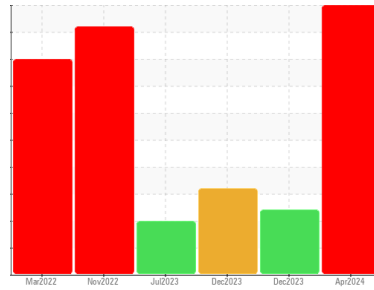




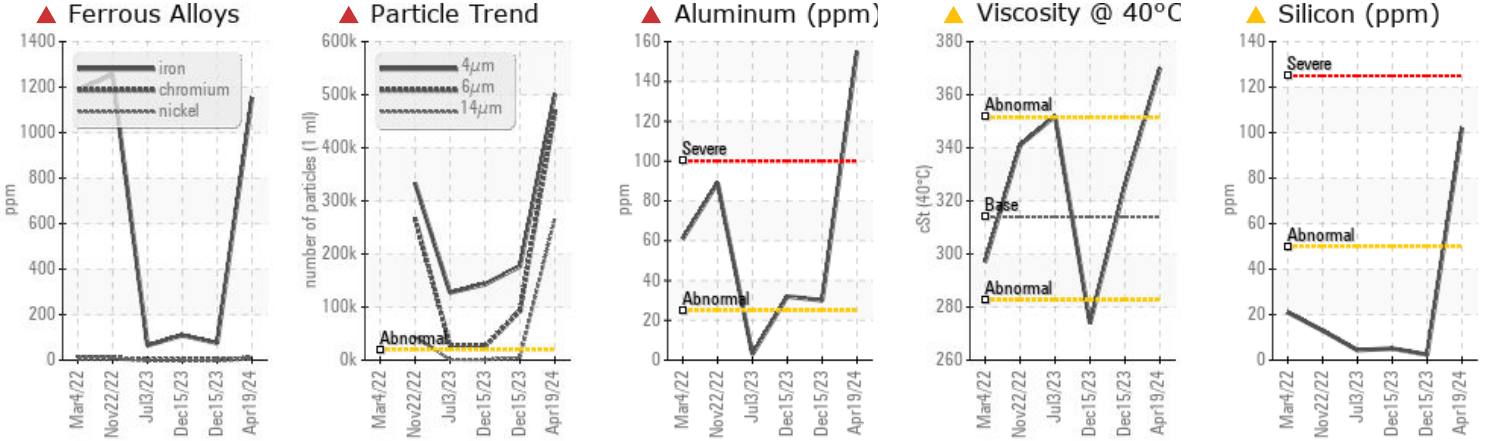
# PROBLEM SUMMARY

Sample Rating Trend



Area  
**CAST HOUSE/CRANES**  
 Machine Id  
**91 WEST BRIDGE GEARBOX 1015-M91-3000**  
 Component  
**Gearbox**  
 Fluid  
**CITGO COMPOUND EP 320 (15 GAL)**

## COMPONENT CONDITION SUMMARY



## RECOMMENDATION

The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

## PROBLEMATIC TEST RESULTS

Sample Status				SEVERE	ABNORMAL	ABNORMAL
Iron	ppm	ASTM D5185m	>200	▲ 1154	109	75
Aluminum	ppm	ASTM D5185m	>25	▲ 155	▲ 32	▲ 30
Silicon	ppm	ASTM D5185m	>50	▲ 102	5	2
Particles >4µm		ASTM D7647	>20000	▲ 501179	▲ 142937	▲ 176829
Particles >6µm		ASTM D7647	>5000	▲ 466273	▲ 25675	▲ 92597
Particles >14µm		ASTM D7647	>640	▲ 267458	▲ 728	▲ 3926
Particles >21µm		ASTM D7647	>160	▲ 118938	140	▲ 602
Particles >38µm		ASTM D7647	>40	▲ 278	2	2
Oil Cleanliness		ISO 4406 (c)	>21/19/16	▲ 26/26/25	▲ 24/22/17	▲ 25/24/19
Visc @ 40°C	cSt	ASTM D445	314	▲ 370	326	▲ 274

