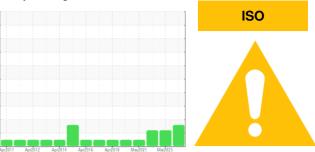


Area

## **OIL ANALYSIS REPORT**

Sample Rating Trend



ALSTOM 3533 Component Hydraulic System Fluid ESSO UNIVIS N 32 (55 GAL)

### DIAGNOSIS

#### A Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor.

## Wear

All component wear rates are normal.

## Contamination

There is a high amount of particulates present in the oil.

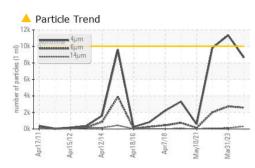
### **Fluid Condition**

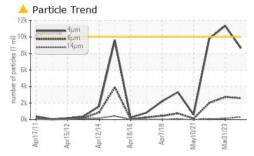
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

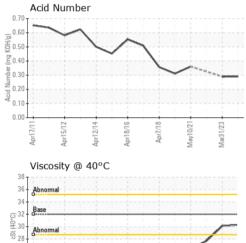
SAMPLE INFORMA	ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0673293	WC0649669	WC0592243
Sample Date		Client Info		02 Apr 2024	31 Mar 2023	01 Apr 2022
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	ABNORMAL	ATTENTION
CONTAMINATION		method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron p	ppm	ASTM D5185m	>20	2	<1	1
Chromium p	ppm	ASTM D5185m	>10	2	1	2
Nickel p	ppm	ASTM D5185m	>10	16	15	<b>A</b> 21
	ppm	ASTM D5185m		<1	0	0
	ppm	ASTM D5185m		0	0	0
	ppm	ASTM D5185m	>10	2	0	0
	ppm	ASTM D5185m	>10	7	6	10
	ppm	ASTM D5185m	>75	4	3	5
	ppm	ASTM D5185m	>10	<1	0	0
	ppm	ASTM D5185m				
	ppm	ASTM D5185m		<1	0	0
	ppm	ASTM D5185m		<1	0	0
1	ppm			<b>、</b>		
ADDITIVES		mathad	limit/hooo			history?
		method	limit/base	current	history1	history2
Boron ß	ppm	ASTM D5185m	.1	0	0	0
Boron ß	ppm ppm		.1			
Boron p Barium p		ASTM D5185m		0	0	0
Boron p Barium p Molybdenum p	ppm	ASTM D5185m ASTM D5185m	.1	0 0 <1 <1	0 0 0 <1	0
Boron p Barium p Molybdenum p Manganese p	opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0	0 0 <1	0 0 0	0 0 0
Boron p Barium p Molybdenum p Manganese p Magnesium p	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3	0 0 <1 <1	0 0 0 <1	0 0 0 0
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0	0 0 <1 <1 2	0 0 <1 2	0 0 0 0 0
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p	opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74	0 0 <1 <1 2 48	0 0 <1 2 53	0 0 0 0 0 52
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p	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 <1 2 48 286	0 0 <1 2 53 373	0 0 0 0 0 52 372
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p	opm opm opm opm opm opm opm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 0 74 266	0 0 <1 <1 2 48 286 434	0 0 <1 2 53 373 470	0 0 0 0 0 52 372 422
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Phosphorus p Zinc p Sulfur p	opm opm opm opm opm opm opm	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 <1 2 48 286 434 2256	0 0 2 53 373 470 3130	0 0 0 0 0 52 372 422 2632
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Phosphorus p Zinc p Sulfur p CONTAMINANTS	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	0 0 <1 2 48 286 434 2256 current	0 0 <1 2 53 373 470 3130 history1	0 0 0 0 52 372 422 2632 history2
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Contadina p Sulfur p Silicon p Sodium p	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 limit/base >20	0 0 <1 <1 2 48 286 434 2256 current 2	0 0 2 53 373 470 3130 history1 <1	0 0 0 0 52 372 422 2632 history2 <1
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Contadina p Sulfur p Silicon p Sodium p	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 0 <1 <1 2 48 286 434 2256 current 2 0	0 0 2 53 373 470 3130 history1 <1 2	0 0 0 0 52 372 422 2632 history2 <1 1
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Calcium p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 0 74 266 338 limit/base >20	0 0 <1 <1 2 48 286 434 2256 current 2 0 1	0 0 2 53 373 470 3130 history1 <1 2 <1	0 0 0 0 52 372 422 2632 history2 <1 1 0
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Dhosphorus p Zinc p Sulfur p Sulfur p Sulfur p CONTAMINANTS Silicon p Sodium p Potassium p	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .3 74 266 338 imit/base >20 >20 imit/base >10000	0 0 <1 <1 2 48 286 434 2256 current 2 0 1 current	0 0 2 53 373 470 3130 history1 <1 2 <1 2 <1 history1	0 0 0 0 52 372 422 2632 history2 <1 1 0 0 history2
Boron p Barium p Molybdenum p Manganese p Magnesium p Calcium p Calcium p Dhosphorus p Zinc p Sulfur p CONTAMINANTS Solium p Sodium p Cotassium p Potassium p FLUID CLEANLINE Particles >4μm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .3 0 74 266 338 imit/base >20 imit/base >20 imit/base >10000 >1300	0 0 <1 <1 2 48 286 434 2256 current 2 0 1 current 8651 ▲ 2583	0 0 0 <1 2 53 373 470 3130 history1 <1 2 <1 2 <1 history1 0 11343	0 0 0 0 52 372 422 2632 history2 <1 1 0 history2 9825
Boron particles >4µm particles parti	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	.1 .3 .3 0 74 266 338 338 <b>limit/base</b> >20 <b>limit/base</b> >20 <b>limit/base</b> >10000 >1300 >160	0 0 <1 <1 2 48 286 434 2256 current 2 0 1 current 8651 ▲ 2583 ▲ 313	0 0 0 <1 2 53 373 470 3130 history1 <1 2 <1 2 <1 2 <1 1 1343 ▲ 2726 118	0 0 0 0 52 372 422 2632 history2 <1 1 1 0 *1 9825 9825 2024 80
Boron particles >6µm particles >1µm particles >2µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647	.1 .3 .3 0 74 266 338 338 iimit/base >20 iimit/base >20 iimit/base >10000 >1300 >160 >40	0 0 <1 <1 2 48 286 434 2256 current 2 0 1 current 8651 8651 ▲ 2583 ▲ 313 ▲ 100	0 0 0 <1 2 53 373 470 3130 history1 <1 2 <1 2 <1 1 2 <1 1 11343 ▲ 2726 118 20	0 0 0 0 52 372 422 2632 history2 <1 1 0 history2 9825 9825 2024 80 16
Boron particles >34µm particles >38µm particle	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	.1 .3 .3 0 74 266 338 <b>limit/base</b> >20 <b>limit/base</b> >20 <b>limit/base</b> >10000 >1300 >160 >40	0 0 <1 <1 2 48 286 434 2256 current 2 0 1 current 8651 ▲ 2583 ▲ 313 ▲ 100 6	0 0 0 <1 2 53 373 470 3130 history1 <1 2 <1 2 <1 history1 ● 11343 ▲ 2726 118 20 1	0 0 0 0 52 372 422 2632 history2 <1 1 0 kistory2 9825 2024 80 16 2
Boron particles >6µm particles >1µm particles >2µm	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647	.1 .3 .3 0 74 266 338 <b>limit/base</b> >20 <b>limit/base</b> >20 <b>limit/base</b> >10000 >1300 >160 >40	0 0 <1 <1 2 48 286 434 2256 current 2 0 1 current 8651 8651 ▲ 2583 ▲ 313 ▲ 100	0 0 0 <1 2 53 373 470 3130 history1 <1 2 <1 2 <1 1 2 <1 1 11343 ▲ 2726 118 20	0 0 0 0 52 372 422 2632 history2 <1 1 0 history2 9825 9825 2024 80 16



