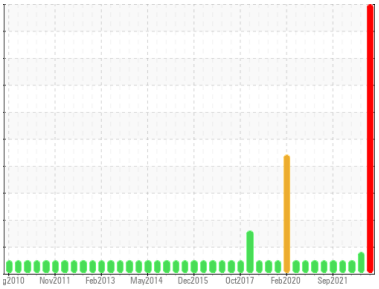
# PROBLEM SUMMARY

Sample Rating Trend

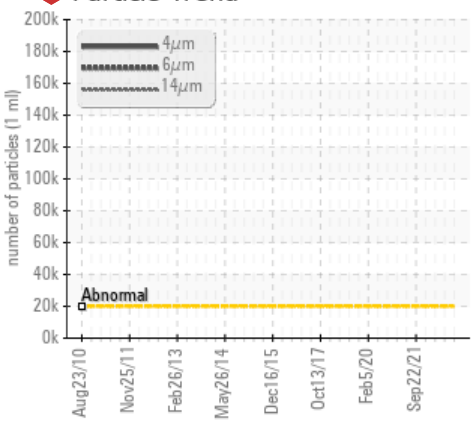


WEAR

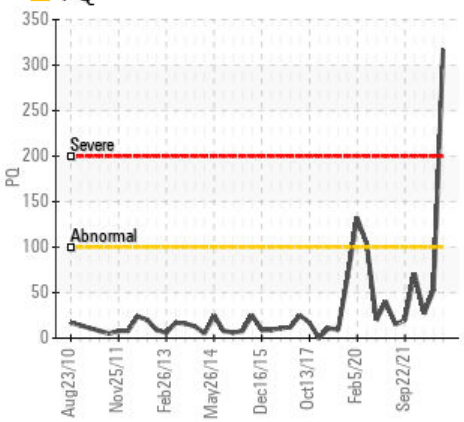
Area
**Banbury 2**
Machine Id
**BB02 C Roll Drive**
Component
**Gearbox**
Fluid
**SHELL OMALA S2 G 220 (50 GAL)**

## COMPONENT CONDITION SUMMARY

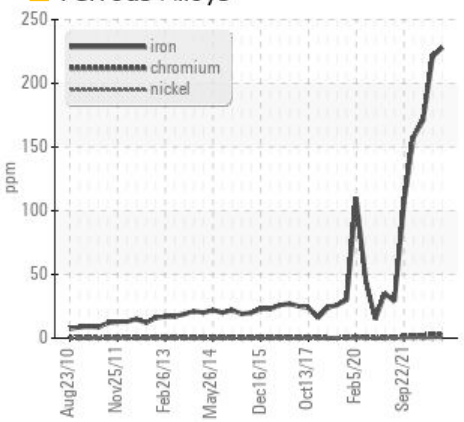
Particle Trend




PQ



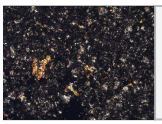

Ferrous Alloys




## RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. 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. Resample in 30-45 days to monitor this situation.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | SEVERE | ABNORMAL | NORMAL |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | | ▲ 317 | 53 | 27 |
| Iron | ppm | ASTM D5185(m) | >200 | ▲ 228 | ▲ 221 | 171 |
| Particles >4µm | | ASTM D7647 | >20000 | ⬢ 188536 | --- | --- |
| Particles >6µm | | ASTM D7647 | >5000 | ⬢ 163456 | --- | --- |
| Particles >14µm | | ASTM D7647 | >640 | ⬢ 60663 | --- | --- |
| Particles >21µm | | ASTM D7647 | >160 | ⬢ 16845 | --- | --- |
| Particles >38µm | | ASTM D7647 | >40 | ▲ 57 | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | ⬢ 25/25/23 | --- | --- |
| White Metal | scalar | Visual* | NONE | ▲ MODER | LIGHT | NONE |
| Yellow Metal | scalar | Visual* | NONE | ▲ LIGHT | NONE | NONE |
| PrtFilter | | | |  | *no image* | *no image* |

**Customer Id:** GOONAP
**Sample No.:** WC0841267
**Lab Number:** 02579805
**Test Package:** IND 2

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Kevin Marson +1 (289)291-4644 x4644
Kevin.Marson@wearcheck.com