Customer Id: CONMUSAL  
 Sample No.: KFS0004611  
 Lab Number: 06179321  
 Test Package: IND 2



To manage this report scan the QR code







To discuss the diagnosis or test data:  
 Angela Borella +1 800-237-1369  
[angela.borella@wearcheckusa.com](mailto:angela.borella@wearcheckusa.com)

To change component or sample information:  
 Customer Service +1 1-800-237-1369  
[customerservice@wearcheck.com](mailto:customerservice@wearcheck.com)

## RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Inspect Wear Source	---	---	?	We advise that you inspect for the source(s) of wear.
Change Fluid	---	---	?	We recommend that you drain the oil from the component if this has not already been done.
Resample	---	---	?	We recommend an early resample to monitor this condition.
Check Breathers	---	---	?	The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather.

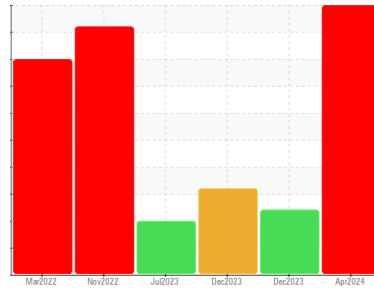
## HISTORICAL DIAGNOSIS

<p><b>WEAR</b></p> 	<p><b>15 Dec 2023 Diag: Jonathan Hester</b>                      We recommend you service the filters on this component. Resample at the next service interval to monitor. The aluminum level is abnormal. All other component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.</p>	<p>view report</p> 
<p><b>WEAR</b></p> 	<p><b>15 Dec 2023 Diag: Jonathan Hester</b>                      We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor. The aluminum level is abnormal. All other component wear rates are normal. There is a high amount of particulates present in the oil. The oil viscosity is lower than normal. The AN level is acceptable for this fluid.</p>	<p>view report</p> 
<p><b>ISO</b></p> 	<p><b>03 Jul 2023 Diag: Jonathan Hester</b>                      We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor. All component wear rates are normal. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.</p>	<p>view report</p> 



# OIL ANALYSIS REPORT

Sample Rating Trend



WEAR



Area  
**CAST HOUSE/CRANES**  
 Machine Id  
**91 WEST BRIDGE GEARBOX 1015-M91-3000**  
 Component  
**Gearbox**  
 Fluid  
**CITGO COMPOUND EP 320 (15 GAL)**

## DIAGNOSIS

### ▲ Recommendation

The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend that you drain the oil from the component if this has not already been done. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition.

### ▲ Wear

Gear wear is indicated.

### ▲ Contamination

There is a high amount of particulates present in the oil. Elemental level of silicon (Si) above normal indicating ingress of seal material.

### ▲ Fluid Condition

The oil viscosity is higher than normal. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>KFS0004611</b>	KFS0004915	KFS0004919
Sample Date	Client Info		<b>19 Apr 2024</b>	15 Dec 2023	15 Dec 2023
Machine Age	hrs	Client Info	<b>0</b>	0	0
Oil Age	hrs	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>SEVERE</b>	ABNORMAL	ABNORMAL

## CONTAMINATION

	method	limit/base	current	history1	history2
Water	WC Method	>0.2	<b>NEG</b>	NEG	NEG

## WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>200	<b>▲ 1154</b>	109	75
Chromium	ppm	ASTM D5185m	>15	<b>9</b>	<1	<1
Nickel	ppm	ASTM D5185m	>15	<b>8</b>	0	0
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>25	<b>▲ 155</b>	▲ 32	▲ 30
Lead	ppm	ASTM D5185m	>100	<b>&lt;1</b>	0	0
Copper	ppm	ASTM D5185m	>200	<b>6</b>	5	2
Tin	ppm	ASTM D5185m	>25	<b>&lt;1</b>	0	0
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Cadmium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<b>8</b>	8	4
Barium	ppm	ASTM D5185m		<b>2</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>5</b>	0	<1
Manganese	ppm	ASTM D5185m		<b>15</b>	1	1
Magnesium	ppm	ASTM D5185m		<b>12</b>	0	2
Calcium	ppm	ASTM D5185m		<b>125</b>	21	8
Phosphorus	ppm	ASTM D5185m		<b>370</b>	307	324
Zinc	ppm	ASTM D5185m		<b>215</b>	120	70
Sulfur	ppm	ASTM D5185m		<b>8241</b>	4986	7482

## CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	<b>▲ 102</b>	5	2
Sodium	ppm	ASTM D5185m		<b>6</b>	4	0
Potassium	ppm	ASTM D5185m	>20	<b>4</b>	2	<1

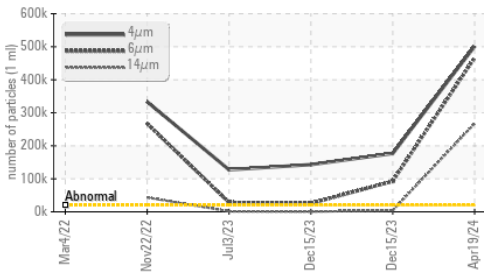
## FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	<b>▲ 501179</b>	▲ 142937	▲ 176829
Particles >6µm	ASTM D7647	>5000	<b>▲ 466273</b>	▲ 25675	▲ 92597
Particles >14µm	ASTM D7647	>640	<b>▲ 267458</b>	▲ 728	▲ 3926
Particles >21µm	ASTM D7647	>160	<b>▲ 118938</b>	140	▲ 602
Particles >38µm	ASTM D7647	>40	<b>▲ 278</b>	2	2
Particles >71µm	ASTM D7647	>10	<b>2</b>	0	0
Oil Cleanliness	ISO 4406 (c)	>21/19/16	<b>▲ 26/26/25</b>	▲ 24/22/17	▲ 25/24/19

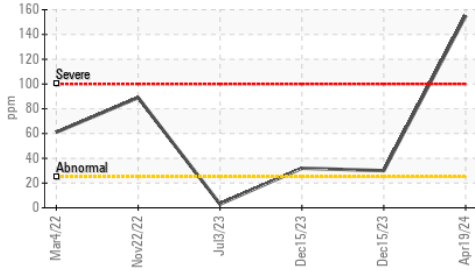
## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	<b>0.64</b>	1.24	0.58

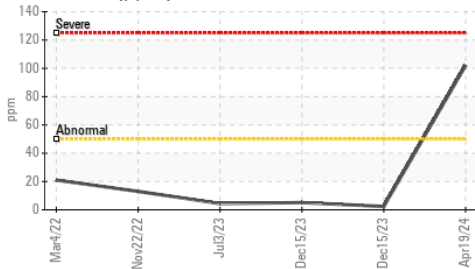
### ▲ Particle Trend



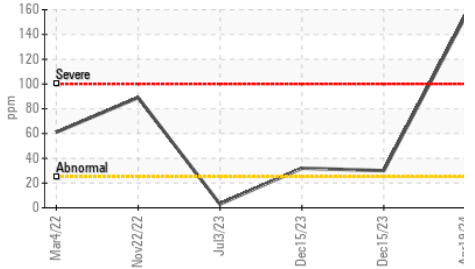
### ▲ Aluminum (ppm)



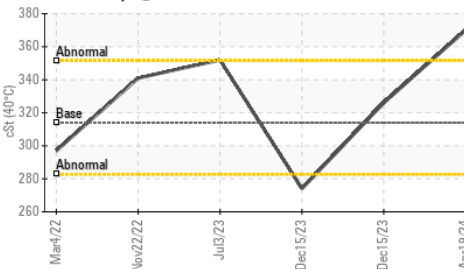
### ▲ Silicon (ppm)



