

| Account Information   |   | Component Information  |  | Sample Information   |  |
|---|---|--|--|--|--|
| Account Number: SHELAM-0004-0002<br>Company Name: HOT MILL<br>Contact: MIKE SILLA<br>Address:<br>CLEVELAND, OH US<br>Phone Number: 216-429-7589 |   | Component ID: CROP SHEAR<br>Secondary ID: Lube 11<br>Component Type: GEARBOX CIRCULATING PRIMARY<br>Manufacturer: <a href="#">Information Requested</a><br>Model: <a href="#">Information Requested</a><br>Application: STEEL MILL<br>Sump Capacity: 200 gal |  | Tracking Number: F1821174152<br>Lab Number: I-965451<br>Lab Location: Indianapolis<br>Data Analyst: RMF<br>Sampled: 27-Jul-2018<br>Submitted: 30-Jul-2018<br>Received: 31-Jul-2018<br>Completed: 01-Aug-2018 |  |
| Filter Information  |   | Miscellaneous Information  |  | Product Information  |  |
| Filter Type: IN-LINE<br>Micron Rating: 90   |   |  |  | Product Manufacturer: SHELL<br>Product Name: OMALA S2 G<br>Viscosity Grade: ISO 460  |  |
| Comments  | Check for source of water contamination (SEALS, BREATHERS, FILL PORTS). Water is at a SEVERE LEVEL. Suggest water drain off procedure, water dehydration, and/or centrifuge. Phosphorus is slightly low for this lubricant. |  |  |  |  |

| Sample # | Wear Metals (ppm) |          |        |          |        |      |     |         |        |          | Contaminant Metals (ppm) |        | Multi-Source Metals (ppm) |          |            |          |           |         | Additive Metals (ppm) |           |         |        |            |      |
|----------|-------------------|----------|--------|----------|--------|------|-----|---------|--------|----------|--------------------------|--------|---------------------------|----------|------------|----------|-----------|---------|-----------------------|-----------|---------|--------|------------|------|
|          | Iron              | Chromium | Nickel | Aluminum | Copper | Lead | Tin | Cadmium | Silver | Vanadium | Silicon                  | Sodium | Potassium                 | Titanium | Molybdenum | Antimony | Manganese | Lithium | Boron                 | Magnesium | Calcium | Barium | Phosphorus | Zinc |
| 8        | 56                | 0        | 0      | 0        | 1      | 0    | 0   | 0       | 0      | 0        | 0                        | 2      | 3                         | 0        | 0          | 0        | 0         | 0       | 0                     | 0         | 2       | 0      | 92         | 0    |
| 9        | 74                | 0        | 0      | 0        | 1      | 0    | 0   | 0       | 0      | 0        | 1                        | 3      | 0                         | 0        | 0          | 1        | 0         | 0       | 1                     | 0         | 3       | 0      | 120        | 0    |
| 10       | 74                | 0        | 0      | 0        | 0      | 0    | 0   | 0       | 0      | 0        | 1                        | 0      | 0                         | 0        | 0          | 0        | 0         | 0       | 1                     | 0         | 0       | 0      | 110        | 0    |
| 11       | 41                | 0        | 0      | 0        | 1      | 0    | 0   | 0       | 0      | 0        | 0                        | 0      | 1                         | 0        | 0          | 0        | 0         | 0       | 4                     | 0         | 2       | 0      | 146        | 0    |
| 12       | 48                | 0        | 0      | 0        | 1      | 0    | 0   | 0       | 0      | 0        | 0                        | 1      | 1                         | 0        | 0          | 0        | 0         | 0       | 3                     | 0         | 2       | 0      | 152        | 0    |

