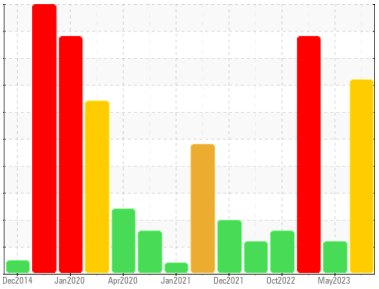
# PROBLEM SUMMARY

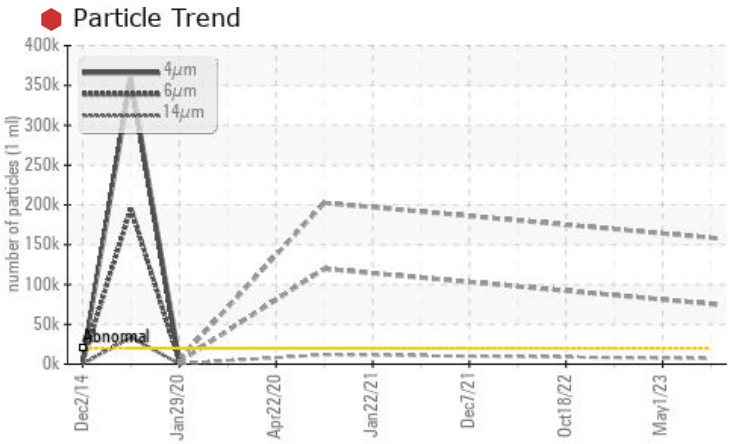
Sample Rating Trend




ISO

Machine Id
## BT-FOR-A7 (S/N TANK FT7 AGITATOR)
Component
**Gearbox**
Fluid
**SHELL OMALA S2 GX 220 (--- GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

Filter oil if possible using B6=75 filter media or better. If filtration is not possible consider changing oil. No other action required at this time. Resample at next normal interval.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | SEVERE | ATTENTION | SEVERE |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | **158644** | --- | --- |
| Particles >6µm | | ASTM D7647 | >5000 | **75548** | --- | --- |
| Particles >14µm | | ASTM D7647 | >640 | **6914** | --- | --- |
| Particles >21µm | | ASTM D7647 | >160 | **1363** | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | **24/23/20** | --- | --- |

**Customer Id:** MOMBAY
**Sample No.:** PLS0000562
**Lab Number:** 05925995
**Test Package:** PLANT

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Mike Johnson +1 (615)771-6030
mike.johnson@amrri.com

*To change component or sample information:*
Customer Service +1 1-800-237-1369
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

*There are no recommended actions for this sample.*

## HISTORICAL DIAGNOSIS

**01 May 2023 Diag: Mike Johnson**

VISUAL METAL

Ferrous wear rate has returned to the typical trend. The is sufficient visual evidence (above 40 micron particles) that a particle count could not be performed. If this unit is being sampled from a drain line RESAMPLE and be sure to flush the drain line before collecting the sample. The unit should be filtered using B6=75 quality filter media to remove particulate and wear debris.Fe wear rate is within the typical historical range for this drive. Fe wear rates are always higer with drives given their operating contact modes, but filtration helps to control the wear rate. Particle count could not be provided due to the debris in the oil. Filtration is strongly recommended. Fluid health properties suggest oil is acceptable for continued use.

view report

**26 Jan 2023 Diag: Mike Johnson**

WEAR

Investigate machine for signs of wear using predictive maintenance technologies such as vibration and thermal trending. Consider filtering oil using B6=75 filter or better. If oil cannot be filtered, consider flushing and changing oil.Iron wear particles are substantially elevated from previous samples. This can indicate accelerated wear. Visible contamination was present in the sample. Fluid health is acceptable for continued use provided that contamination can be brought under control.

view report

**18 Oct 2022 Diag: Mike Johnson**

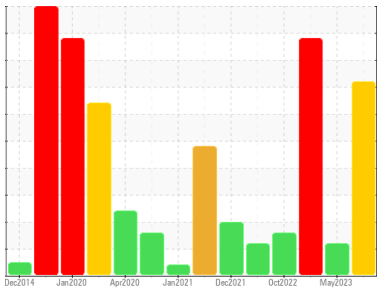
VISUAL METAL

Oil cleanliness tests were not conducted due to visible particulate in the sample. Filter oil if possible and resample oil. Investigate possible sources of contamination.Wear particles are low and steady. Oil cleanliness tests were not conducted due to visible particulate in the sample. Fluid health is acceptable for continued use provided that contamination is brought under control.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend




ISO

Machine Id
## BT-FOR-A7 (S/N TANK FT7 AGITATOR)
Component
**Gearbox**
Fluid
**SHELL OMALA S2 GX 220 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Filter oil if possible using B6=75 filter media or better. If filtration is not possible consider changing oil. No other action required at this time. Resample at next normal interval.

