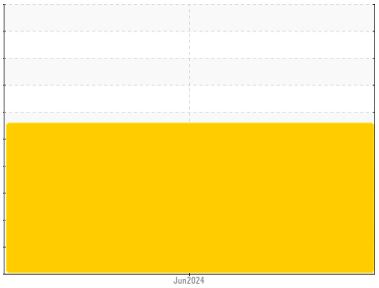
# PROBLEM SUMMARY

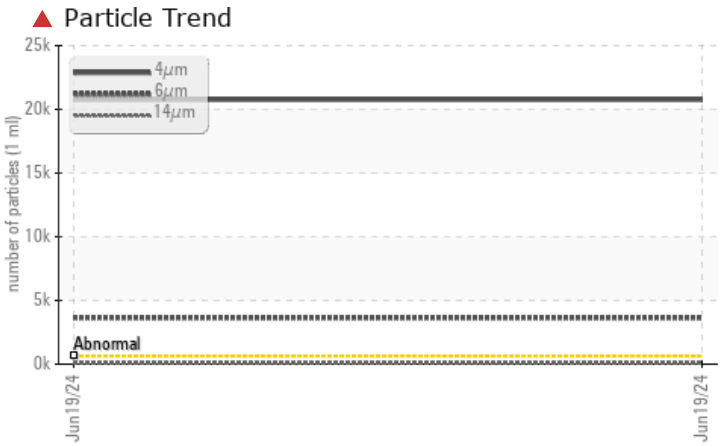
Sample Rating Trend

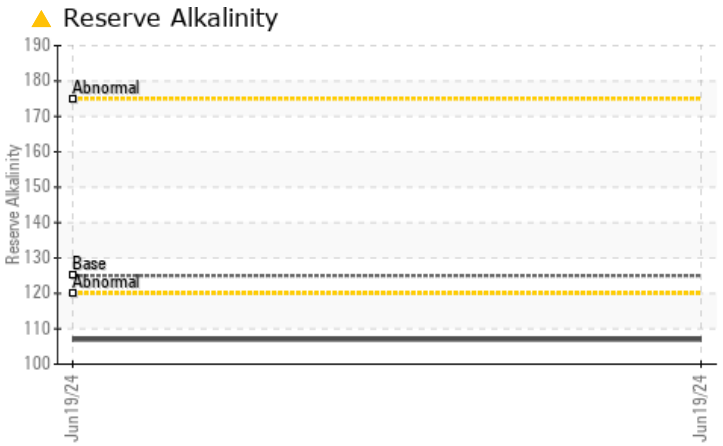


ISO

Area
**Plate Mill/166 Hot Mill**
Machine Id
**LEVELLER HYD (PLS014) (S/N 1000046464)**
Component
**Hydraulic System**
Fluid
**HOUGHTON HOUGHTO-SAFE 620 (--- GAL)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. Due to the low reserve alkalinity it is advised that you contact HOUGHTON to assist in restoring the proper amine concentration. 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. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

## PROBLEMATIC TEST RESULTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample Status | | | | **SEVERE** | --- | --- |
| Particles >4µm | | ASTM D7647 | >640 | ▲ **20756** | --- | --- |
| Particles >6µm | | ASTM D7647 | >160 | ▲ **3636** | --- | --- |
| Particles >14µm | | ASTM D7647 | >20 | ▲ **66** | --- | --- |
| Particles >21µm | | ASTM D7647 | >4 | ▲ **19** | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >16/14/11 | ▲ **22/19/13** | --- | --- |
| Alkiline Reserve (Oils) | ml KOH/g | ASTM D1121* | 125 | ▲ **107** | --- | --- |

**Customer Id:** ALGSSM
**Sample No.:** WC0494980
**Lab Number:** 02647242
**Test Package:** IND 2

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
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Kevin.Marson@wearcheck.com

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gloria.gonzalez@wearcheck.com

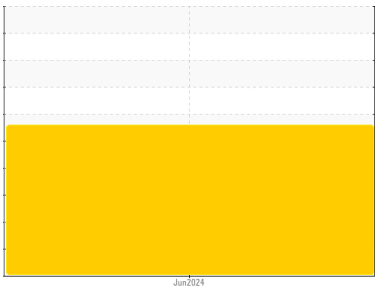
## RECOMMENDED ACTIONS

| 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. |
| Contact Required | --- | --- | ? | Due to the low reserve alkalinity it is advised that you contact HOUGHTON to assist in restoring the proper amine concentration. |
| Information Required | --- | --- | ? | NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. |
| 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. |
| 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