# **OIL ANALYSIS REPORT**







Apr7/18 -

Apr12/14

Apr18/16

May10/21

/lar31/23

Abi

26

24

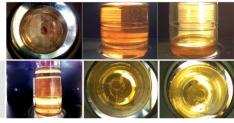
22

Apr17/11

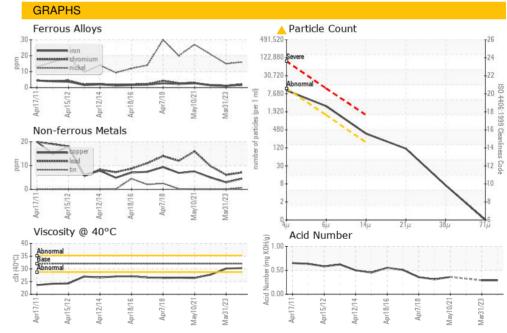
Apr15/12

FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.29	0.29	
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	30.3	30.1	27.7
SAMPLE IMAGES	;	method	limit/base	current	history1	history2

Color



Bottom



Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 AMTRAK Sample No. : WC0673293 1401 W STREET NE, HIGH SPEED RAIL 2ND FLOOR Received : 08 Apr 2024 Lab Number : 06141233 Tested : 09 Apr 2024 WASHINGTON, DC Unique Number : 10966041 Diagnosed : 10 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] 06141233 (Generated: 04/10/2024 17:40:29) Rev: 1

Contact/Location: MICHAEL PORTER - AMTRAK

Page 2 of 2