### ▲ Aluminum (ppm)



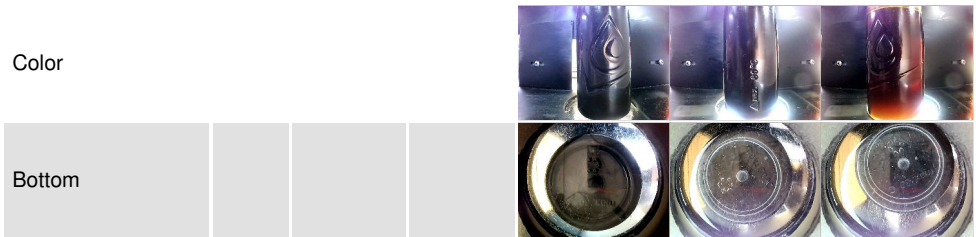
### ▲ Viscosity @ 40°C



VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

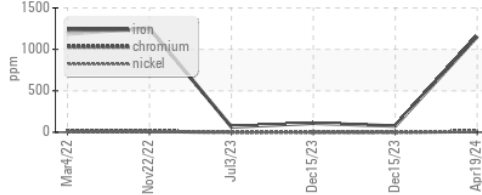
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445 314	▲ 370	326	▲ 274

SAMPLE IMAGES	method	limit/base	current	history1	history2
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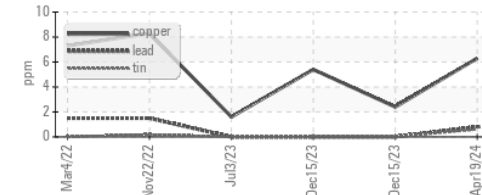


### GRAPHS

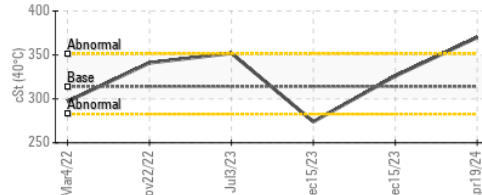
#### ▲ Ferrous Alloys



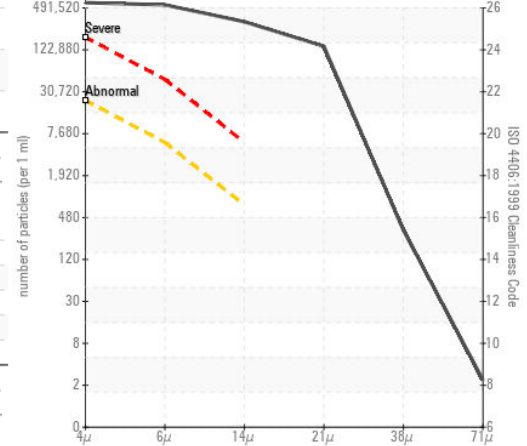
#### Non-ferrous Metals



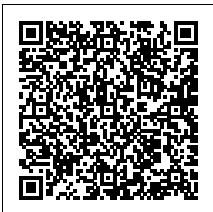
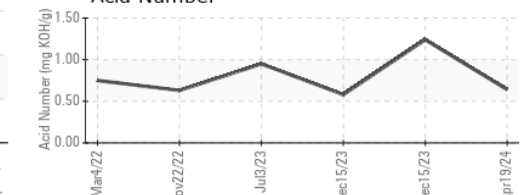
#### ▲ Viscosity @ 40°C



#### ▲ Particle Count



#### Acid Number



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : KFS0004611 **Received** : 14 May 2024  
**Lab Number** : 06179321 **Tested** : 16 May 2024  
**Unique Number** : 11030647 **Diagnosed** : 16 May 2024 - Angela Borella  
**Test Package** : IND 2 ( Additional Tests: PrtCount )

**CONSTELLIUM**  
 4805 SECOND STREET  
 MUSCLE SHOALS, AL  
 US 35661  
 Contact: Randy Nichols  
 randall.nichols@constellium.com  
 T: (256)386-6956  
 F:

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)