*To change component or sample information:*
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Filter | --- | --- | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. |
| Resample | --- | --- | ? | Resample in 30-45 days to monitor this situation. |
| 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. |
| Check Dirt Access | --- | --- | ? | We advise that you check all areas where contaminants can enter the system. |
| Check For Visual Metal | --- | --- | ? | We advise that you check for visible metal particles in the oil. |
| 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

**05 Feb 2023 Diag: Kevin Marson**

WEAR

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.Iron ppm levels are abnormal. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

view report

**27 Oct 2022 Diag: Kevin Marson**

NORMAL

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

**05 Nov 2021 Diag: Wes Davis**

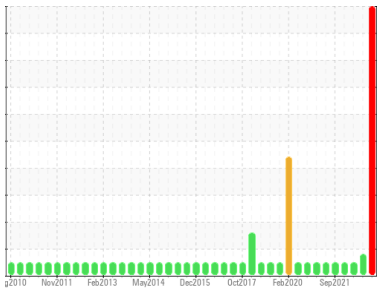
NORMAL

Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend



**WEAR**

Area
**Banbury 2**
Machine Id
**BB02 C Roll Drive**
Component
**Gearbox**
Fluid
**SHELL OMALA S2 G 220 (50 GAL)**

## DIAGNOSIS

**Recommendation**

We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. 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. Resample in 30-45 days to monitor this situation.

**Wear**

PQ levels are abnormal. Iron ppm levels are abnormal. Moderate concentration of visible metal present. Bearing and/or bushing wear is indicated. Gear wear is indicated. The high ferrous density (PQ) index indicates that abnormal wear is occurring.

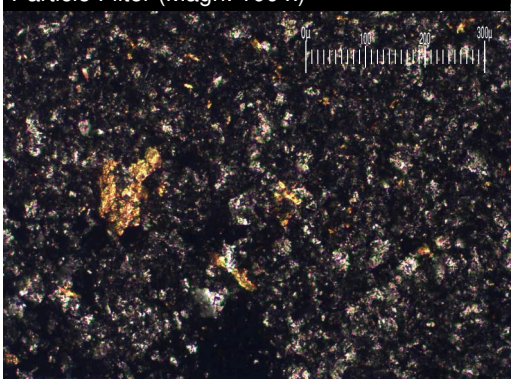
**Contamination**

There is a high amount of particulates (2 to 100 microns in size) present in the oil.

**Fluid Condition**

The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Particle Filter (Magn: 100 x)



| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0841267** | WC0754392 | WC0664081 |
| Sample Date | | Client Info | | **25 Aug 2023** | 05 Feb 2023 | 27 Oct 2022 |
| 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 | | | | **SEVERE** | ABNORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | | ▲ **317** | 53 | 27 |
| Iron | ppm | ASTM D5185(m) | >200 | ▲ **228** | ▲ 221 | 171 |
| Chromium | ppm | ASTM D5185(m) | >15 | **2** | 3 | 2 |
| Nickel | ppm | ASTM D5185(m) | >15 | **<1** | <1 | 0 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >25 | **<1** | 1 | <1 |
| Lead | ppm | ASTM D5185(m) | >100 | **4** | 2 | 2 |
| Copper | ppm | ASTM D5185(m) | >200 | **42** | 24 | 21 |
| Tin | ppm | ASTM D5185(m) | >25 | **<1** | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) | >5 | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

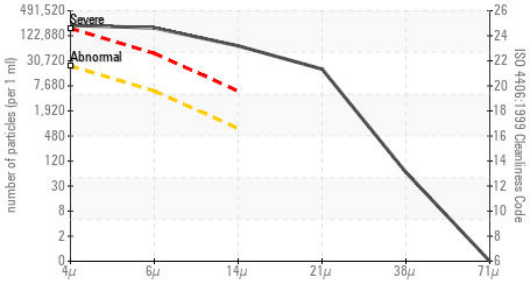
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 4.4 | **<1** | <1 | 0 |
| Barium | ppm | ASTM D5185(m) | 0.0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 0 | **20** | 81 | 74 |
| Manganese | ppm | ASTM D5185(m) | | **2** | 2 | 1 |
| Magnesium | ppm | ASTM D5185(m) | 0 | **0** | 0 | <1 |
| Calcium | ppm | ASTM D5185(m) | 0 | **3** | 13 | 13 |
| Phosphorus | ppm | ASTM D5185(m) | 215 | **263** | 367 | 360 |
| Zinc | ppm | ASTM D5185(m) | 0 | **78** | 149 | 132 |
| Sulfur | ppm | ASTM D5185(m) | 7039 | **7915** | 9433 | 9050 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >50 | **3** | 5 | 4 |
| Sodium | ppm | ASTM D5185(m) | | **<1** | 1 | <1 |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | 0 | <1 |

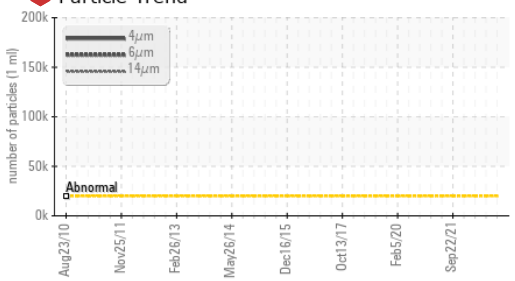
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | ● **188536** | --- | --- |
| Particles >6µm | | ASTM D7647 | >5000 | ● **163456** | --- | --- |
| Particles >14µm | | ASTM D7647 | >640 | ● **60663** | --- | --- |
| Particles >21µm | | ASTM D7647 | >160 | ● **16845** | --- | --- |
| Particles >38µm | | ASTM D7647 | >40 | ▲ **57** | --- | --- |
| Particles >71µm | | ASTM D7647 | >10 | **0** | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >21/19/16 | ● **25/25/23** | --- | --- |

# OIL ANALYSIS REPORT

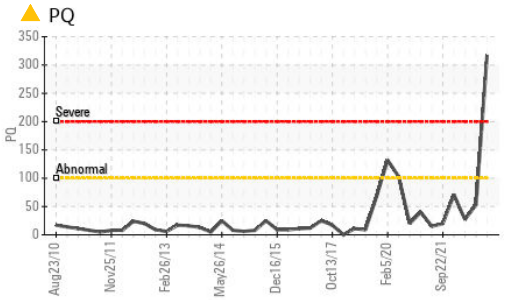
Particle Count



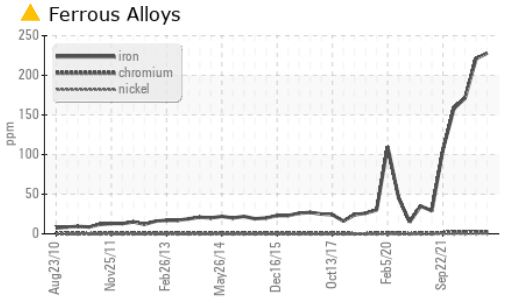

Particle Trend



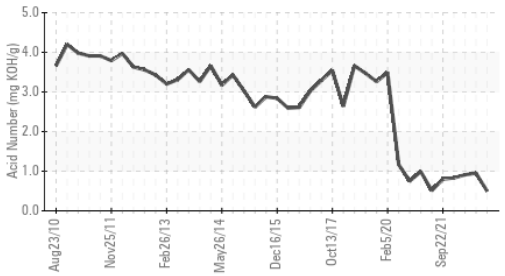

PQ




Ferrous Alloys



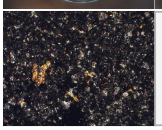

Acid Number




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | | **0.50** | 0.95 | 0.91 |

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

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | 220 | **216** | 219 | 224 |

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

ISO 17025:2017 Accredited Laboratory


**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0841267 **Received** : 31 Aug 2023
**Lab Number** : 02579805 **Diagnosed** : 01 Sep 2023
**Unique Number** : 5632865 **Diagnostician** : Kevin Marson
**Test Package** : IND 2 ( Additional Tests: Bottom, BottomAnalysis, FilterPatch, PQ, PrtCount, PrtFilter, TAN Mod)

**Goodyear Napanee**
388 GOODYEAR ROAD
NAPANEE, ON
CA K7R 3L2
Contact: Mohammad Waleed
Mohammad_Waleed@goodyear.com
T: (613)354-7709
F: (613)354-9377


*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*