

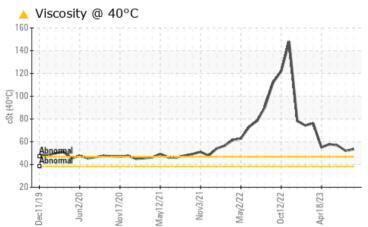
# **PROBLEM SUMMARY**

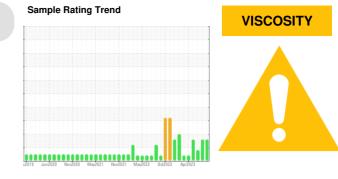
#### Area **Direct Strip Mill/Finishing** Machine Id **BRICMONT FURNACE HYDRAULIC SYSTEM (DSC015) (S/N 1000020510)** Component

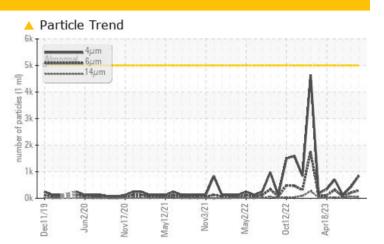
Hydraulic System

## HOUGHTON HOUGHTO-SAFE 620 (--- GAL)

## COMPONENT CONDITION SUMMARY







## RECOMMENDATION

We recommend you service the filters on this component. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please note that this is a corrected copy for data entry updates.

## PROBLEMATIC TEST RESULTS

| THOBELMATIO     | LOTITE | 00210         |           |               |              |            |
|-----------------|--------|---------------|-----------|---------------|--------------|------------|
| Sample Status   |        |               |           | ABNORMAL      | ABNORMAL     | ABNORMAL   |
| Particles >14µm |        | ASTM D7647    | >40       | <u> </u>      | <b>6</b> 7   | 26         |
| Particles >21µm |        | ASTM D7647    | >10       | <u> </u>      | <b>A</b> 39  | <b>1</b> 5 |
| Oil Cleanliness |        | ISO 4406 (c)  | >19/16/12 | <u> </u>      | 🔺 16/15/13   | 14/13/12   |
| Visc @ 40°C     | cSt    | ASTM D7279(m) |           | <b>6</b> 53.4 | <b>5</b> 2.0 | ▲ 56.7     |

Customer Id: ALGSSM Sample No.: WC0837459 Lab Number: 02586214 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 <u>Kevin.Marson@wearcheck.com</u>

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 recommend you service the filters on this component.  |  |  |
| Information Required |        |      | ?       | NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. |  |  |

## **HISTORICAL DIAGNOSIS**



## 08 Aug 2023 Diag: Kevin Marson

We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. We recommend an early resample to monitor this condition. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. Viscosity of sample indicates oil is within ISO 46 range, advise investigate. 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

#### 21 Jun 2023 Diag: Kevin Marson



We recommend you service the filters on this component. 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 a light amount of silt (particulates < 14 microns in size) present in the oil. Viscosity of sample indicates oil is within ISO 46 range, advise investigate. 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.

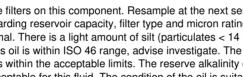
#### 15 May 2023 Diag: Kevin Marson



We recommend you service the filters on this component. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.All component wear rates are normal. There is a light amount of silt (particulates < 14 microns in size) present in the oil. Viscosity of sample indicates oil is within ISO 68 range, advise investigate. 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.









## **OIL ANALYSIS REPORT**

#### Area **Direct Strip Mill/Finishing** Machine Id **BRICMONT FURNACE HYDRAULIC SYSTEM (DSC015) (S/N 1000020510)** Component

Hydraulic System

HOUGHTON HOUGHTO-SAFE 620 (--- GAL)

## DIAGNOSIS

## Recommendation

We recommend you service the filters on this component. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please note that this is a corrected copy for data entry updates.

## Wear

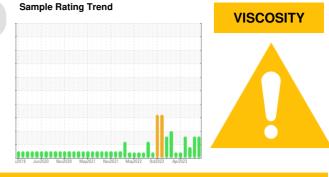
All component wear rates are normal.

### Contamination

There is a light amount of silt (particulates < 14 microns in size) present in the oil.

### Fluid Condition

Viscosity of sample indicates oil is within ISO 46 range, advise investigate. 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.



| Sample Date         Image         Client Info         26 Sep 2023         08 Aug 2023         21 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         N/A           Sample Status         Imatibase         current         history1         history2           Iron         ppm         ASTM D5185(m)         >40         0         0         <1           Nickel         ppm         ASTM D5185(m)         >40         0         0         <1           Nickel         ppm         ASTM D5185(m)         >40         0         0         0           Silver         ppm         ASTM D5185(m)         >40         0         0         0           Lead         ppm         ASTM D5185(m)         >60         0         0         0           Vanadium         ppm         ASTM D5185(m)         >60         0         0         0           Silver         ppm         ASTM D5185(m)         <60         0         0         0           Lea  | SAMPLE INFORM  | ATION  | method  | limit/base  | current   | history1  | history2   |
|---|--|--|---|---|---|---|--|
| Machine AgehrsClient Info000Oil AgehrsClient InfoN/AN/AN/AOil ChangedClient InfoN/AABNORMALABNORMALSample StatusImageCurrenthistorylhistorylWEAR METALSmethodImal/LinkCurrenthistorylIronppmASTM D518(m)>4000<1ChromiumppmASTM D518(m)>20000NickelppmASTM D518(m)>20000SilverppmASTM D518(m)>20000AuminumppmASTM D518(m)>41<100AuminumppmASTM D518(m)>41000CopperppmASTM D518(m)>40000AntimonyppmASTM D518(m)>40000AntimonyppmASTM D518(m)>40000AdminumppmASTM D518(m)<13<131ADDITIVESmethodimal/Linkimal/Linkimal/Linkimal/Linkimal/LinkAdminumppmASTM D518(m)<13<131AdminumppmASTM D518(m)<13<131AdminumppmASTM D518(m)<13<131AdminumppmASTM D518(m)<13<  | Sample Number  |  | Client Info   |   | WC0837459   | WC0780837   | WC0813662  |
| Oil Age         hrs         Client Info         N/A         N/A         N/A           Sample Status         Image         Client Info         N/A         ABNORMAL         ABNORMAL         ABNORMAL           WEAR METALS         method         limi/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >40         0         0         <1           Okromium         ppm         ASTM D5185(m)         >40         0         0         <1           Nickel         ppm         ASTM D5185(m)         >40         0         0         0           Silver         ppm         ASTM D5185(m)         >4         0         0         0           Copper         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         >4         0         0         0           Vanadium         ppm         ASTM D5185(m)         >4         0         0         0           Berylitium         ppm         ASTM D5185(m)         0         0         0         0           Adminony         ppm         ASTM D5185(m)         0         0 </th <th>Sample Date</th> <th></th> <th>Client Info</th> <th></th> <th>26 Sep 2023</th> <th>08 Aug 2023</th> <th>21 Jun 2023</th>  | Sample Date  |  | Client Info   |   | 26 Sep 2023   | 08 Aug 2023   | 21 Jun 2023  |
| Oil Changed<br>Sample Status     Client Info     N/A     N/A     ABNORMAL     ABNORMAL       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM DS185(m)     >40     0     0     <1       Nickel     ppm     ASTM DS185(m)     >20     0     0     <1       Nickel     ppm     ASTM DS185(m)     >20     0     0     0       Silver     ppm     ASTM DS185(m)     >40     0     0     0       Aluminum     ppm     ASTM DS185(m)     >40     0     0     0       Lead     ppm     ASTM DS185(m)     >60     0     0     0       Copper     ppm     ASTM DS185(m)     >60     0     0     0       Vanadium     ppm     ASTM DS185(m)     >60     0     0     0       Vanadium     ppm     ASTM DS185(m)     >60     0     0     0       Vanadium     ppm     ASTM DS185(m)     >60     0     0     0       Beryllium     ppm     ASTM DS185(m)     0     0     0     0       Mangainum     ppm     ASTM DS185(m)     0     0     <1     3     <1       Beryl  | Machine Age  | hrs  | Client Info   |   | 0   | 0   | 0  |
| Sample Status         Image of the status         ABNORMAL         ABNORMAL         ABNORMAL         ABNORMAL         ABNORMAL         ABNORMAL         ABNORMAL           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >40         0         0         <1           Nickel         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         >20         0         0         0           Aluminum         ppm         ASTM D5185(m)         >10         0         0         0           Lead         ppm         ASTM D5185(m)         >44         0         0         0           Antimony         ppm         ASTM D5185(m)         >4         0         0         0           Vanadium         ppm         ASTM D5185(m)         >0         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Addium         ppm         ASTM D5185(m)         0         0         <1         3         1   | Oil Age  | hrs  | Client Info   |   | 0   | 0   | 0  |
| WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185(m)         >40         0         0         <1           Chromium         ppm         ASTM D5185(m)         >40         0         0         <1           Nickel         ppm         ASTM D5185(m)         >20         0         0         0           Silver         ppm         ASTM D5185(m)         >4         0         0         0           Aluminum         ppm         ASTM D5185(m)         >4         0         0         0           Lead         ppm         ASTM D5185(m)         >4         0         0         0           Copper         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0   | Oil Changed  |  | Client Info   |   | N/A   | N/A   | N/A  |
| Iron         ppm         ASTM D5185(m)         >40         0         0         <1   | Sample Status  |  |   |   | ABNORMAL  | ABNORMAL  | ABNORMAL   |
| Chromium         ppm         ASTM D5185(m)         >4         0         0         <1  | WEAR METALS  |  | method  | limit/base  | current   | history1  | history2   |
| Nickel         ppm         ASTM D5/85(m)         >20         0         0         0           Titanium         ppm         ASTM D5/85(m)         <1  | Iron   | ppm  | ASTM D5185(m)   | >40   | 0   | 0   | <1   |
| Titanium         ppm         ASTM D5185(m)         <1         0         0         0           Silver         ppm         ASTM D5185(m)         <1   | Chromium   | ppm  | ASTM D5185(m)   | >4  | 0   | 0   | <1   |
| Silver         ppm         ASTM D5185(m)         <1         <1         0           Aluminum         ppm         ASTM D5185(m)         >4         0         0         0           Lead         ppm         ASTM D5185(m)         >10         0         0         0           Copper         ppm         ASTM D5185(m)         >60         0         6         1           Tin         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Barium         ppm         ASTM D5185(m)         <11  | Nickel   | ppm  | ASTM D5185(m)   | >20   | 0   | 0   | 0  |
| Aluminum         ppm         ASTM D5185(m)         >4         0         0         0           Lead         ppm         ASTM D5185(m)         >10         0         0         0           Copper         ppm         ASTM D5185(m)         >60         0         6         1           Tin         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         <11  | Titanium   | ppm  | ASTM D5185(m)   |   | 0   | 0   | 0  |
| Lead         ppm         ASTM D5185(m)         >10         0         0         0           Copper         ppm         ASTM D5185(m)         >60         0         6         1           Tin         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0         0           Cadmium         ppm         ASTM D5185(m)         <11  | Silver   | ppm  | ASTM D5185(m)   |   | <1  | <1  | 0  |
| Copper         ppm         ASTM D5185(m)         >60         0         6         1           Tin         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1  | Aluminum   | ppm  | ASTM D5185(m)   | >4  | 0   | 0   | 0  |
| Tin         ppm         ASTM D5185(m)         >4         0         0         0           Antimony         ppm         ASTM D5185(m)         0         0         0         0           Vanadium         ppm         ASTM D5185(m)         0         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1   | Lead   | ppm  | ASTM D5185(m)   | >10   | 0   | 0   | 0  |
| Antimony         ppm         ASTM D5185(m)         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)         <1  | Copper   | ppm  | ASTM D5185(m)   | >60   | 0   | 6   | 1  |
| Vanadium         ppm         ASTM D5185(m)         0         0         0           Beryllium         ppm         ASTM D5185(m)         0         0         0           Cadmium         ppm         ASTM D5185(m)         0         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1   | Tin  | ppm  | ASTM D5185(m)   | >4  | 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  | Antimony   | ppm  | ASTM D5185(m)   |   | 0   | 0   | 0  |
| CadmiumppmASTM D5185(m)000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)<1   | Vanadium   | ppm  | ASTM D5185(m)   |   | 0   | 0   | 0  |
| ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         <1  | Beryllium  | ppm  | ASTM D5185(m)   |   | 0   | 0   | 0  |
| Boron         ppm         ASTM D5185(m)         <1         3         <1           Barium         ppm         ASTM D5185(m)         <1   | Cadmium  | ppm  | ASTM D5185(m)   |   | 0   | 0   | 0  |
| Barium         ppm         ASTM D5185(m)         <1   | ADDITIVES  |  | method  | limit/base  | current   | history1  | history2   |
| Molybdenum         ppm         ASTM D5185(m)         0         0         <1           Manganese         ppm         ASTM D5185(m)         0         0         0           Magnesium         ppm         ASTM D5185(m)         <1  |  |  |   |   |   |   |  |
| Manganese         ppm         ASTM D5185(m)         0         0         0           Magnesium         ppm         ASTM D5185(m)         <1  | Boron  | ppm  | ASTM D5185(m)   |   | <1  | 3   | <1   |
| Magnesium         ppm         ASTM D5185(m)         <1         3         <1           Calcium         ppm         ASTM D5185(m)         0         3         <1  |  |  |   |   |   |   |  |
| Calcium         ppm         ASTM D5185(m)         0         3         <1           Phosphorus         ppm         ASTM D5185(m)         0         2         <1  |  | ppm  | ASTM D5185(m)   |   | <1  | 1   | 0  |
| Phosphorus         ppm         ASTM D5185(m)         0         2         <1           Zinc         ppm         ASTM D5185(m)         0         0         0           Sulfur         ppm         ASTM D5185(m)         38         57         6           Lithium         ppm         ASTM D5185(m)         38         57         6           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         <1   | Barium   | ppm<br>ppm   | ASTM D5185(m)<br>ASTM D5185(m)  |   | <1<br>0   | 1<br>0  | 0<br><1  |
| Zinc         ppm         ASTM D5185(m)         0         0         0           Sulfur         ppm         ASTM D5185(m)         38         57         6           Lithium         ppm         ASTM D5185(m)         38         57         6           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         <1         0         0           Sodium         ppm         ASTM D5185(m)         >20         <1   | Barium<br>Molybdenum   | ppm<br>ppm<br>ppm  | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   |   | <1<br>0<br>0  | 1<br>0<br>0   | 0<br><1<br>0   |
| Sulfur         ppm         ASTM D5185(m)         38         57         6           Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         <1         0         0           Sodium         ppm         ASTM D5185(m)         >20         <1         0         0           Sodium         ppm         ASTM D5185(m)         >20         <1         22         10           Sodium         ppm         ASTM D5185(m)         >20         <1         22         10           Vater         %         ASTM D5185(m)         >20         <1         22         10           Water         %         ASTM D50304*         >43.5         34.1         37.1         36.0           ppm Water         ppm         ASTM D6304*         >43.5000         341000         371000         360000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         >5000         849 <th< td=""><th>Barium<br/>Molybdenum<br/>Manganese</th><td>ppm<br/>ppm<br/>ppm<br/>ppm</td><td>ASTM D5185(m)<br/>ASTM D5185(m)<br/>ASTM D5185(m)<br/>ASTM D5185(m)</td><td></td><th>&lt;1<br/>0<br/>0<br/>&lt;1</th><td>1<br/>0<br/>0<br/>3</td><td>0<br/>&lt;1<br/>0<br/>&lt;1</td></th<> | Barium<br>Molybdenum<br>Manganese  | ppm<br>ppm<br>ppm<br>ppm   | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  |   | <1<br>0<br>0<br><1  | 1<br>0<br>0<br>3  | 0<br><1<br>0<br><1   |
| Lithium         ppm         ASTM D5185(m)         <1         <1         <1           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         <1         0         0           Sodium         ppm         ASTM D5185(m)         >20         <1         0         0           Sodium         ppm         ASTM D5185(m)         >20         <1         22         10           Sodium         ppm         ASTM D5185(m)         >20         <1         22         10           Vater         %         ASTM D5185(m)         >20         <1         22         10           Water         %         ASTM D6304*         >43.55         34.1         37.1         36.0           ppm Water         ppm         ASTM D6304*         >435000         341000         371000         360000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         >5000         849         423         124           Particles >6µm         ASTM D7647         >640         293   | Barium<br>Molybdenum<br>Manganese<br>Magnesium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm                                    | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   |   | <1<br>0<br>0<br><1<br>0   | 1<br>0<br>0<br>3<br>3   | 0<br><1<br>0<br><1<br><1   |
| CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >20         <1   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                             | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  |   | <1<br>0<br>0<br><1<br>0<br>0  | 1<br>0<br>3<br>3<br>2   | 0<br><1<br>0<br><1<br><1<br><1<br><1   |
| Silicon         ppm         ASTM D5185(m)         >20         <1         0         0           Sodium         ppm         ASTM D5185(m)         >20         <1  | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                             | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   |   | <1<br>0<br><1<br>0<br>0<br>0<br>0   | 1<br>0<br>3<br>3<br>2<br>0  | 0<br><1<br>0<br><1<br><1<br><1<br><1<br>0  |
| Sodium         ppm         ASTM D5185(m)         10         15         26           Potassium         ppm         ASTM D5185(m)         >20         <1         22         10           Water         %         ASTM D6304*         >43.5         34.1         37.1         36.0           ppm Water         ppm         ASTM D6304*         >43500         341000         371000         360000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         849         423         124           Particles >6μm         ASTM D7647         >640         293         211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm                      | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   |   | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38   | 1<br>0<br>3<br>3<br>2<br>0<br>57  | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6   |
| Potassium         ppm         ASTM D5185(m)         >20         <1         22         10           Water         %         ASTM D6304*         >43.5         34.1         37.1         36.0           ppm Water         ppm         ASTM D6304*         >43500         341000         371000         360000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         849         423         124           Particles >6μm         ASTM D7647         >640         293         211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)  | limit/base  | <1<br>0<br><1<br>0<br>0<br>0<br>0<br>38<br><1   | 1<br>0<br>3<br>3<br>2<br>0<br>57<br><1  | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1   |
| Water         %         ASTM D6304*         >43.5         34.1         37.1         36.0           ppm Water         ppm         ASTM D6304*         >435000         341000         371000         360000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         >5000         849         423         124           Particles >6µm         ASTM D7647         >640         293         211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   |   | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38<br><1<br>2<br>0<br>0<br>0<br>38<br>38   | 1<br>0<br>3<br>3<br>2<br>0<br>57<br><1<br>history1  | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1<br>history2   |
| ppm Water         ppm         ASTM D6304*         >435000 <b>341000</b> 371000         360000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000 <b>849</b> 423         124           Particles >6μm         ASTM D7647         >640 <b>293</b> 211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)   |   | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38<br><1<br>2<br>current<br><1   | 1<br>0<br>3<br>3<br>2<br>0<br>57<br><1<br>history1<br>0   | 0<br><1<br>0<br><1<br><1<br><1<br><1<br>0<br>6<br><1<br>history2<br>0  |
| FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4μm         ASTM D7647         >5000         849         423         124           Particles >6μm         ASTM D7647         >640         293         211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm               | ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br>ASTM D5185(m)<br><b>method</b><br>ASTM D5185(m)<br>ASTM D5185(m)   | >20   | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38<br><1<br><i>current</i><br><1<br>10<br><1                                     | 1<br>0<br>3<br>3<br>2<br>0<br>57<br><1<br><b>history1</b><br>0<br>15<br>22  | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1<br>history2<br>0<br>26<br>10  |
| Particles >4μm         ASTM D7647         >5000         849         423         124           Particles >6μm         ASTM D7647         >640         293         211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium  | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)  | >20<br>>20  | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38<br><1<br><i>current</i><br><1<br>10<br><1                                     | 1<br>0<br>3<br>3<br>2<br>0<br>57<br><1<br><b>history1</b><br>0<br>15<br>22  | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1<br>history2<br>0<br>26<br>10  |
| Particles >6μm         ASTM D7647         >640         293         211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m)  | >20<br>>20<br>>43.5                                   | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38<br><1<br><i>current</i><br><1<br>10<br><1<br>34.1                             | 1<br>0<br>0<br>3<br>2<br>0<br>57<br><1<br><b>history1</b><br>0<br>15<br>22<br>37.1  | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1<br>history2<br>0<br>26<br>10<br>36.0                                    |
| Particles >6μm         ASTM D7647         >640         293         211         67   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>Water<br>ppm Water                   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D5185(m) | >20<br>>20<br>>43.5<br>>435000                        | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38<br><1<br><b>current</b><br><1<br>10<br><1<br>34.1<br>341000                   | 1<br>0<br>0<br>3<br>2<br>0<br>57<br><1<br>history1<br>0<br>15<br>22<br>37.1<br>371000                                       | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1<br>history2<br>0<br>26<br>10<br>36.0<br>360000                          |
|   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>Water<br>ppm Water                   | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D6304*   | >20<br>>20<br>>43.5<br>>435000<br>limit/base          | <1<br>0<br>0<br><1<br>0<br>0<br>0<br>38<br><1<br><i>current</i><br><1<br>10<br><1<br>34.1<br>341000<br><i>current</i> | 1<br>0<br>0<br>3<br>3<br>2<br>0<br>57<br><1<br><b>history1</b><br>0<br>15<br>22<br>37.1<br>371000<br><b>history1</b>        | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1<br>*1<br>history2<br>0<br>26<br>10<br>36.0<br>360000<br>history2        |
|   | Barium<br>Molybdenum<br>Manganese<br>Magnesium<br>Calcium<br>Phosphorus<br>Zinc<br>Sulfur<br>Lithium<br>CONTAMINANTS<br>Silicon<br>Sodium<br>Potassium<br>Water<br>ppm Water<br>FLUID CLEANLIN | ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm<br>ppm | ASTM D5185(m)<br>ASTM D6304*<br>ASTM D6304*     | >20<br>>20<br>>43.5<br>>435000<br>limit/base<br>>5000 | <1 0 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0  | 1<br>0<br>0<br>3<br>3<br>2<br>0<br>57<br><1<br><b>history1</b><br>0<br>15<br>22<br>37.1<br>371000<br><b>history1</b><br>423 | 0<br><1<br>0<br><1<br><1<br><1<br>0<br>6<br><1<br>*1<br>history2<br>0<br>26<br>10<br>36.0<br>360000<br>history2<br>124 |

ASTM D7647 >10

ASTM D7647 >3

ASTM D7647 >3

Particles >21µm

Particles >38µm

Particles >71µm

**Oil Cleanliness** 

Contact/Location: Maintenance Technology - Algoma Reliability - ALGSSM

39

4

0

▲ 16/15/13

19

2

2

ISO 4406 (c) >19/16/12 🔺 17/15/13

14/13/12

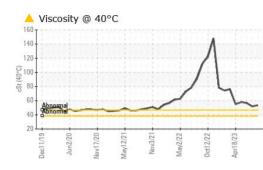
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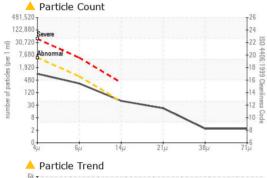
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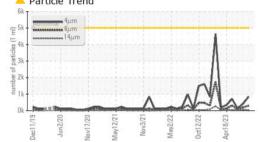
2



## **OIL ANALYSIS REPORT**



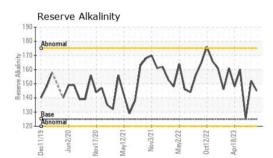


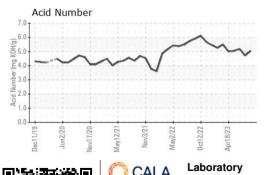


| FLUID DEGRADA           | TION       | method        | limit/base | current     | history1 | history2 |
|-------------------------|------------|---------------|------------|-------------|----------|----------|
| Acid Number (AN)        | mg KOH/g   | ASTM D974*    |            | 5.04        | 4.72     | 5.18     |
| Alkiline Reserve (Oils) | ml KOH/g   | ASTM D1121*   | 125        | 145         | 152      | 125      |
| 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 PROPERT           | IES        | method        | limit/base | current     | history1 | history2 |
| рН                      | Scale 0-14 | ASTM D1287*   |            | 9.31        | 9.57     | 9.30     |
| Visc @ 40°C             | cSt        | ASTM D7279(m) | 4          | <b>53.4</b> | ▲ 52.0   | ▲ 56.7   |
| SAMPLE IMAGES           | 3          | method        | limit/base | current     | history1 | history2 |
|                         |            |               |            |             |          |          |









: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 ALGOMA STEEL INC. - STORES DEPT. CALA Sample No. : WC0837459 Received : 02 Oct 2023 301 WALLACE TERRACE Lab Number : 02586214 Diagnosed : 13 Oct 2023 SAULT STE MARIE, ON ISO 17025:2017 Accredited Laboratory Unique Number : 5655280 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

Contact/Location: Maintenance Technology - Algoma Reliability - ALGSSM