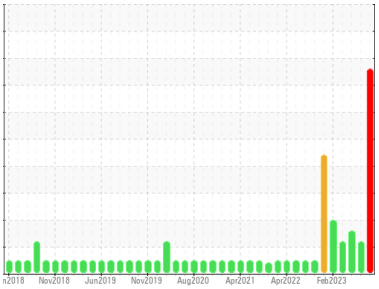
# PROBLEM SUMMARY

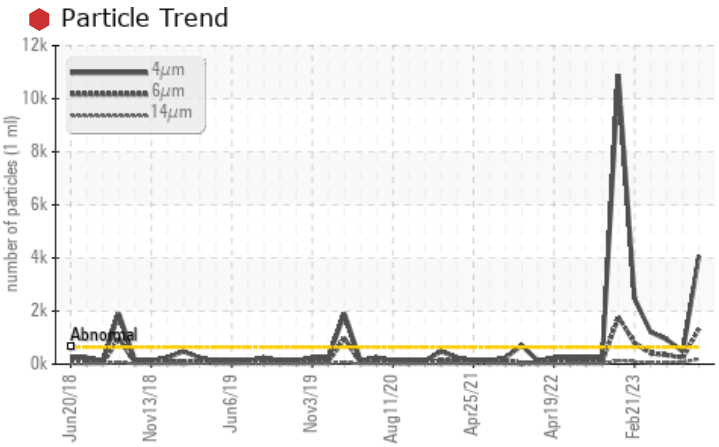
Sample Rating Trend



ISO

Area
## #7 Blast Furnace
Machine Id
## CLAYGUN HYD (IRN037) (S/N 1000032769)
Component
**Hydraulic System**
Fluid
**HOUGHTON HOUGHTO-SAFE 620 (5000 LTR)**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

We advise that you check all areas where contaminants can enter the system. 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 | ATTENTION | ABNORMAL |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >640 | **4081** | 480 | 924 |
| Particles >6µm | | ASTM D7647 | >160 | **1340** | 240 | 340 |
| Particles >14µm | | ASTM D7647 | >40 | **205** | 60 | 65 |
| Particles >21µm | | ASTM D7647 | >10 | **107** | 7 | 14 |
| Particles >38µm | | ASTM D7647 | >3 | **24** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >16/14/12 | **19/18/15** | 16/15/13 | 17/16/13 |

**Customer Id:** ALGSSM
**Sample No.:** WC0780651
**Lab Number:** 02608819
**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

*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. |
| 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

ISO

**23 Oct 2023 Diag: Kevin Marson**

We recommend you service the filters on this component. Resample at the next service interval to monitor. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using IND 3 test kits, this testkit includes Analytical Ferrography which provides a detailed morphological analysis of wear particles present in the fluid.Component wear rates appear to be normal (unconfirmed). There is a light amount of silt (particulates < 14 microns in size) present in the oil. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. The water concentration level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

ISO

**27 Jun 2023 Diag: Kevin Marson**

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. 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.

view report

ISO

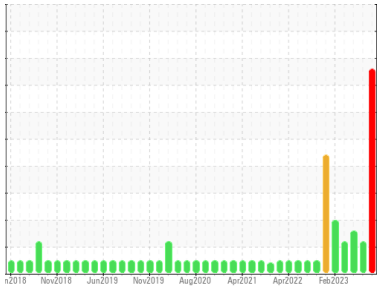
**03 May 2023 Diag: Kevin Marson**

We recommend you service the filters on this component. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a moderate amount of silt (particulates < 14 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. 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.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
## #7 Blast Furnace
Machine Id
## CLAYGUN HYD (IRN037) (S/N 1000032769)
Component
**Hydraulic System**
Fluid
**HOUGHTON HOUGHTO-SAFE 620 (5000 LTR)**

## DIAGNOSIS

**Recommendation**

We advise that you check all areas where contaminants can enter the system. 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**

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 AN level is acceptable for this fluid. The pH level of this fluid is within the acceptable limits. The reserve alkalinity of this fluid is acceptable. 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 | | **WC0780651** | WC0689833 | WC0689955 |
| Sample Date | | Client Info | | **14 Jan 2024** | 23 Oct 2023 | 27 Jun 2023 |
| 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** | ATTENTION | ABNORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >20 | **0** | 0 | 2 |
| Chromium | ppm | ASTM D5185(m) | >20 | **0** | 0 | 3 |
| Nickel | ppm | ASTM D5185(m) | >20 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | **<1** | <1 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | **0** | 0 | 0 |
| Lead | ppm | ASTM D5185(m) | >20 | **0** | 0 | 6 |
| Copper | ppm | ASTM D5185(m) | >20 | **0** | 0 | 3 |
| Tin | ppm | ASTM D5185(m) | >20 | **0** | 0 | 2 |
| Antimony | ppm | ASTM D5185(m) | | **<1** | 0 | 2 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

