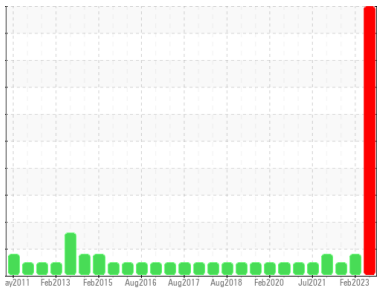
OIL ANALYSIS REPORT

Sample Rating Trend



WEAR

Machine Id
ALSTOM R064
Component
Gearbox
Fluid
TOTAL CARTER SH 220 (3 GAL)

DIAGNOSIS

Recommendation
We advise that you check all areas where dirt can enter the system. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

Wear
Gear wear is indicated. Bearing and/or bushing wear is indicated. Generally an abnormal to severe rate of wear throughout the component.

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

Fluid Condition
Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable due to the presence of contaminants.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0560254**	WC0673265	WC0667697
Sample Date		Client Info		**27 Aug 2023**	05 Feb 2023	04 Aug 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				**SEVERE**	ABNORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	**8523**	280	148
Chromium	ppm	ASTM D5185m	>10	**100**	2	<1
Nickel	ppm	ASTM D5185m	>10	**38**	<1	<1
Titanium	ppm	ASTM D5185m		**21**	<1	0
Silver	ppm	ASTM D5185m		**0**	0	<1
Aluminum	ppm	ASTM D5185m	>25	**358**	3	4
Lead	ppm	ASTM D5185m	>50	**18**	2	4
Copper	ppm	ASTM D5185m	>200	**508**	28	38
Tin	ppm	ASTM D5185m	>10	**0**	<1	1
Antimony	ppm	ASTM D5185m	>5	**---**	---	---
Vanadium	ppm	ASTM D5185m		**1**	0	0
Cadmium	ppm	ASTM D5185m		**<1**	0	1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m		**19**	0	3
Barium	ppm	ASTM D5185m		**0**	0	0
Molybdenum	ppm	ASTM D5185m		**21**	<1	<1
Manganese	ppm	ASTM D5185m		**87**	4	1
Magnesium	ppm	ASTM D5185m		**155**	2	0
Calcium	ppm	ASTM D5185m		**487**	6	3
Phosphorus	ppm	ASTM D5185m		**474**	287	320
Zinc	ppm	ASTM D5185m		**518**	90	103
Sulfur	ppm	ASTM D5185m		**4817**	2551	2882

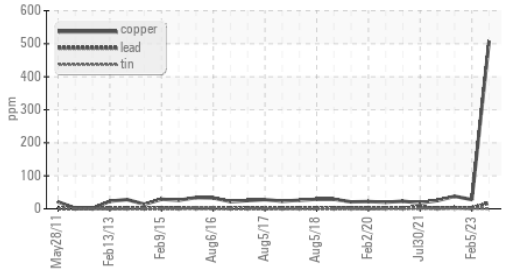
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	**1559**	14	14
Sodium	ppm	ASTM D5185m		**107**	16	32
Potassium	ppm	ASTM D5185m	>20	**54**	<1	0

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		**0.24**	0.27	0.31

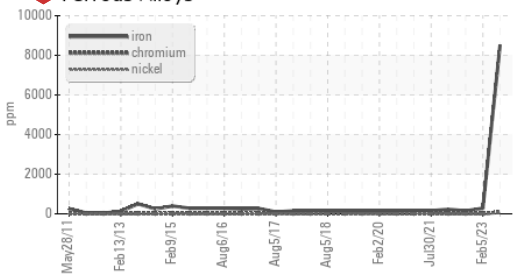
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	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

OIL ANALYSIS REPORT

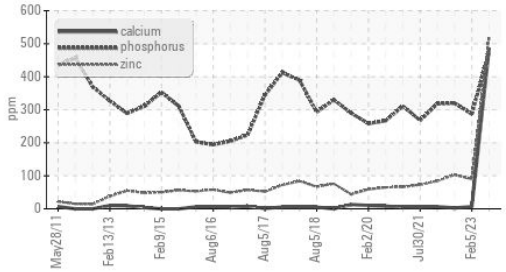
Non-ferrous Metals



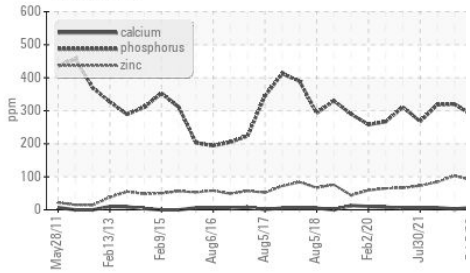
Ferrous Alloys



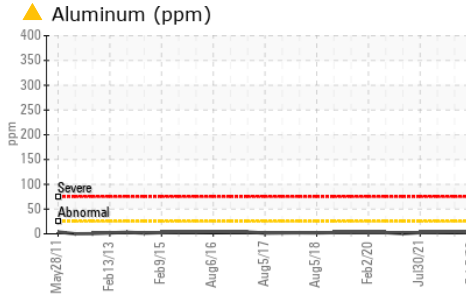
Additives



Additives



Aluminum (ppm)

