

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

ALSTOM 3318 Component Hydraulic System

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 INFORMA	ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0798949	WC0673312	WC0592306
Sample Date		Client Info		13 Apr 2024	16 Apr 2023	17 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	NORMAL
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	3	1	2
Chromium	ppm	ASTM D5185m	>10	2	1	2
Nickel	ppm	ASTM D5185m	>10	17	21	30
Titanium	ppm	ASTM D5185m		<1	0	0
Silver	ppm	ASTM D5185m		0	0	<1
Aluminum	ppm	ASTM D5185m	>10	2	0	0
Lead	ppm	ASTM D5185m	>10	11	7	13
Copper	ppm	ASTM D5185m	>75	9	7	13
Tin	ppm	ASTM D5185m	>10	1	0	<1
Antimony	ppm	ASTM D5185m				
Vanadium	ppm	ASTM D5185m		<1	<1	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES		methou	iiiiii/base	Current	TIIStory I	nistoryz
_	ppm		.1	0	0	0
Boron	ppm ppm					
Boron Barium		ASTM D5185m		0	0	0
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	.1	0 1	0	0
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	.1	0 1 <1	0 0 0	0 0 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3	0 1 <1 <1	0 0 0 <1	0 0 0 0
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0	0 1 <1 <1 3	0 0 <1 <1	0 0 0 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74	0 1 <1 <1 3 68	0 0 0 <1 <1 49	0 0 0 <1 63
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266	0 1 <1 3 68 351	0 0 <1 <1 49 342	0 0 0 <1 63 375
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266	0 1 <1 3 68 351 462	0 0 <1 <1 49 342 443	0 0 0 <1 63 375 480
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266 338	0 1 <1 3 68 351 462 2807	0 0 <1 <1 49 342 443 2518	0 0 0 <1 63 375 480 2501
Boron Barium Molybdenum Manganese Magnesium Calcium Chosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266 338	0 1 <1 3 68 351 462 2807 current	0 0 2 3 4 3 4 2 5 1 8 4 4 3 4 2 5 1 8 history1	0 0 0 <1 63 375 480 2501 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266 338 limit/base >20	0 1 <1 <1 3 68 351 462 2807 current 2	0 0 0 <1 <1 49 342 443 2518 history1 <1	0 0 0 <1 63 375 480 2501 history2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266 338 limit/base >20	0 1 <1 3 68 351 462 2807 <u>current</u> 2 0	0 0 0 <1 <1 49 342 443 2518 history1 <1 1	0 0 0 <1 63 375 480 2501 history2 <1 <1
Boron Barium Aolybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 0 74 266 338 338 limit/base >20 limit/base	0 1 <1 3 68 351 462 2807 <u>current</u> 2 0 1	0 0 0 <1 <1 49 342 443 2518 history1 <1 1 0	0 0 0 <1 63 375 480 2501 history2 <1 <1 <1 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 0 74 266 338 338 limit/base >20 limit/base	0 1 <1 3 68 351 462 2807 current 2 0 1 current	0 0 0 <1 <1 49 342 443 2518 history1 <1 1 0 history1	0 0 0 <1 63 375 480 2501 history2 <1 <1 0 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .74 266 338 266 338 20 20 >20 20 20 20 20 20 20 20 20	0 1 <1 3 68 351 462 2807 current 2 0 1 current 5249	0 0 0 <1 <1 49 342 443 2518 history1 <1 1 0 history1 14022	0 0 0 (0 <1 63 375 480 2501 history2 <1 <1 <1 0 history2 327
Boron Barium Anyanese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .74 266 338 limit/base >20 }20 limit/base >20 limit/base >10000 >1300	0 1 <1 3 68 351 462 2807 current 2 0 1 current 5249 1278	0 0 0 <1 <1 49 342 443 2518 history1 <1 1 0 history1 1 4022 ▲ 14022	0 0 0 (0 <1 63 375 480 2501 history2 <1 <1 <1 0 history2 327 71
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .74 266 338 266 338 266 338 260 260 260 260 20 20 20 20 20 20 20 20 20 20 20 20 20	0 1 <1 <1 3 68 351 462 2807 current 2 0 1 current 5249 1278 108	0 0 0 <1 <1 49 342 443 2518 history1 <1 1 0 history1 1 0 history1 ∧ 14022 ∧ 14022 ∧ 2958 ∧ 222	0 0 0 0 <1 63 375 480 2501 history2 <1 <1 <1 0 history2 327 71 10
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	.1 .3 .7 266 338 266 338 20 imit/base >20 imit/base >10000 >1300 >160 >40	0 1 <1 <1 3 68 351 462 2807 Current 2 0 1 Current 5249 1278 108 29	0 0 0 <1 <1 49 342 443 2518 history1 <1 1 0 history1 ▲ 14022 ▲ 14022 ▲ 2958 ▲ 222 ▲ 72	0 0 0 (0 <1 63 375 480 2501 history2 <1 <1 <1 <1 0 0 history2 327 71 10 33

ISO 4406 (c) >20/17/14

Oil Cleanliness

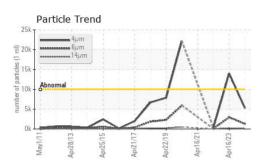
▲ 21/19/15

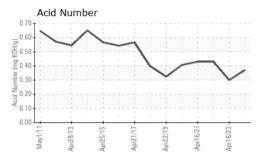
16/13/10

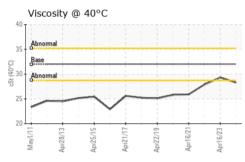
20/17/14

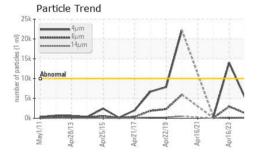


OIL ANALYSIS REPORT





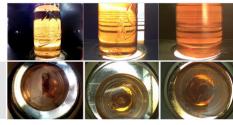


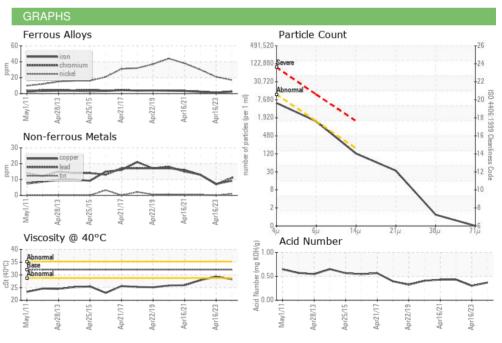


FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.37	0.30	0.43
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	LIGHT	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	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	ΓIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	28.3	29.3	27.9
SAMPLE IMAGE	S	method	limit/base	current	history1	history2

Color

Bottom





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 AMTRAK Sample No. : WC0798949 1401 W STREET NE, HIGH SPEED RAIL 2ND FLOOR Received : 18 Apr 2024 Lab Number : 06153771 Tested : 19 Apr 2024 WASHINGTON, DC Unique Number : 10989194 Diagnosed : 23 Apr 2024 - Jonathan Hester US 20018 Test Package : MOB 2 Contact: MICHAEL PORTER Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. michael.porter@amtrak.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (202)870-1399 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Report Id: AMTRAK [WUSCAR] 06153771 (Generated: 04/23/2024 11:32:07) Rev: 1

Contact/Location: MICHAEL PORTER - AMTRAK

Page 2 of 2