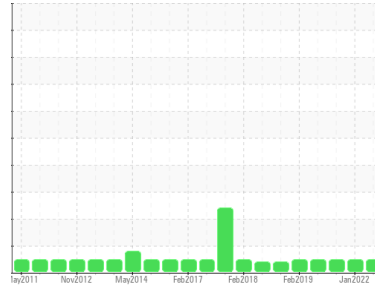




# OIL ANALYSIS REPORT

Sample Rating Trend



**NORMAL**



Machine Id  
**ALSTOM R036**  
 Component  
**Gearbox**  
 Fluid  
**TOTAL CARTER SH 220 (3 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 oil.

### Fluid Condition

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

## SAMPLE INFORMATION

|               | method      | limit/base  | current            | history1    | history2    |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info |             | <b>WC0798699</b>   | WC0571693   | WC0456968   |
| Sample Date   | Client Info |             | <b>12 May 2024</b> | 28 Jan 2022 | 04 Jun 2020 |
| 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>Not Changed</b> | N/A         | N/A         |
| Sample Status |             |             | <b>NORMAL</b>      | NORMAL      | NORMAL      |

## 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>152</b>   | 78       | 110      |
| Chromium | ppm    | ASTM D5185m >10  | <b>&lt;1</b> | <1       | <1       |
| Nickel   | ppm    | ASTM D5185m >10  | <b>1</b>     | 0        | <1       |
| Titanium | ppm    | ASTM D5185m      | <b>&lt;1</b> | <1       | <1       |
| Silver   | ppm    | ASTM D5185m      | <b>0</b>     | 2        | 0        |
| Aluminum | ppm    | ASTM D5185m >25  | <b>3</b>     | 4        | 2        |
| Lead     | ppm    | ASTM D5185m >50  | <b>3</b>     | 6        | 3        |
| Copper   | ppm    | ASTM D5185m >200 | <b>31</b>    | 56       | 37       |
| Tin      | ppm    | ASTM D5185m >10  | <b>&lt;1</b> | <1       | <1       |
| Antimony | ppm    | ASTM D5185m >5   | <b>---</b>   | 0        | 0        |
| Vanadium | ppm    | ASTM D5185m      | <b>0</b>     | 0        | 0        |
| Cadmium  | ppm    | ASTM D5185m      | <b>0</b>     | <1       | 0        |

## ADDITIVES

|            | method | limit/base  | current      | history1 | history2 |
|------------|--------|-------------|--------------|----------|----------|
| Boron      | ppm    | ASTM D5185m | <b>1</b>     | 12       | 2        |
| Barium     | ppm    | ASTM D5185m | <b>&lt;1</b> | 0        | <1       |
| Molybdenum | ppm    | ASTM D5185m | <b>0</b>     | <1       | 1        |
| Manganese  | ppm    | ASTM D5185m | <b>2</b>     | 1        | 1        |
| Magnesium  | ppm    | ASTM D5185m | <b>3</b>     | 1        | <1       |
| Calcium    | ppm    | ASTM D5185m | <b>9</b>     | 18       | 10       |
| Phosphorus | ppm    | ASTM D5185m | <b>356</b>   | 377      | 305      |
| Zinc       | ppm    | ASTM D5185m | <b>87</b>    | 100      | 64       |
| Sulfur     | ppm    | ASTM D5185m | <b>4422</b>  | 3720     | 3157     |

## CONTAMINANTS

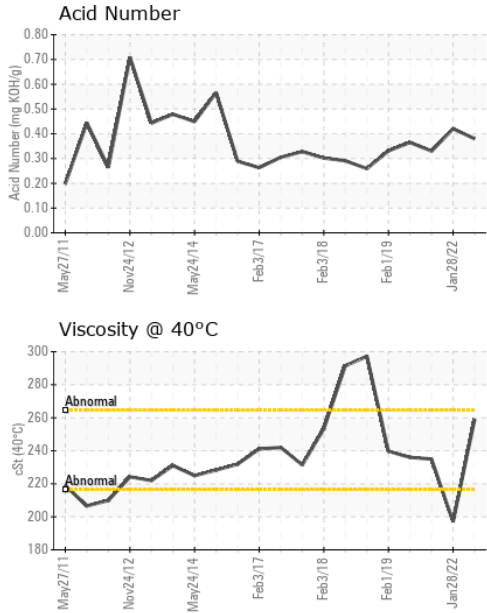
|           | method | limit/base      | current   | history1 | history2 |
|-----------|--------|-----------------|-----------|----------|----------|
| Silicon   | ppm    | ASTM D5185m >50 | <b>21</b> | 20       | 13       |
| Sodium    | ppm    | ASTM D5185m     | <b>35</b> | 65       | 49       |
| Potassium | ppm    | ASTM D5185m >20 | <b>3</b>  | <1       | <1       |

