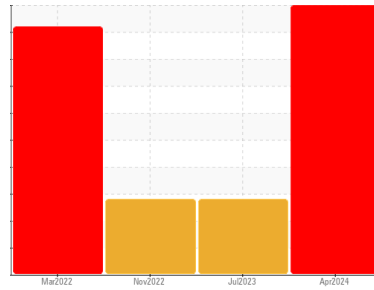




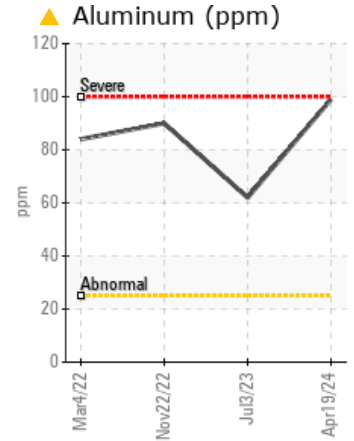
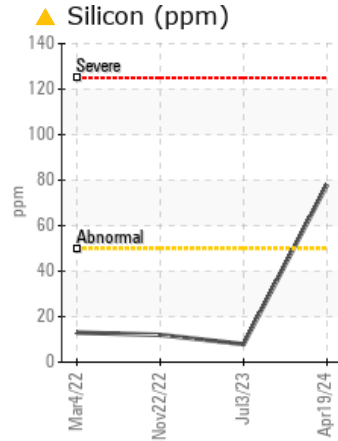
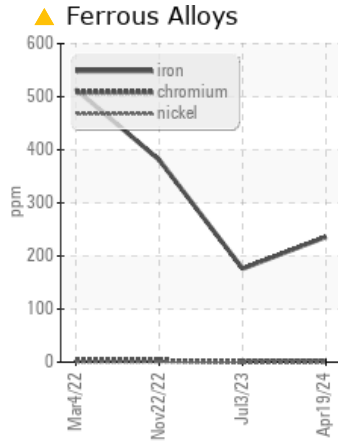
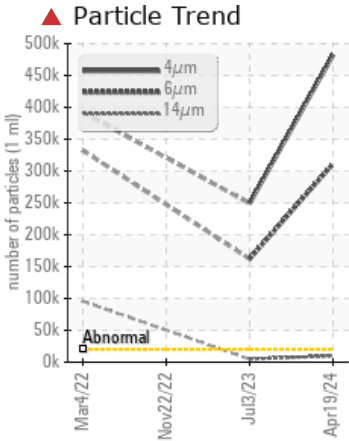
# PROBLEM SUMMARY

Area  
**CAST HOUSE/CRANES**  
 Machine Id  
**91 CENTER BRIDGE GEARBOX 1015-M91-2000**  
 Component  
**Gearbox**  
 Fluid  
**CITGO COMPOUND EP 320 (15 GAL)**

Sample Rating Trend



## COMPONENT CONDITION SUMMARY



## RECOMMENDATION

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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 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	▲ 236	176	▲ 381
Aluminum	ppm	ASTM D5185m	>25	▲ 99	▲ 62	▲ 90
Silicon	ppm	ASTM D5185m	>50	▲ 78	8	12
Particles >4µm		ASTM D7647	>20000	▲ 482262	▲ 249291	---
Particles >6µm		ASTM D7647	>5000	▲ 311365	▲ 162206	---
Particles >14µm		ASTM D7647	>640	▲ 9912	▲ 4776	---
Particles >21µm		ASTM D7647	>160	▲ 1442	▲ 606	---
Oil Cleanliness		ISO 4406 (c)	>21/19/16	▲ 26/25/20	▲ 25/25/19	---

Customer Id: CONMUSAL  
 Sample No.: KFS0004633  
 Lab Number: 06179320  
 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 Filter	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.
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.
Filter Fluid	---	---	?	We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid.

## HISTORICAL DIAGNOSIS

### WEAR



#### 03 Jul 2023 Diag: Jonathan Hester

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor. The aluminum level is abnormal. 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.

[view report](#)



### VISUAL METAL



#### 22 Nov 2022 Diag: Don Baldrige

We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. We were unable to perform a particle count due to metal particles present in this sample. Moderate concentration of visible metal present. Gear wear is indicated. No other contaminants were detected in the oil. The AN level is acceptable for this fluid.

[view report](#)



### WEAR



#### 04 Mar 2022 Diag: Doug Bogart

We recommend you service the filters on this component if applicable. We advise that you inspect for the source(s) of wear. We recommend an early resample to monitor this condition. Please specify the brand, type, and viscosity of the oil on your next sample. Gear wear is indicated. There is a high amount of particulates present in the oil. The AN level is acceptable for this fluid.