# OIL ANALYSIS REPORT

Sample Rating Trend




ISO

Area
**Plate Mill/166 Hot Mill**
Machine Id
**LEVELLER HYD (PLS014) (S/N 1000046464)**
Component
**Hydraulic System**
Fluid
**HOUGHTON HOUGHTO-SAFE 620 (--- GAL)**

## DIAGNOSIS

**Recommendation**
We advise that you check all areas where contaminants can enter the system. Due to the low reserve alkalinity it is advised that you contact HOUGHTON to assist in restoring the proper amine concentration. 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. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

**Wear**
All component wear rates are normal.

**Contamination**
There is a high amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness code is much higher than the acceptable limit for the target ISO 4406 cleanliness code.

**Fluid Condition**
The reserve alkalinity of this fluid is lower than acceptable. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The water concentration level is acceptable for this fluid. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0494980** | --- | --- |
| Sample Date | | Client Info | | **19 Jun 2024** | --- | --- |
| Machine Age | hrs | Client Info | | **0** | --- | --- |
| Oil Age | hrs | Client Info | | **0** | --- | --- |
| Oil Changed | | Client Info | | **N/A** | --- | --- |
| Sample Status | | | | **SEVERE** | --- | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |
| Chromium | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |
| Nickel | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |
| Titanium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Silver | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Aluminum | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |
| Lead | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |
| Copper | ppm | ASTM D5185(m) | >20 | **<1** | --- | --- |
| Tin | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |
| Antimony | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Vanadium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Beryllium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Cadmium | ppm | ASTM D5185(m) | | **0** | --- | --- |

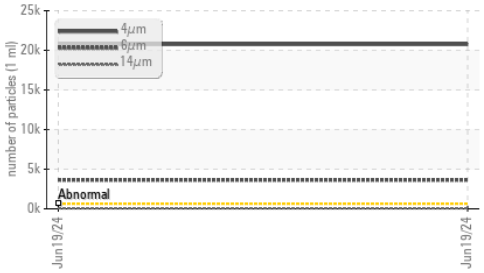
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | | **4** | --- | --- |
| Barium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Molybdenum | ppm | ASTM D5185(m) | | **7** | --- | --- |
| Manganese | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Magnesium | ppm | ASTM D5185(m) | | **<1** | --- | --- |
| Calcium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Phosphorus | ppm | ASTM D5185(m) | | **12** | --- | --- |
| Zinc | ppm | ASTM D5185(m) | | **3** | --- | --- |
| Sulfur | ppm | ASTM D5185(m) | | **4** | --- | --- |
| Lithium | ppm | ASTM D5185(m) | | **2** | --- | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >15 | **2** | --- | --- |
| Sodium | ppm | ASTM D5185(m) | | **85** | --- | --- |
| Potassium | ppm | ASTM D5185(m) | >20 | **26** | --- | --- |
| Water | % | ASTM D6304* | >43.5 | **42.9** | --- | --- |
| ppm Water | ppm | ASTM D6304* | >435000 | **429000** | --- | --- |

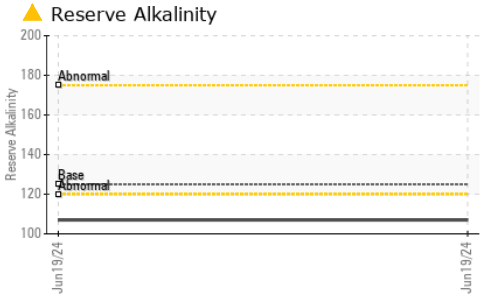
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >640 | ▲ **20756** | --- | --- |
| Particles >6µm | | ASTM D7647 | >160 | ▲ **3636** | --- | --- |
| Particles >14µm | | ASTM D7647 | >20 | ▲ **66** | --- | --- |
| Particles >21µm | | ASTM D7647 | >4 | ▲ **19** | --- | --- |
| Particles >38µm | | ASTM D7647 | >3 | **2** | --- | --- |
| Particles >71µm | | ASTM D7647 | >3 | **0** | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >16/14/11 | ▲ **22/19/13** | --- | --- |

