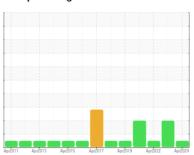


OIL ANALYSIS REPORT

Sample Rating Trend







ALSTOM 3528 Component

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.

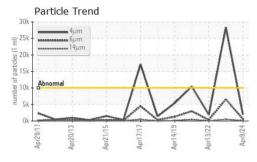
Fluid Condition

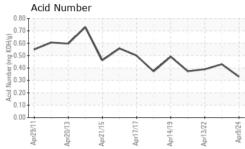
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

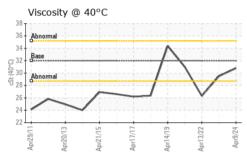
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2	
Sample Number		Client Info		WC0673292	WC0592266	WC0560212	
Sample Date		Client Info		09 Apr 2024	20 Apr 2022	13 Apr 2022	
Machine Age	hrs	Client Info		0	0	0	
Oil Age	hrs	Client Info		0	0	0	
Oil Changed		Client Info		N/A	N/A	N/A	
Sample Status				NORMAL	ABNORMAL	NORMAL	
CONTAMINATION	V	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	2	3	
Chromium	ppm	ASTM D5185m	>10	<1	2	4	
Nickel	ppm	ASTM D5185m	>10	14	23	34	
Titanium	ppm	ASTM D5185m		0	0	0	
Silver	ppm	ASTM D5185m		0	<1	<1	
Aluminum	ppm	ASTM D5185m	>10	0	<1	<1	
Lead	ppm	ASTM D5185m	>10	8	14	21	
Copper	ppm	ASTM D5185m	>75	4	6	10	
Tin	ppm	ASTM D5185m	>10	0	0	<1	
Antimony	ppm	ASTM D5185m					
Vanadium	ppm	ASTM D5185m		0	0	0	
Cadmium	ppm	ASTM D5185m		0	0	0	
				•	· ·		
ADDITIVES		method	limit/base	current	history1	history2	
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base			history2	
	ppm			current	history1		
Boron		ASTM D5185m		current 0	history1	2	
Boron Barium	ppm	ASTM D5185m ASTM D5185m	.1	current 0 0	history1 0 0	2	
Boron Barium Molybdenum	ppm	ASTM D5185m ASTM D5185m ASTM D5185m	.1	current 0 0 0	history1 0 0 0	2 0 0	
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.3	current 0 0 0 0	history1 0 0 0 0	2 0 0	
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1	current 0 0 0 0 0 0	history1 0 0 0 0 0 <1	2 0 0 0 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 .0 .74	current 0 0 0 0 0 0 52	history1 0 0 0 0 0 <1 55	2 0 0 0 0 <1 58	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266	Current 0 0 0 0 0 0 52 339	history1 0 0 0 0 <1 55 378	2 0 0 0 <1 58 371	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	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	Current 0 0 0 0 0 0 52 339 434	history1 0 0 0 0 <1 55 378 446	2 0 0 0 <1 58 371 429	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	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	Current 0 0 0 0 0 52 339 434 2784	history1 0 0 0 0 <1 55 378 446 2493	2 0 0 0 <1 58 371 429 2950	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	.1 .3 0 74 266 338	Current 0 0 0 0 0 0 52 339 434 2784 Current	history1 0 0 0 0 0 <1 55 378 446 2493 history1	2 0 0 0 <1 58 371 429 2950 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	.1 .3 0 74 266 338	Current 0 0 0 0 0 0 52 339 434 2784 Current	history1 0 0 0 0 <1 55 378 446 2493 history1 1	2 0 0 0 <1 58 371 429 2950 history2	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	.1 .3 .0 .74 .266 .338	current 0 0 0 0 0 0 52 339 434 2784 current 1	history1 0 0 0 0 <1 55 378 446 2493 history1 1 0	2 0 0 0 <1 58 371 429 2950 history2 <1	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	.1 .3 0 74 266 338 limit/base >20 >20	current 0 0 0 0 0 0 52 339 434 2784 current 1 2 <1	history1 0 0 0 0 <1 55 378 446 2493 history1 1 0 0	2 0 0 0 <1 58 371 429 2950 history2 <1 4	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	.1 .3 .74 .266 .338	current 0 0 0 0 0 52 339 434 2784 current 1 2 <1	history1 0 0 0 0 <1 55 378 446 2493 history1 1 0 0 history1	2 0 0 0 <1 58 371 429 2950 history2 <1 4 0	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	.1 .3 0 74 266 338 limit/base >20 limit/base >10000	current 0 0 0 0 0 52 339 434 2784 current 1 2 <1 current	history1 0 0 0 0 <1 55 378 446 2493 history1 1 0 0 history1 ≥8344	2 0 0 0 <1 58 371 429 2950 history2 <1 4 0	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m METHOD ASTM D5185m	.1 .3 0 74 266 338 limit/base >20 >20 limit/base >10000 >1300 >160	current 0 0 0 0 0 52 339 434 2784 current 1 2 <1 current 1979 582	history1 0 0 0 0 <1 55 378 446 2493 history1 1 0 0 history1 28344 6571	2 0 0 0 <1 58 371 429 2950 history2 <1 4 0 history2 1911 314	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D7647 ASTM D7647	.1 .3 0 74 266 338 limit/base >20 >20 limit/base >10000 >1300 >160	current 0 0 0 0 0 52 339 434 2784 current 1 2 <1 current 1979 582 102	history1 0 0 0 0 0 <1 55 378 446 2493 history1 1 0 0 history1 28344 6571 493	2 0 0 0 <1 58 371 429 2950 history2 <1 4 0 history2 1911 314 22	
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647	.1 .3 .74 .266 .338	current 0 0 0 0 0 52 339 434 2784 current 1 2 <1 current 1979 582 102 26	history1 0 0 0 0 0 <1 55 378 446 2493 history1 1 0 0 history1 28344 6571 493 135	2 0 0 0 <1 58 371 429 2950 history2 <1 4 0 history2 1911 314 22 6	

