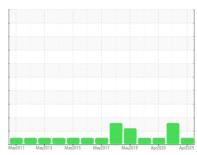


OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id
CC 3511
Component
Hydraulic System
Fluid

ESSO UNIVIS N 32 (55 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

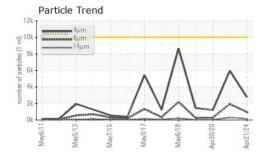
Fluid Condition

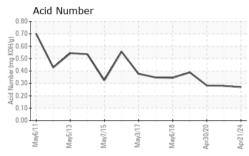
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

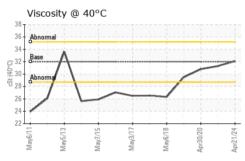
		May2011 N	Nay2013 May2015	May2017 May2018 Apr2020	Apr2024	
SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0798814	WC0560218	WC0417764
Sample Date		Client Info		21 Apr 2024	29 Apr 2023	30 Apr 2020
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	ABNORMAL	NORMAL
CONTAMINATIO	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	0	<1	<1
Chromium	ppm	ASTM D5185m	>10	0	2	3
Nickel	ppm	ASTM D5185m	>10	5	9	9
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	0	0	0
Lead	ppm	ASTM D5185m	>10	1	5	5
Copper	ppm	ASTM D5185m	>75	0	2	2
Tin	ppm	ASTM D5185m	>10	0	0	0
Antimony	ppm	ASTM D5185m				0
Vanadium	ppm	ASTM D5185m		0	0	0
.						
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES	ppm	ASTM D5185m method	limit/base	o current	0 history1	0 history2
	ppm		limit/base		-	
ADDITIVES Boron		method		current	history1	history2
ADDITIVES Boron Barium	ppm	method ASTM D5185m		current 0	history1	history2
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m	.1	current 0 0	history1 0 0	history2 0 0
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	.1	current 0 0 0	history1 0 0 0	history2 0 0 0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.3	current 0 0 0 0	history1 0 0 0 0	history2 0 0 0 0 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.3	current 0 0 0 0 0	history1 0 0 0 0 0	history2 0 0 0 0 <1
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	.1 .3 .0 74	Current 0 0 0 0 0 0 46	history1 0 0 0 0 0 <1 52	history2 0 0 0 0 <-1 0 50
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m	.1 .3 0 74 266	Current 0 0 0 0 0 0 46 319	history1 0 0 0 0	history2 0 0 0 0 <1 0 50 325
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	.1 .3 0 74 266	Current 0 0 0 0 0 46 319 422	history1 0 0 0 0 <1 52 336 458	history2 0 0 0 0 <1 0 50 325 412
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	.1 .3 0 74 266 338	Current 0 0 0 0 0 46 319 422 2191 current <1	history1 0 0 0 0 0 <1 52 336 458 2428 history1 2	history2 0 0 0 <1 0 50 325 412 2708
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	.1 .3 .0 .74 .266 .338	Current 0 0 0 0 0 46 319 422 2191 current	history1 0 0 0 0 <1 52 336 458 2428 history1	history2 0 0 0 0 <1 0 50 325 412 2708 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	.1 .3 .0 .74 .266 .338	Current 0 0 0 0 0 46 319 422 2191 current <1	history1 0 0 0 0 0 <1 52 336 458 2428 history1 2	history2 0 0 0 0 <1 0 50 325 412 2708 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	.1 .3 .0 .74 .266 .338	current 0 0 0 0 0 46 319 422 2191 current <1	history1 0 0 0 0 <1 52 336 458 2428 history1 2 0	history2 0 0 0 0 <1 0 50 325 412 2708 history2 2 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	.1 .3 0 74 266 338 limit/base >20 >20	current 0 0 0 0 0 46 319 422 2191 current <1 <1 0	history1 0 0 0 0 <1 52 336 458 2428 history1 2 0 <1	history2 0 0 0 0 <1 0 50 325 412 2708 history2 2 <1 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m method	.1 .3 .0 .74 .266 .338	current 0 0 0 0 0 46 319 422 2191 current <1 0 current	history1 0 0 0 0 <1 52 336 458 2428 history1 2 0 <1	history2 0 0 0 0 <1 0 50 325 412 2708 history2 2 <1 history2
ADDITIVES 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 ppm	method ASTM D5185m method ASTM D5185m	.1 .3 0 74 266 338 limit/base >20 limit/base >10000	current 0 0 0 0 0 46 319 422 2191 current <1 0 current	history1 0 0 0 0 <1 52 336 458 2428 history1 2 0 <1 history1 5958	history2 0 0 0 0 <1 0 50 325 412 2708 history2 2 <1 history2 1200
ADDITIVES 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 ppm	method 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 46 319 422 2191 current <1 0 current 2778 955	history1 0 0 0 0 <1 52 336 458 2428 history1 2 0 <1 history1 5958 1926	history2 0 0 0 0 <1 0 50 325 412 2708 history2 2 <1 history2 1200 277
ADDITIVES 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 ppm	method 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 46 319 422 2191 current <1 <1 0 current 2778 955 146	history1 0 0 0 0 <1 52 336 458 2428 history1 2 0 <1 history1 5958 1926 294	history2 0 0 0 0 <1 0 50 325 412 2708 history2 2 <1 <1 history2 1200 277 19
ADDITIVES 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 ppm	method ASTM D5185m method ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647	.1 .3 .0 .74 .266 .338	current 0 0 0 0 0 46 319 422 2191 current <1 <1 0 current 2778 955 146 55	history1 0 0 0 0 0 <1 52 336 458 2428 history1 2 0 <1 history1 5958 1926 294 105	history2 0 0 0 0 <1 0 50 325 412 2708 history2 2 <1 <1 history2 1200 277 19 6

