

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

ALSTOM 3311 Component Hydraulic System

ESSO UNIVIS N 32 (--- 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 INFORM	ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0909924	WC0673369	WCM2322741
Sample Date		Client Info		14 Apr 2024	14 Apr 2023	24 Apr 2019
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	NORMAL	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	4	4
Chromium	ppm	ASTM D5185m	>10	3	3	4
Nickel	ppm	ASTM D5185m	>10	23	34	37
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	0	0	0
	ppm	ASTM D5185m	>10	18	11	14
Copper	ppm	ASTM D5185m	>75	31	8	9
Tin	ppm	ASTM D5185m	>10	<1	<1	<1
Antimony	ppm	ASTM D5185m				0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
_	ppm		limit/base	current 0	history1 0	history2 <1
Boron	ppm ppm					
Boron Barium		ASTM D5185m		0	0	<1
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m	.1	0 0	0	<1 0
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	.1	0 0 0	0 0 0	<1 0 0
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3	0 0 0 <1	0 0 0 0	<1 0 0 <1
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0	0 0 0 <1 3	0 0 0 0 1	<1 0 0 <1 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 0 <1 3 64	0 0 0 0 1 55	<1 0 0 <1 1 58
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	.1 .3 0 74 266	0 0 <1 3 64 379	0 0 0 1 55 344	<1 0 0 <1 1 58 338
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 0 <1 3 64 379 518	0 0 0 1 55 344 465	<1 0 0 <1 1 58 338 446
Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus 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 0 <1 3 64 379 518 3683	0 0 0 1 55 344 465 2945	<1 0 0 <1 1 58 338 446 4675
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 0 <1 3 64 379 518 3683 current	0 0 0 1 55 344 465 2945 history1	<1 0 0 <1 1 58 338 446 4675 history2
Boron Barium Molybdenum Manganese Magnesium Calcium 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 74 266 338 338 Iimit/base >20	0 0 2 3 64 379 518 3683 <i>current</i> 1	0 0 0 1 55 344 465 2945 history1 1	<1 0 0 <1 1 58 338 446 4675 history2 <1
Boron Barium Molybdenum Manganese Magnesium Calcium 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 74 266 338 338 Iimit/base >20	0 0 0 <1 3 64 379 518 3683 Current 1 4	0 0 0 1 55 344 465 2945 history1 1 2	<1 0 0 <1 1 58 338 446 4675 history2 <1 3
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 limit/base >20 >20	0 0 (<1 3 64 379 518 3683 <i>current</i> 1 4 2	0 0 0 1 55 344 465 2945 history1 1 2 2 <1	<1 0 0 <1 1 58 338 446 4675 history2 <1 3 <1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .74 266 338 266 338 20 20 >20 20 20 1imit/base >20	0 0 0 <1 3 64 379 518 3683 current 1 4 2 2 current	0 0 0 1 55 344 465 2945 history1 1 2 <1 2 41	<1 0 0 <1 1 58 338 446 4675 history2 <1 3 <1 3 <1 history2
Boron Barium Aolybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm	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 20	0 0 0 <1 3 64 379 518 3683 <u>current</u> 1 4 2 2 <u>current</u> 2765	0 0 0 1 55 344 465 2945 history1 1 2 <1 2 <1 history1 1092	<1 0 0 <1 1 58 338 446 4675 history2 <1 3 <1 3 <1 history2 1598
Boron Barium Barium Molybdenum Manganese 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 	0 0 -1 -3 -64 -379 -518 -3683 <u>current</u> 1 -4 -2 <u>current</u> 2765 -545	0 0 0 1 55 344 465 2945 history1 1 2 <1 2 <1 history1 1092 250	<1 0 0 <1 1 58 338 446 4675 history2 <1 3 <1 3 <1 history2 1598 342
Boron Barium Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLINE Particles >4µm Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .74 .266 .338 	0 0 0 <1 3 64 379 518 3683 <i>current</i> 1 4 2 <i>current</i> 2765 545 51	0 0 0 1 55 344 465 2945 history1 1 2 <1 1 2 <1 history1 1 092 250 12	<1 0 0 <1 1 58 338 446 4675 history2 <1 3 <1 3 <1 history2 1598 342 33
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Potassium Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647	.1 .3 .74 266 338 266 338 20 imit/base >20 20 20 imit/base >10000 >1300 >160 >40 >40 >10	0 0 0 <1 3 64 379 518 3683 <u>current</u> 1 4 2 2 <u>current</u> 2765 545 511 16	0 0 0 1 55 344 465 2945 history1 1 2 <1 1 2 <1 history1 1092 250 12 4	<1 0 0 <1 1 58 338 446 4675 history2 <1 3 <1 history2 1598 342 33 8

ISO 4406 (c) >20/17/14

Oil Cleanliness

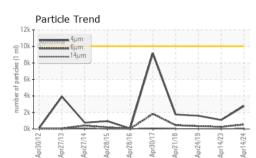
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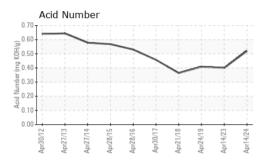
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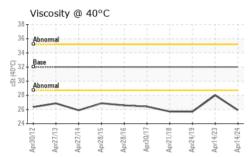
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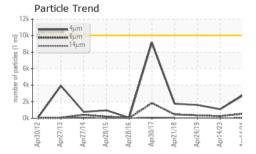


OIL ANALYSIS REPORT





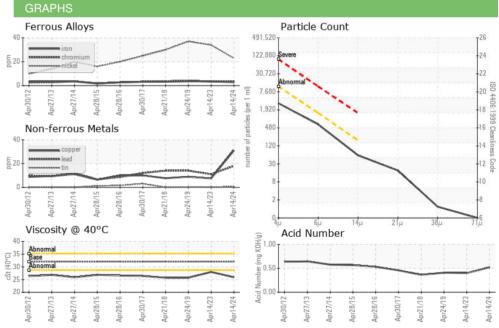




FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.52	0.40	0.409
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	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	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	25.9	28.0	25.7
SAMPLE IMAGES	5	method	limit/base	current	history1	history2

Color

Bottom



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 AMTRAK : WC0909924 1401 W STREET NE, HIGH SPEED RAIL 2ND FLOOR Sample No. Received : 18 Apr 2024 Lab Number : 06153052 Tested : 19 Apr 2024 WASHINGTON, DC Unique Number : 10983130 Diagnosed : 22 Apr 2024 - Don Baldridge 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] 06153052 (Generated: 04/22/2024 18:22:47) Rev: 1

Contact/Location: MICHAEL PORTER - AMTRAK