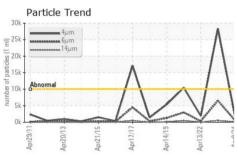


OIL ANALYSIS REPORT









FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.33	0.43	0.39
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	VLITE
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	TES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	30.8	29.5	26.3
SAMPLE IMAGES	3	method	limit/base	current	history1	history2
			_			

GRA	APHS												
Ferrous Alloys						Particle Count							
E 20	iron chromiu	m	-				122,880 Severe						T26
	- III CACI						30,720 - Abnorma	al					-22
	Apr20/13	4pr21/15	Apr17/17	Apr14/19	Apr13/22 -	Apr9/24							20 %
Apr29/11	Apr2	Apr2	Apr1	April	April	Apr	1,920		. N				18 199
Non-ferrous Metals Non-ferrous Metals										-16 Ce			
30	copper						120		1				-14 mines
C. C.	esses lead			1		*	E 30+			1			-20 4406:1999 Cleanliness Code
0			Marie and Publishers				8-			,	/		-10
Apr29/11	Apr20/13	Apr21/15	Apr17/17	Apr14/19	Apr13/22	Apr9/24	2-				1		-8
			Apr	Apr	Apr	Ap	0,44	6,4	14 _U	21μ	38	u	71 _u
Viscosity @ 40°C							Numb						
A1	mal					-	ġ 1.00						
35 Base Base Abnor	mal						Acid Number (mg K0H/g) 00:00 11/6		_		_		
3 25							F 0 00						
Apr29/11-	Apr20/13	Apr21/15	Apr17/17	Apr14/19	Apr13/22	Apr9/24	Acie Apr29/11-	Apr20/13	Apr21/15	Apr17/17	Apr14/19	Apr13/22 -	Apr9/24 -
Apri	Aprí	Aprí	Apr	Apri	Apri	Ap	Apri	Aprí	Aprí	Apr	Apri	Apri	Ap





Certificate 12367

Laboratory Sample No.

Lab Number : 06160322

: WC0673292 Unique Number : 10995745 Test Package : MOB 2

Color

Bottom

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 25 Apr 2024 **Tested**

Diagnosed

: 26 Apr 2024 : 27 Apr 2024 - Don Baldridge

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) **AMTRAK**