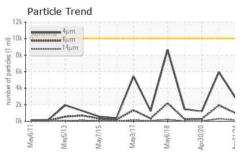


OIL ANALYSIS REPORT









FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.27	0.28	0.283
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	TES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	32.1	31.3	30.8
SAMPLE IMAGES		method	limit/hase	current	history1	history2

Color		
Bottom		

GRA	PHS												
	ous Alloy	/S						cle Co	unt				20
	iron chromiur	n			1		491,520 122,880 Severe						Z6 24
Anna and and and and and and and and and	nickel	and the same of	Statement of the Party of the P	White Spinster, or other Persons in column 2 is not to the Persons in colu			30,720	000000					-22
0 11/9	May5/13 -	- 51/1	3/17	May6/18 +	0/20	Apr21/24	Abnorma 7,680	· .					+20 4406:1999 Cleanliness
May6/1	May	May7/15	May3/17	May	Apr30/20	Apr2	1,920		**				-18 5
Non-	ferrous	Metal	S				480-						16 CE
20	copper			THE REAL PROPERTY.	1		7,680 1,920 480 120			\			-14 lines
101	••••• lead	1	S. S		1		30-			1	\		-12 G
0	V				1		8-				1		-10
May6/11.	May5/13 .	May7/15	May3/17.	May6/18	Apr30/20	Apr21/24	2-					/	-8
Ma	Ma	Ma	Ma	ĭg.	Apr	Apri	0,	6µ	14μ	21μ	38		716
	osity @ 4	10°C					_。 Acid	Numb		Liμ	30	μ	rıμ
Abnom Base	mal						Acid Number (mg KOH/g) 0.00 0.50 0.50 0.00 11/9						
35 - Base 30 - Abnor	na			***************************************			E 0.50	-	\ /				
25-						-	N on		~			$\overline{}$	
May6/11	May5/13	May7/15	May3/17-	May6/18	Apr30/20	Apr21/24	Acid	May5/13 -	May7/15	May3/17	May6/18	Apr30/20	Apr21/24
Мау	Мау	Мау	Мау	Мау	Apr3	Apr2	May	May	May	Мау	Мау	Apr3	Apr2





Certificate 12367

Laboratory

Sample No. : WC0798814 Lab Number : 06159024

Unique Number : 10994447 Test Package : MOB 2

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 24 Apr 2024

Tested : 25 Apr 2024 : 25 Apr 2024 - Wes Davis Diagnosed

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