**Wear**
Wear particles are steady.

**Contamination**
Particle contamination is highly elevated. Filtration can help extend machine life.

**Fluid Condition**
Fluid health is acceptable for continued use provided that contamination can be brought under control.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PLS0000562** | PLS0000707 | PLS0000632 |
| Sample Date | | Client Info | | **09 Aug 2023** | 01 May 2023 | 26 Jan 2023 |
| Machine Age | mths | Client Info | | **0** | 0 | 3 |
| Oil Age | mths | Client Info | | **0** | 3 | 0 |
| Oil Changed | | Client Info | | **N/A** | Changed | N/A |
| Sample Status | | | | **SEVERE** | ATTENTION | SEVERE |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184 | | **44** | 79 | 95 |
| Iron | ppm | ASTM D5185m | >200 | **48** | 53 | 154 |
| Chromium | ppm | ASTM D5185m | >15 | **0** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >15 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **0** | <1 | 0 |
| Lead | ppm | ASTM D5185m | >100 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >200 | **<1** | 0 | <1 |
| Tin | ppm | ASTM D5185m | >25 | **0** | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 6.2 | **0** | 0 | 0 |
| Barium | ppm | ASTM D5185m | 0.0 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 0 | **<1** | <1 | <1 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | 1 |
| Magnesium | ppm | ASTM D5185m | 0 | **4** | 0 | 2 |
| Calcium | ppm | ASTM D5185m | 0.0 | **5** | <1 | 4 |
| Phosphorus | ppm | ASTM D5185m | 290 | **273** | 306 | 297 |
| Zinc | ppm | ASTM D5185m | 3.8 | **14** | 0 | 12 |
| Sulfur | ppm | ASTM D5185m | 8167 | **10188** | 13424 | 9198 |

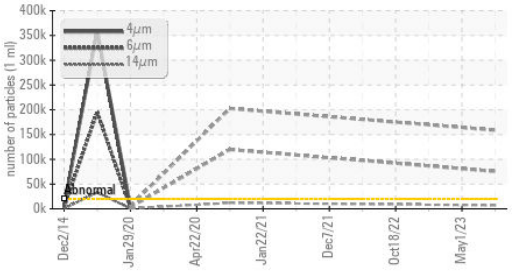
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >50 | **2** | 1 | <1 |
| Sodium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | <1 | 1 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | | **0** | 0 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | | **2.9** | 2.9 | 3.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | | **11.8** | 12.4 | 12.3 |

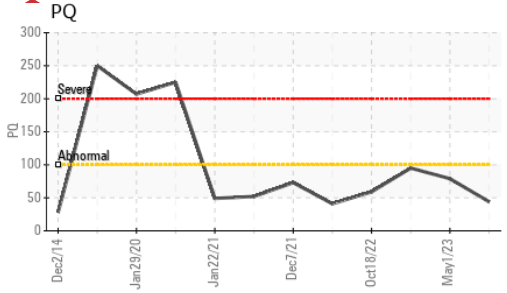
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | **158644** | --- | --- |
| Particles >6µm | | ASTM D7647 | >5000 | **75548** | --- | --- |
| Particles >14µm | | ASTM D7647 | >640 | **6914** | --- | --- |
| Particles >21µm | | ASTM D7647 | >160 | **1363** | --- | --- |
| Particles >38µm | | ASTM D7647 | >40 | **23** | --- | --- |
| Particles >71µm | | ASTM D7647 | >10 | **0** | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | **24/23/20** | --- | --- |