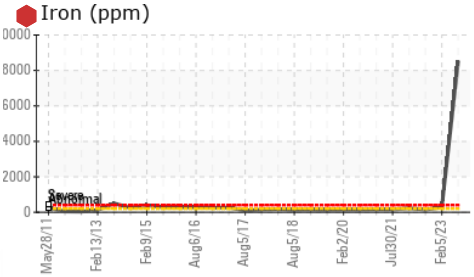


FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445		**224**	243	246

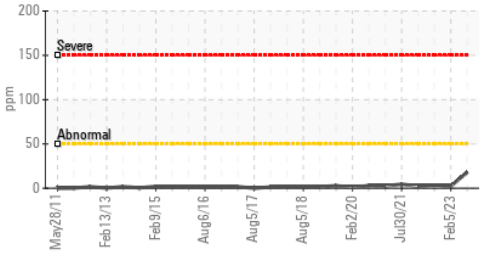
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color			*no image*	*no image*	*no image*
Bottom			*no image*	*no image*	*no image*

GRAPHS

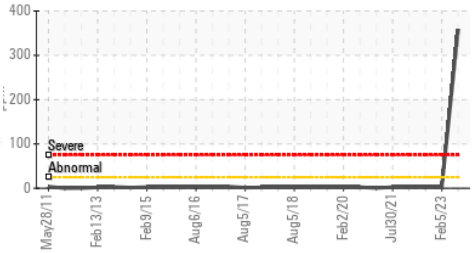
Iron (ppm)



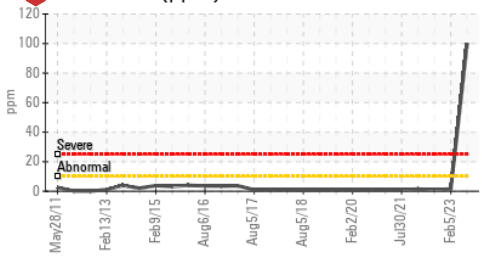
Lead (ppm)



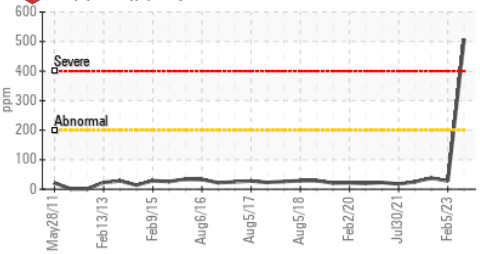
Aluminum (ppm)



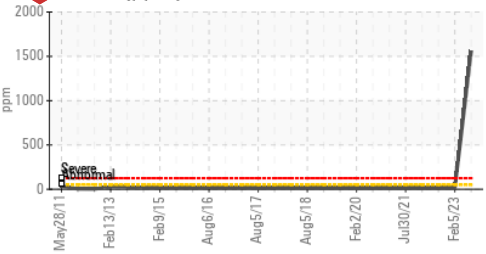
Chromium (ppm)



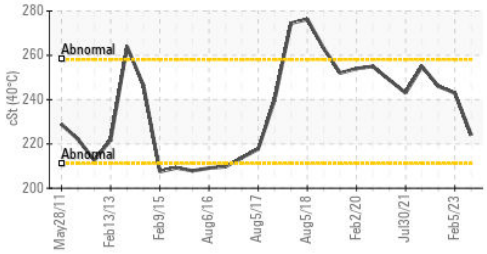
Copper (ppm)



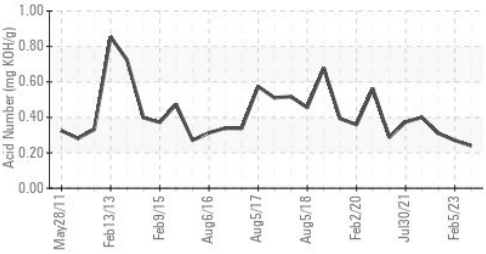
Silicon (ppm)



Viscosity @ 40°C



Acid Number



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0560254
Lab Number : 05939105
Unique Number : 10629717
Test Package : MOB 2

Received : 30 Aug 2023
Diagnosed : 01 Sep 2023
Diagnostician : Don Baldridge

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)

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
F: