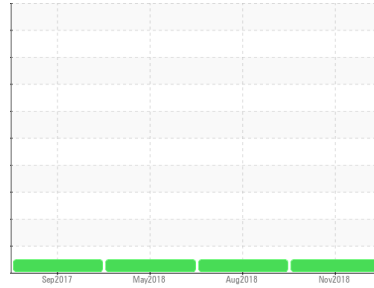




# OIL ANALYSIS REPORT

Sample Rating Trend

**NORMAL**



Area  
**Plate Mill/166 Hot Mill**  
 Machine Id  
**#1 LUBE SYSTEM (PLS005) (S/N 1000001259)**  
 Component  
**Tank Return Lube System**  
 Fluid  
**GEAR OIL ISO 460 (8000 GAL)**

## DIAGNOSIS

### Recommendation

Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

### Wear

All component wear rates are normal.

### Contamination

ISO Cleanliness Code (ISO 4406:1999): 25/23/17;  
 Cumulative particle counts >4µm = 177638, >6µm = 42177, >14µm = 864, >21µm = 159, >38µm = 3, >71µm = 0.

### Fluid Condition

The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

| SAMPLE INFORMATION |             | method | limit/base | current            | history1    | history2    |
|--------------------|-------------|--------|------------|--------------------|-------------|-------------|
| Sample Number      | Client Info |        |            | <b>WC0293355</b>   | WC0293382   | WC0293607   |
| Sample Date        | Client Info |        |            | <b>19 Nov 2018</b> | 26 Aug 2018 | 28 May 2018 |
| Machine Age        | Client Info |        |            | <b>0</b>           | 0           | 0           |
| Oil Age            | Client Info |        |            | <b>0</b>           | 0           | 0           |
| Oil Changed        | Client Info |        |            | <b>N/A</b>         | N/A         | N/A         |
| Sample Status      |             |        |            | <b>NORMAL</b>      | NORMAL      | NORMAL      |

| CONTAMINATION |           | method | limit/base | current    | history1 | history2 |
|---------------|-----------|--------|------------|------------|----------|----------|
| Water         | WC Method |        | >0.05      | <b>NEG</b> | NEG      | NEG      |

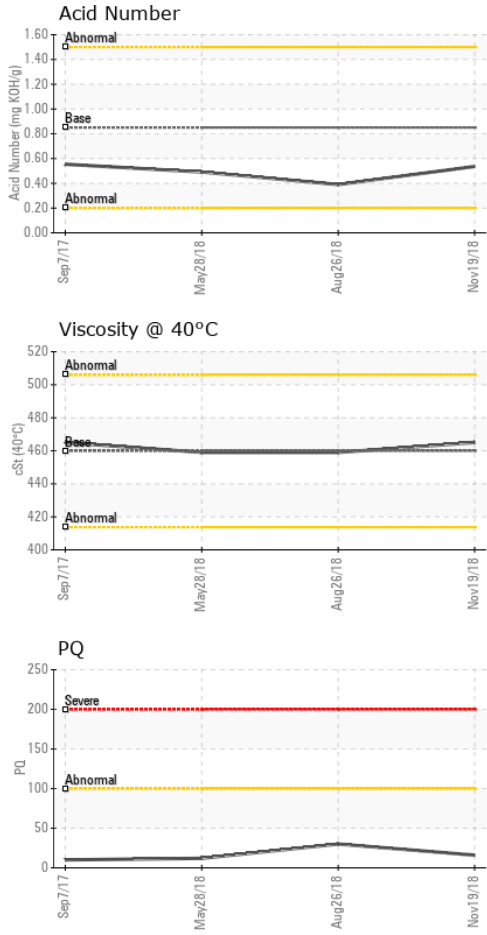
| WEAR METALS |     | method        | limit/base | current      | history1 | history2 |
|-------------|-----|---------------|------------|--------------|----------|----------|
| PQ          |     | ASTM D8184*   |            | <b>16</b>    | 30       | 12       |
| Iron        | ppm | ASTM D5185(m) | >20        | <b>25</b>    | 26       | 26       |
| Chromium    | ppm | ASTM D5185(m) | >20        | <b>0</b>     | 0        | 0        |
| Nickel      | ppm | ASTM D5185(m) | >20        | <b>&lt;1</b> | 0        | <1       |
| Titanium    | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |
| Silver      | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |
| Aluminum    | ppm | ASTM D5185(m) | >20        | <b>3</b>     | 3        | 2        |
| Lead        | ppm | ASTM D5185(m) | >20        | <b>&lt;1</b> | <1       | <1       |
| Copper      | ppm | ASTM D5185(m) | >20        | <b>2</b>     | 2        | 2        |
| Tin         | ppm | ASTM D5185(m) | >20        | <b>0</b>     | 0        | 0        |
| Antimony    | ppm | ASTM D5185(m) |            | <b>&lt;1</b> | <1       | <1       |
| Vanadium    | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |
| Beryllium   | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |
| Cadmium     | ppm | ASTM D5185(m) |            | <b>0</b>     | 0        | 0        |

| ADDITIVES  |     | method        | limit/base | current      | history1 | history2 |
|------------|-----|---------------|------------|--------------|----------|----------|
| Boron      | ppm | ASTM D5185(m) | 50         | <b>&lt;1</b> | 2        | 2        |
| Barium     | ppm | ASTM D5185(m) | 15         | <b>0</b>     | 0        | 0        |
| Molybdenum | ppm | ASTM D5185(m) | 15         | <b>&lt;1</b> | <1       | 0        |
| Manganese  | ppm | ASTM D5185(m) |            | <b>&lt;1</b> | <1       | <1       |
| Magnesium  | ppm | ASTM D5185(m) | 50         | <b>1</b>     | <1       | <1       |
| Calcium    | ppm | ASTM D5185(m) | 50         | <b>1</b>     | 1        | 2        |
| Phosphorus | ppm | ASTM D5185(m) | 350        | <b>234</b>   | 254      | 264      |
| Zinc       | ppm | ASTM D5185(m) | 100        | <b>&lt;1</b> | 1        | 2        |
| Sulfur     | ppm | ASTM D5185(m) | 12500      | <b>8315</b>  | 8797     | 8963     |
| Lithium    | ppm | ASTM D5185(m) |            | <b>0</b>     | <1       | <1       |

| CONTAMINANTS |     | method        | limit/base | current      | history1 | history2 |
|--------------|-----|---------------|------------|--------------|----------|----------|
| Silicon      | ppm | ASTM D5185(m) | >15        | <b>1</b>     | 1        | 3        |
| Sodium       | ppm | ASTM D5185(m) |            | <b>&lt;1</b> | <1       | <1       |
| Potassium    | ppm | ASTM D5185(m) | >20        | <b>0</b>     | 0        | <1       |



# OIL ANALYSIS REPORT



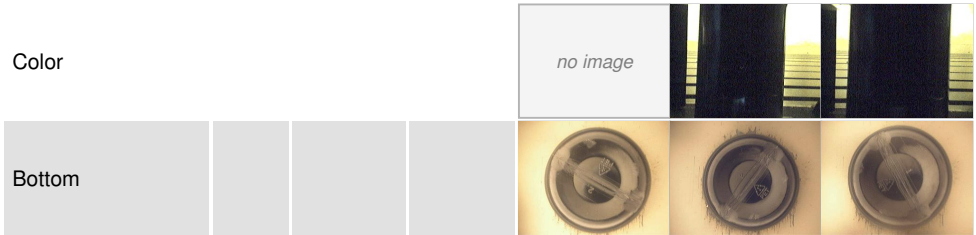
| FLUID CLEANLINESS | method       | limit/base | current         | history1 | history2 |
|-------------------|--------------|------------|-----------------|----------|----------|
| Particles >4µm    | ASTM D7647   | >5000      | <b>177638</b>   | 158433   | 138123   |
| Particles >6µm    | ASTM D7647   | >1300      | <b>42177</b>    | 36007    | 50611    |
| Particles >14µm   | ASTM D7647   | >160       | <b>864</b>      | 560      | 1172     |
| Particles >21µm   | ASTM D7647   | >40        | <b>159</b>      | 99       | 181      |
| Particles >38µm   | ASTM D7647   | >10        | <b>3</b>        | 2        | 3        |
| Particles >71µm   | ASTM D7647   | >3         | <b>0</b>        | 0        | 1        |
| Oil Cleanliness   | ISO 4406 (c) | >19/17/14  | <b>25/23/17</b> | 24/22/16 | 24/23/17 |

| FLUID DEGRADATION | method   | limit/base | current | history1     | history2 |       |
|-------------------|----------|------------|---------|--------------|----------|-------|
| Acid Number (AN)  | mg KOH/g | ASTM D974* | 0.85    | <b>0.536</b> | 0.39     | 0.491 |

| VISUAL           | method | limit/base | current | history1     | history2 |       |
|------------------|--------|------------|---------|--------------|----------|-------|
| White Metal      | scalar | Visual*    | NONE    | <b>NONE</b>  | NONE     | NONE  |
| Yellow Metal     | scalar | Visual*    | NONE    | <b>NONE</b>  | NONE     | NONE  |
| Precipitate      | scalar | Visual*    | NONE    | <b>NONE</b>  | NONE     | NONE  |
| Silt             | scalar | Visual*    | NONE    | <b>NONE</b>  | NONE     | NONE  |
| Debris           | scalar | Visual*    | NONE    | <b>NONE</b>  | VLITE    | NONE  |
| Sand/Dirt        | scalar | Visual*    | NONE    | <b>NONE</b>  | NONE     | NONE  |
| Appearance       | scalar | Visual*    | NORML   | <b>NORML</b> | NORML    | NORML |
| Odor             | scalar | Visual*    | NORML   | <b>NORML</b> | NORML    | NORML |
| Emulsified Water | scalar | Visual*    | >0.05   | <b>NEG</b>   | NEG      | NEG   |
| Free Water       | scalar | Visual*    |         | <b>NEG</b>   | NEG      | NEG   |

| FLUID PROPERTIES | method | limit/base    | current | history1   | history2 |     |
|------------------|--------|---------------|---------|------------|----------|-----|
| Visc @ 40°C      | cSt    | ASTM D7279(m) | 460     | <b>465</b> | 459      | 459 |

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



**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 **ALGOMA STEEL INC. - STORES DEPT.**  
**Sample No.** : WC0293355 **Received** : 22 Nov 2018 301 WALLACE TERRACE  
**Lab Number** : **02253203** **Tested** : 27 Nov 2018 SAULT STE MARIE, ON  
**Unique Number** : 4784379 **Diagnosed** : 27 Nov 2018 - Kevin Marson CA P6C 1K8  
**Test Package** : IND 2 ( Additional Tests: PQ, TAN Man ) Contact: Algoma Reliability  
 algomareliability@algoma.com

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.

T: (705)206-1059  
 F: (705)945-3585