| Sample # | Sample Information |               |           |           |             |            |               | Contaminants  |       |                 | Fluid Properties |                  |             |                |           |            |
|----------|--------------------|---------------|-----------|-----------|-------------|------------|---------------|---------------|-------|-----------------|------------------|------------------|-------------|----------------|-----------|------------|
|          | Date Sampled       | Date Received | Lube Time | Unit Time | Lube Change | Lube Added | Filter Change | Fuel Dilution | Soot  | Water           | Viscosity 40°C   | Viscosity 100 °C | Acid Number | Base No. D4739 | Oxidation | Nitration  |
|          |                    |               | d         | d         |             | gal        |               | % Vol         | % Vol | % Vol           | cSt              | cSt              | mg KOH/g    | mg KOH/g       | abs/cm    | abs/0.1 mm |
| 8        | 19-Mar-2018        | 21-Mar-2018   | 0         | 0         | No          | 0          | No            |               |       | ≈0.5 - Hotplate | WAT              |                  | 0.09        |                |           |            |
| 9        | 18-Apr-2018        | 19-Apr-2018   | 0         | 0         | No          | 0          | No            |               |       |                 | 421              |                  | 0.24        |                |           |            |
| 10       | 18-May-2018        | 21-May-2018   | 0         | 0         | No          | 0          | No            |               |       |                 | 418              |                  | 0.20        |                |           |            |
| 11       | 25-Jun-2018        | 27-Jun-2018   | 0         | 0         | No          | 0          | No            |               |       |                 | 479              |                  | 0.50        |                |           |            |
| 12       | 27-Jul-2018        | 31-Jul-2018   | 0         | 0         | No          | 0          | No            |               |       |                 | 465              |                  | 0.21        |                |           |            |

| Sample # | Particle Count (particles/mL) |        |        |         |         |         |         |         |          |             | Additional Testing                   |                                  |
|----------|-------------------------------|--------|--------|---------|---------|---------|---------|---------|----------|-------------|--------------------------------------|----------------------------------|
|          | ISO Code Based On 4/6/14      | > 4 µm | > 6 µm | > 10 µm | > 14 µm | > 21 µm | > 38 µm | > 70 µm | > 100 µm | Test Method | Water by Karl Fischer - mod. 6304C % | Particle Quantifier Index Number |
| 8        | //                            |        |        |         |         |         |         |         |          |             | 3.911                                | 106                              |
| 9        | //                            |        |        |         |         |         |         |         |          |             | 0.924                                | 75                               |
| 10       | //                            |        |        |         |         |         |         |         |          |             | 1.162                                | 63                               |
| 11       | //                            |        |        |         |         |         |         |         |          |             | 3.480                                | 31                               |
| 12       | //                            |        |        |         |         |         |         |         |          |             | 2.369                                | 28                               |

Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing fluid or component information limits the evaluation. No warranty is expressed or implied. Measurement uncertainty available upon request.

|                        |           |  |
|------------------------|-----------|--|
| Historical<br>Comments | <b>8</b>  | Check for source of water contamination (SEALS, BREATHERS, FILL PORTS). Water is at a SEVERE LEVEL. Suggest water drain off procedure, water dehydration, and/or centrifuge. Viscosity result is invalid due to water contamination. Phosphorus is slightly low for this lubricant. Resample at half interval. |
|                        | <b>9</b>  | Check for source of water contamination (SEALS, BREATHERS, FILL PORTS). Water is at a SEVERE LEVEL. Suggest water drain off procedure, water dehydration, and/or centrifuge. Phosphorus is slightly low for this lubricant.  |
|                        | <b>10</b> | Check for source of water contamination (SEALS, BREATHERS, FILL PORTS). Water is at a SEVERE LEVEL. Suggest water drain off procedure, water dehydration, and/or centrifuge. Phosphorus is slightly low for this lubricant. PLEASE NOTE, this is a recurring finding. Resample at half interval.               |
|                        | <b>11</b> | Check for source of water contamination (SEALS, BREATHERS, FILL PORTS). Water is at a SEVERE LEVEL. Suggest water drain off procedure, water dehydration, and/or centrifuge. Phosphorus is slightly low for this lubricant.  |