# OIL ANALYSIS REPORT

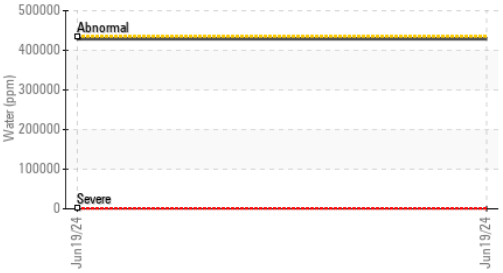
Particle Trend




Reserve Alkalinity

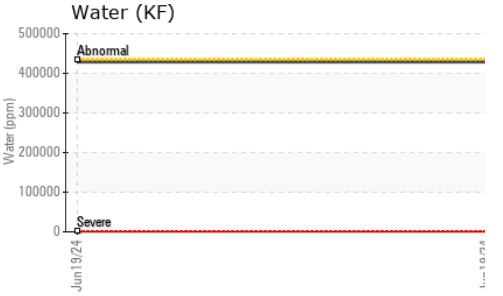



Water (KF)




Acid Number


Water (KF)




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | | **5.24** | --- | --- |
| Alkiline Reserve (Oils) | ml KOH/g | ASTM D1121* | 125 | ▲ **107** | --- | --- |

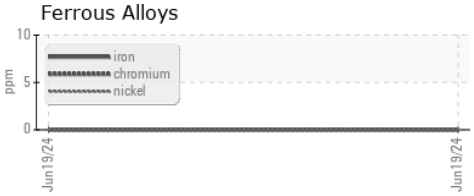
| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **VLITE** | --- | --- |
| Yellow Metal | scalar | Visual* | NONE | **NONE** | --- | --- |
| Precipitate | scalar | Visual* | NONE | **NONE** | --- | --- |
| Silt | scalar | Visual* | NONE | **NONE** | --- | --- |
| Debris | scalar | Visual* | NONE | **NONE** | --- | --- |
| Sand/Dirt | scalar | Visual* | NONE | **NONE** | --- | --- |
| Appearance | scalar | Visual* | NORML | **NORML** | --- | --- |
| Odor | scalar | Visual* | NORML | **NORML** | --- | --- |
| Emulsified Water | scalar | Visual* | >43.5 | **NEG** | --- | --- |
| Free Water | scalar | Visual* | | **NEG** | --- | --- |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| pH | Scale 0-14 | ASTM D1287* | | **9.42** | --- | --- |
| Visc @ 40°C | cSt | ASTM D7279(m) | | **42.9** | --- | --- |

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

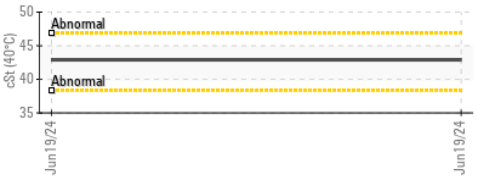
GRAPHS

Ferrous Alloys

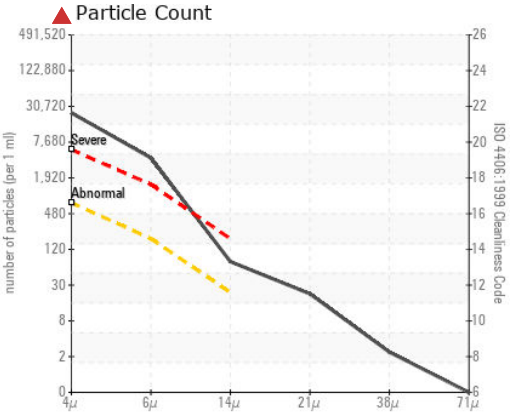



Non-ferrous Metals

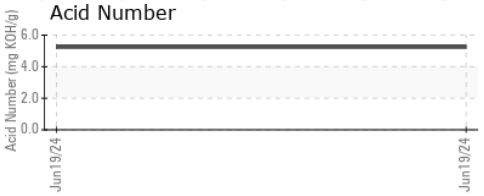

Viscosity @ 40°C




Particle Count




Acid Number




CALA
ISO 17025:2017
Accredited
Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0494980
**Lab Number** : 02647242
**Unique Number** : 5812794
**Test Package** : IND 2 ( Additional Tests: Bottom, KF, pH, ReserveAlk, TAN Man )

**Received** : 10 Jul 2024
**Tested** : 19 Jul 2024
**Diagnosed** : 19 Jul 2024 - Kevin Marson

*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.*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