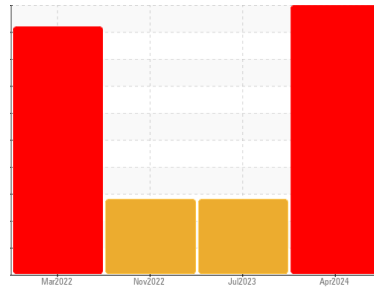
[view report](#)





# OIL ANALYSIS REPORT

Sample Rating Trend



ISO



Area

## CAST HOUSE/CRANES

### 91 CENTER BRIDGE GEARBOX 1015-M91-2000

Machine Id

Component

Gearbox

Fluid

CITGO COMPOUND EP 320 (15 GAL)

#### DIAGNOSIS

##### ▲ Recommendation

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. 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 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 AN level is acceptable for this fluid.

#### SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>KFS0004633</b>	KFS0003318	KFS0002526
Sample Date	Client Info		<b>19 Apr 2024</b>	03 Jul 2023	22 Nov 2022
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>236</b>	176	▲ 381
Chromium	ppm	ASTM D5185m	>15	<b>2</b>	<1	3
Nickel	ppm	ASTM D5185m	>15	<b>&lt;1</b>	0	<1
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
Silver	ppm	ASTM D5185m		<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>25	▲ <b>99</b>	▲ 62	▲ 90
Lead	ppm	ASTM D5185m	>100	<b>0</b>	0	0
Copper	ppm	ASTM D5185m	>200	<b>1</b>	1	2
Tin	ppm	ASTM D5185m	>25	<b>&lt;1</b>	0	0
Antimony	ppm	ASTM D5185m	>5	<b>---</b>	---	---
Vanadium	ppm	ASTM D5185m		<b>0</b>	<1	0
Cadmium	ppm	ASTM D5185m		<b>0</b>	0	0

#### ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		<b>7</b>	7	10
Barium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
Molybdenum	ppm	ASTM D5185m		<b>3</b>	2	2
Manganese	ppm	ASTM D5185m		<b>5</b>	4	7
Magnesium	ppm	ASTM D5185m		<b>6</b>	2	4
Calcium	ppm	ASTM D5185m		<b>52</b>	32	88
Phosphorus	ppm	ASTM D5185m		<b>212</b>	233	273
Zinc	ppm	ASTM D5185m		<b>40</b>	27	26
Sulfur	ppm	ASTM D5185m		<b>7791</b>	7569	7007

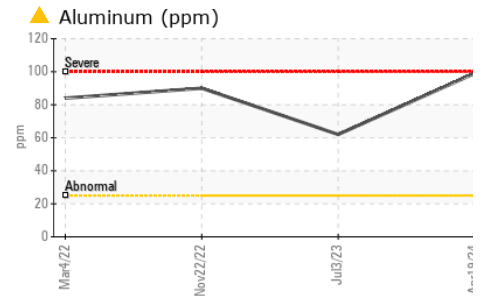
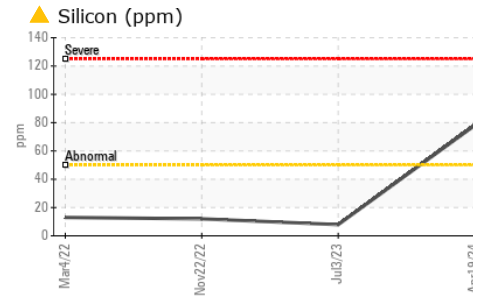
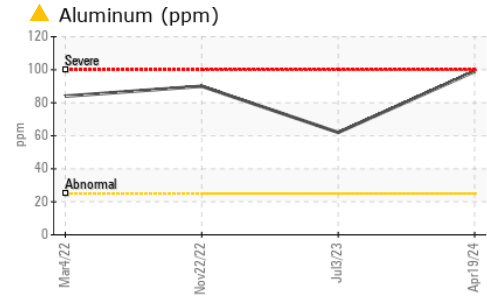
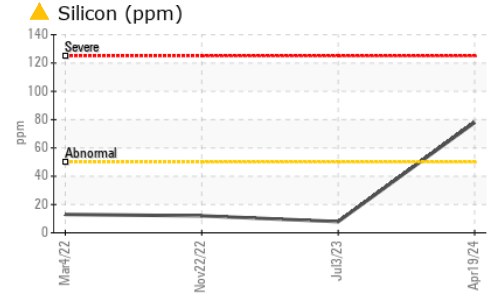
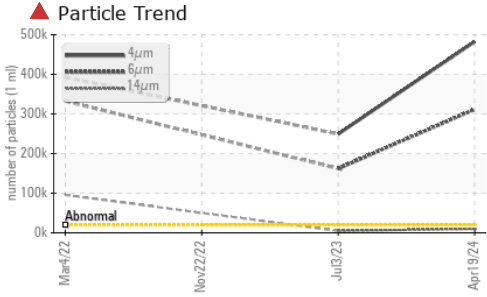
#### CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>50	▲ <b>78</b>	8	12
Sodium	ppm	ASTM D5185m		<b>&lt;1</b>	0	<1
Potassium	ppm	ASTM D5185m	>20	<b>2</b>	0	0

#### FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>20000	▲ <b>482262</b>	▲ 249291	---
Particles >6µm	ASTM D7647	>5000	▲ <b>311365</b>	▲ 162206	---
Particles >14µm	ASTM D7647	>640	▲ <b>9912</b>	▲ 4776	---
Particles >21µm	ASTM D7647	>160	▲ <b>1442</b>	▲ 606	---
Particles >38µm	ASTM D7647	>40	<b>28</b>	7	---
Particles >71µm	ASTM D7647	>10	<b>1</b>	0	---
Oil Cleanliness	ISO 4406 (c)	>21/19/16	▲ <b>26/25/20</b>	▲ 25/25/19	---

# OIL ANALYSIS REPORT

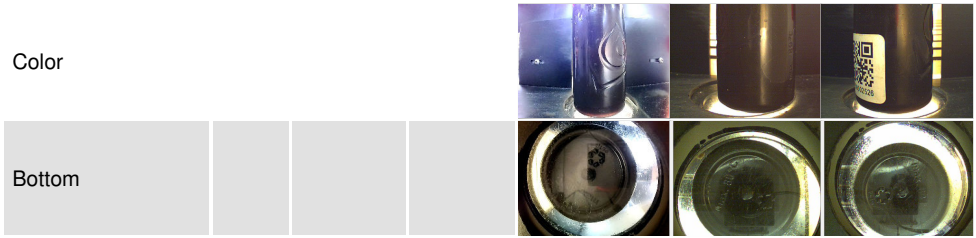


FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		<b>0.70</b>	0.75	0.71

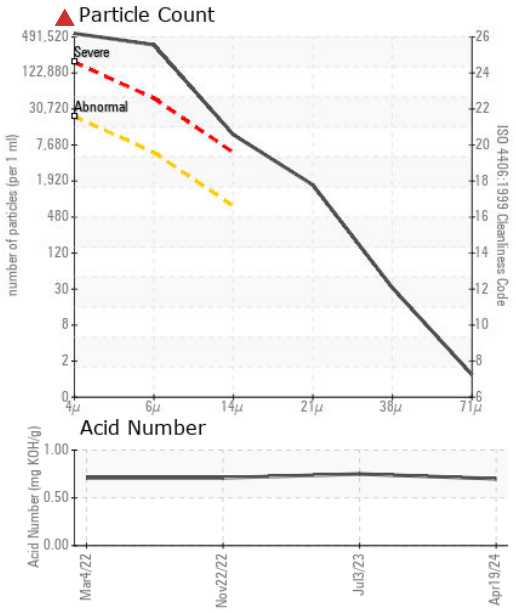
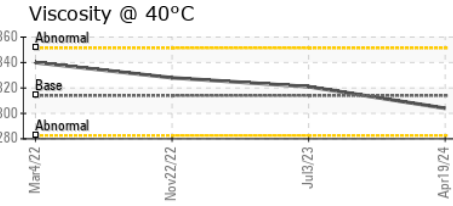
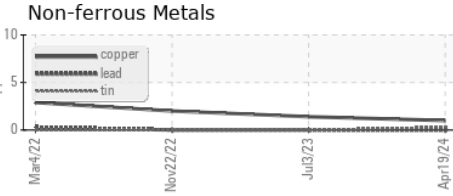
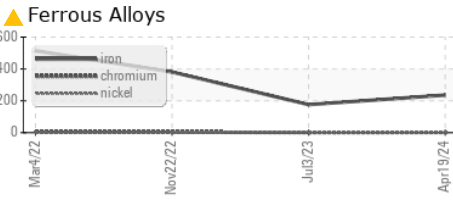
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	▲ MODER
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Precipitate	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>LIGHT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

FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	314	<b>304</b>	321	328

SAMPLE IMAGES		method	limit/base	current	history1	history2
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## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : KFS0004633      **Received** : 14 May 2024  
**Lab Number** : 06179320      **Tested** : 15 May 2024  
**Unique Number** : 11030646      **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

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)