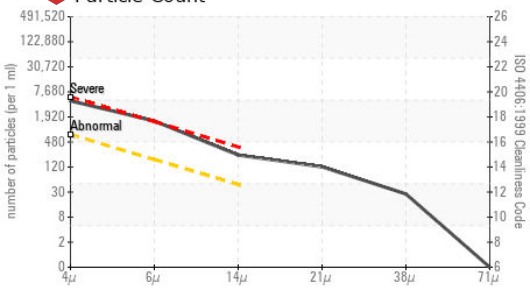
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | | **1** | 1 | 2 |
| Barium | ppm | ASTM D5185(m) | | **<1** | <1 | 2 |
| Molybdenum | ppm | ASTM D5185(m) | | **0** | 0 | 3 |
| Manganese | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185(m) | | **0** | <1 | <1 |
| Calcium | ppm | ASTM D5185(m) | | **<1** | 1 | 2 |
| Phosphorus | ppm | ASTM D5185(m) | | **1** | 2 | 0 |
| Zinc | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Sulfur | ppm | ASTM D5185(m) | | **59** | 59 | 0 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | 0 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >15 | **<1** | <1 | 0 |
| Sodium | ppm | ASTM D5185(m) | | **24** | 24 | 23 |
| Potassium | ppm | ASTM D5185(m) | >20 | **25** | 28 | 0 |
| Water | % | ASTM D6304* | >43.5 | **40.4** | 40.5 | 39.1 |
| ppm Water | ppm | ASTM D6304* | >435000 | **404000** | 405000 | 391000 |

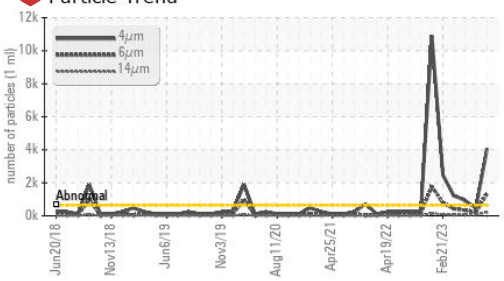
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >640 | ▲ **4081** | 480 | ▲ 924 |
| Particles >6µm | | ASTM D7647 | >160 | ⬢ **1340** | ▲ 240 | ▲ 340 |
| Particles >14µm | | ASTM D7647 | >40 | ▲ **205** | ▲ 60 | ▲ 65 |
| Particles >21µm | | ASTM D7647 | >10 | ⬢ **107** | 7 | 14 |
| Particles >38µm | | ASTM D7647 | >3 | ⬢ **24** | 0 | 0 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >16/14/12 | ⬢ **19/18/15** | ▲ 16/15/13 | ▲ 17/16/13 |

# OIL ANALYSIS REPORT

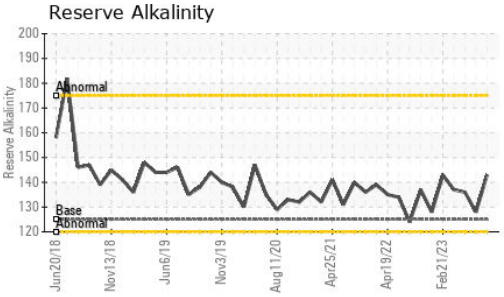
Particle Count



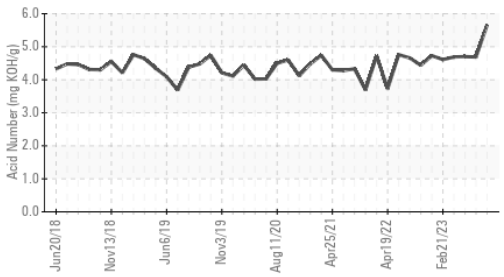

Particle Trend



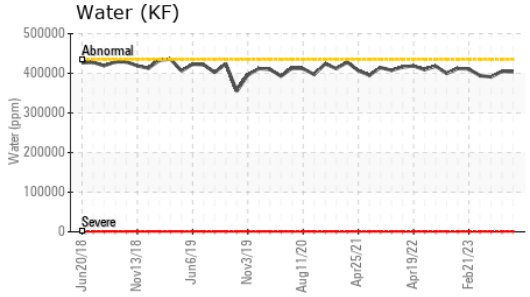

Reserve Alkalinity




Acid Number




Water (KF)




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | | **5.66** | 4.69 | 4.70 |
| Alkiline Reserve (Oils) | ml KOH/g | ASTM D1121* | 125 | **143** | 128 | 136 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| 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 | NONE |
| Sand/Dirt | scalar | Visual* | NONE | **NONE** | NONE | NONE |
| Appearance | scalar | Visual* | NORML | **FRGLY** | FRGLY | FRGLY |
| Odor | scalar | Visual* | NORML | **NORML** | NORML | NORML |
| Emulsified Water | scalar | Visual* | >43.5 | **>10%** | >10% | >10% |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| pH | Scale 0-14 | ASTM D1287* | | **9.63** | 9.49 | 9.37 |
| Visc @ 40°C | cSt | ASTM D7279(m) | | **42.3** | 44.9 | 42.9 |

| 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 **ALGOMA STEEL INC. - STORES DEPT.**
**Sample No.** : WC0780651 **Recieved** : 15 Jan 2024 301 WALLACE TERRACE
**Lab Number** : 02608819 **Diagnosed** : 17 Jan 2024 SAULT STE MARIE, ON
**Unique Number** : 5709905 **Diagnostician** : Kevin Marson CA P6C 1K8
**Test Package** : IND 2 ( Additional Tests: KF, pH, ReserveAlk, TAN Man ) Contact: Algoma Reliability

*To discuss this sample report, contact Customer Service at 1-800-268-2131.* algomareliability@algoma.com
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.* T: (705)206-1059
*Validity of results and interpretation are based on the sample and information as supplied.* F: (705)945-3585