	74	54	47	52
Phosphorus	ppm	ASTM D5185m	266	374	310	361
Zinc	ppm	ASTM D5185m	338	461	361	376
Sulfur	ppm	ASTM D5185m		2668	2094	2705

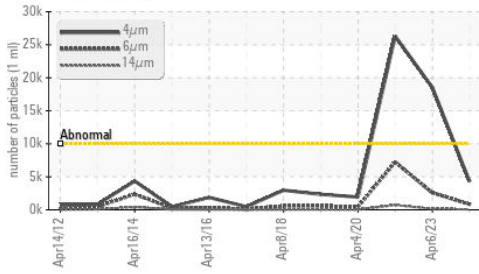
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	<1	1	<1
Sodium	ppm	ASTM D5185m		0	0	2
Potassium	ppm	ASTM D5185m	>20	1	0	0

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>10000	4289	▲ 18503	▲ 26297
Particles >6µm		ASTM D7647	>1300	832	▲ 2586	▲ 7225
Particles >14µm		ASTM D7647	>160	66	137	▲ 723
Particles >21µm		ASTM D7647	>40	19	39	▲ 185
Particles >38µm		ASTM D7647	>10	1	2	▲ 18
Particles >71µm		ASTM D7647	>3	0	0	0
Oil Cleanliness		ISO 4406 (c)	>20/17/14	19/17/13	▲ 21/19/14	▲ 22/20/17

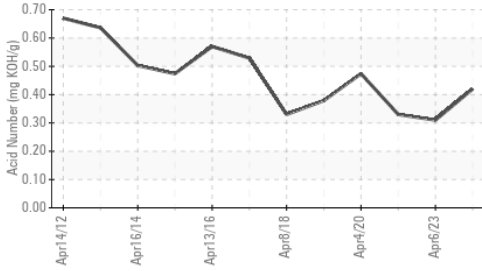


OIL ANALYSIS REPORT

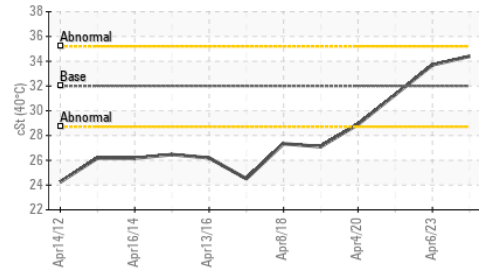
Particle Trend



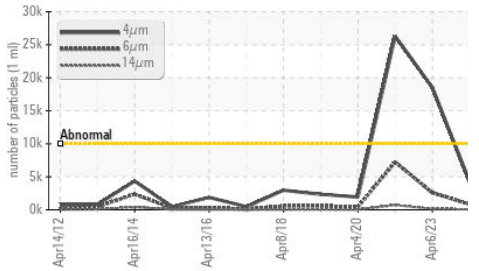
Acid Number



Viscosity @ 40°C



Particle Trend



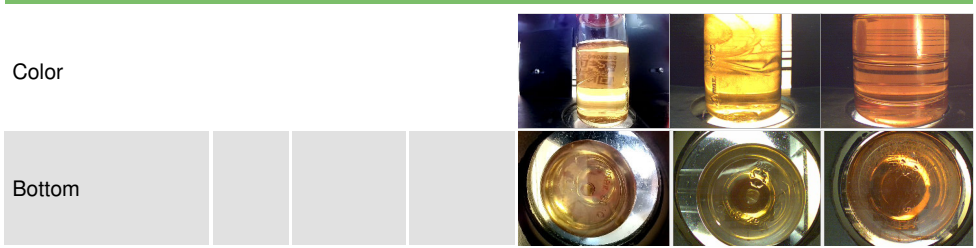
FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.42	0.31	0.33
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	LIGHT
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

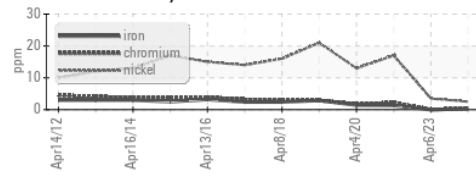
	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	33.7	31.3

SAMPLE IMAGES

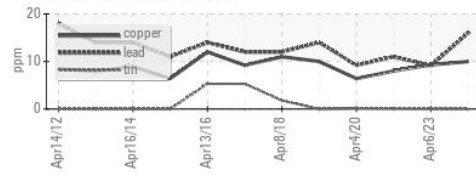


GRAPHS

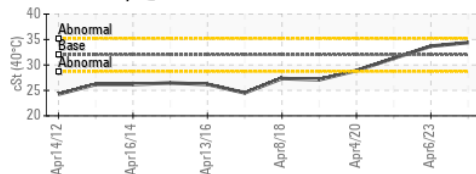
Ferrous Alloys



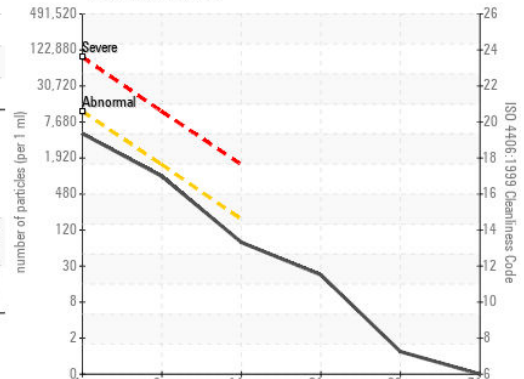
Non-ferrous Metals



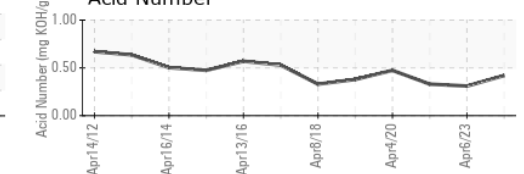
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0909822
Lab Number : 06137355
Unique Number : 10956820
Test Package : MOB 2

Received : 03 Apr 2024
Tested : 04 Apr 2024
Diagnosed : 05 Apr 2024 - Don Baldrige

AMTRAK
 1401 W STREET NE, HIGH SPEED RAIL 2ND FLOOR
 WASHINGTON, DC
 US 20018

Contact: MICHAEL PORTER
 michael.porter@amtrak.com
 T: (202)870-1399

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)