## FLUID DEGRADATION

|                  | method   | limit/base | current     | history1 | history2 |
|------------------|----------|------------|-------------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | <b>0.38</b> | 0.42     | 0.330    |



# OIL ANALYSIS REPORT

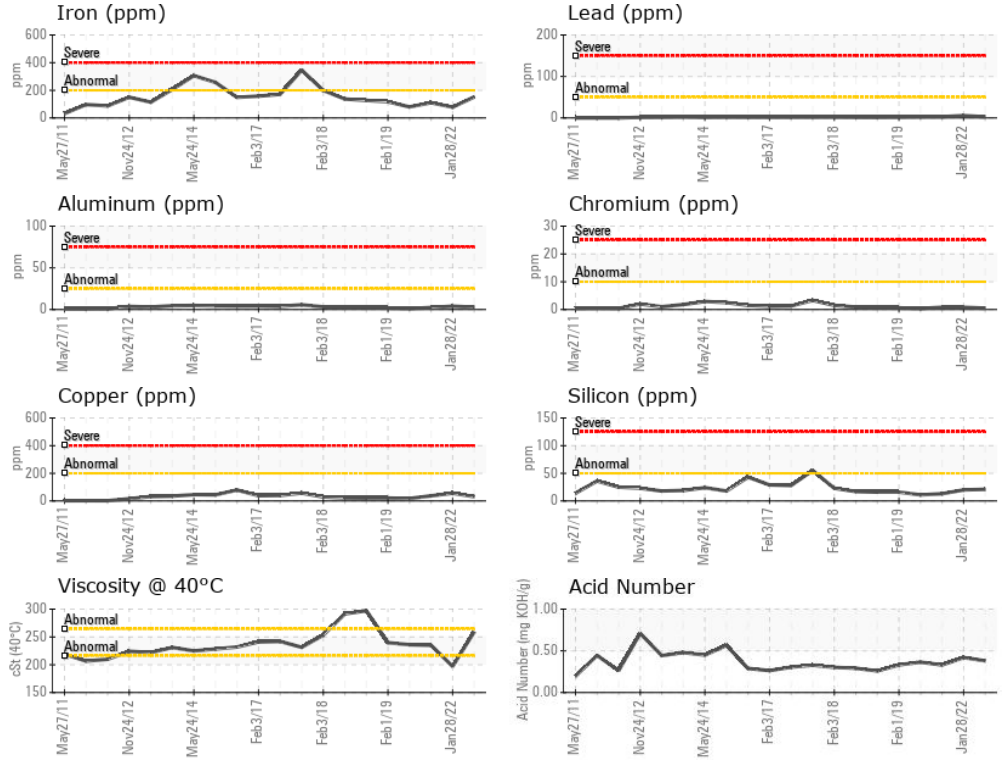


| VISUAL           | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual    | NONE    | LIGHT    | VLITE    |
| Yellow Metal     | scalar | *Visual    | NONE    | NONE     | NONE     |
| 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  | 259     | 197      | 235      |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---------------|--------|------------|---------|----------|----------|
| Color         |        |            |         | no image | no image |
| Bottom        |        |            |         | no image | no image |

## GRAPHS



**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : WC0798699      **Received** : 14 May 2024  
**Lab Number** : 06179486      **Tested** : 15 May 2024  
**Unique Number** : 11030812      **Diagnosed** : 15 May 2024 - Wes Davis  
**Test Package** : MOB 2

**AMTRAK**  
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 WASHINGTON, DC  
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 Contact: MICHAEL PORTER  
 michael.porter@amtrak.com  
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 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)