# OIL ANALYSIS REPORT

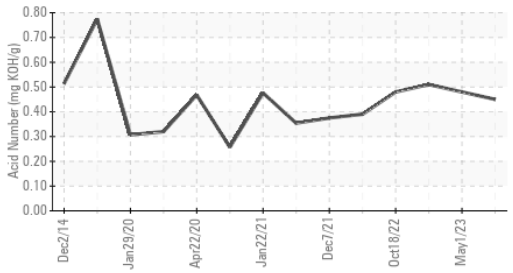
Particle Trend



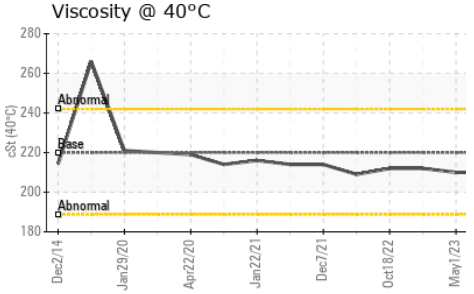

PQ



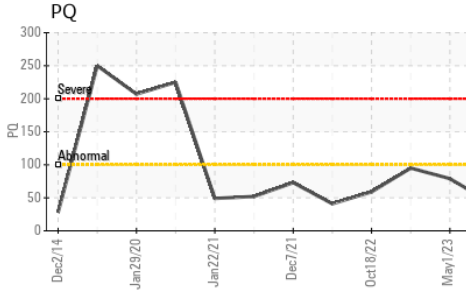

Acid Number




Viscosity @ 40°C




PQ

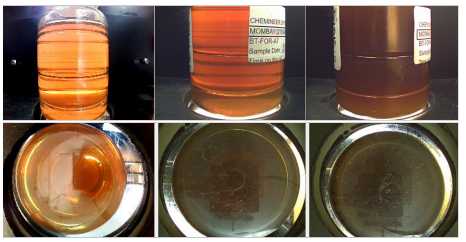



| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | | **2.8** | 3.0 | 2.9 |
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **0.45** | 0.48 | 0.51 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | ▲ HEAVY | ▲ MODER |
| 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 | ⬢ MODER |
| 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 | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

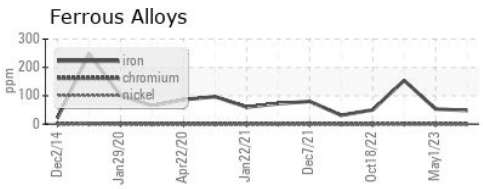
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 220 | **210** | 210 | 212 |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |

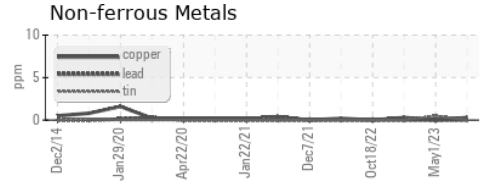


## GRAPHS

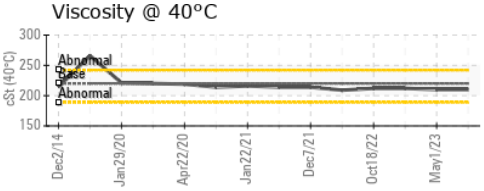
Ferrous Alloys



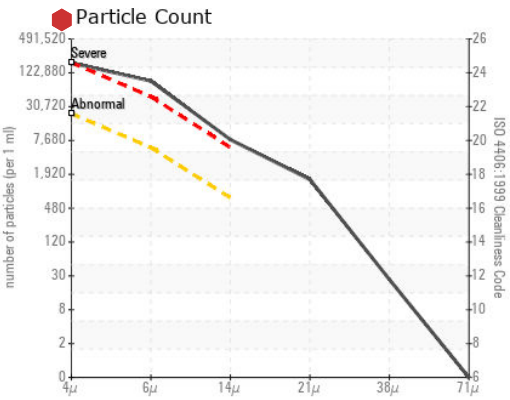

Non-ferrous Metals



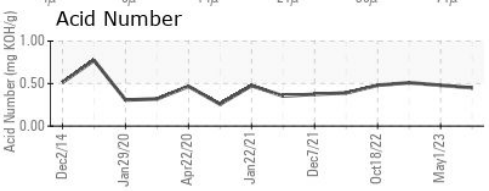

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PLS0000562 **Received** : 16 Aug 2023
**Lab Number** : 05925995 **Diagnosed** : 23 Aug 2023
**Unique Number** : 10605942 **Diagnostician** : Mike Johnson
**Test Package** : PLANT ( Additional Tests: FT-IR, PrtCount )

*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)*

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