

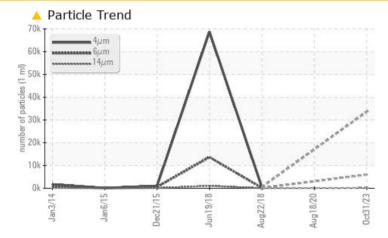
## **PROBLEM SUMMARY**

KAESER ASD40T 4709398 (S/N 1147)

**Compressor** 

### KAESER SIGMA (OEM) S-460 (--- GAL)

#### COMPONENT CONDITION SUMMARY



#### RECOMMENDATION

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

#### **PROBLEMATIC TEST RESULTS** Sample Status ABNORMAL ABNORMAL ABNORMAL Particles >6µm ASTM D7647 >1300 5978 154 Particles >14µm ASTM D7647 >80 25 9 Particles >21µm ASTM D7647 >20 41 **Oil Cleanliness** ISO 4406 (c) >--/17/13 **A** 22/20/15 14/12

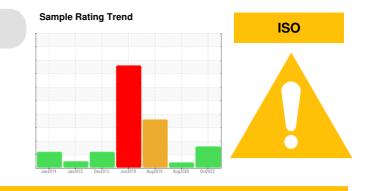
Customer Id: AMEGAIKC Sample No.: KC06007742 Lab Number: 06007742 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data: Don Baldridge +1 don.b505@comcast.net

*To change component or sample information:* Customer Service +1 1-800-237-1369 <u>customerservice@wearcheck.com</u>



There are no recommended actions for this sample.

#### HISTORICAL DIAGNOSIS

#### 18 Aug 2020 Diag: Angela Borella

VIS DEBRIS



Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. We were unable to perform a particle count due to a high concentration of particles present in this sample.All component wear rates are normal. Moderate concentration of visible dirt/debris present in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

#### 22 Aug 2018 Diag: Angela Borella

19 Jun 2018 Diag: Jonathan Hester

We advise that you check for a possible overheat condition. Recommend drain oil if not already done and flush with cleaner before refilling with oil. We recommend an early resample to monitor this condition. The copper level is abnormal. All other component wear rates are normal. There is a light concentration of water present in the oil. The amount and size of particulates present in the system are acceptable. The AN level is above the recommended limit. The oil is no longer serviceable.



#### DEGRADATION



We advise that you check for a possible overheat condition. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.All component wear rates are normal. There is a high amount of particulates present in the oil. There is a light concentration of water present in the oil. The AN level is above the recommended limit. The oil viscosity is higher than normal. Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable.





#### Report Id: AMEGAIKC [WUSCAR] 06007742 (Generated: 11/17/2023 08:55:11) Rev: 1



## **OIL ANALYSIS REPORT**

# KAESER ASD40T 4709398 (S/N 1147)

**Compressor** Fluid

KAESER SIGMA (OEM) S-460 (--- GAL)

#### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. The filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

#### Wear

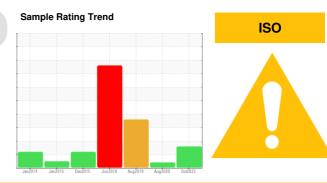
All component wear rates are normal.

#### Contamination

There is a high amount of particulates present in the oil.

#### Fluid Condition

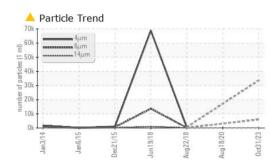
The AN level is acceptable for this fluid. The condition of the oil is acceptable for the time in service.

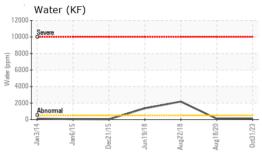


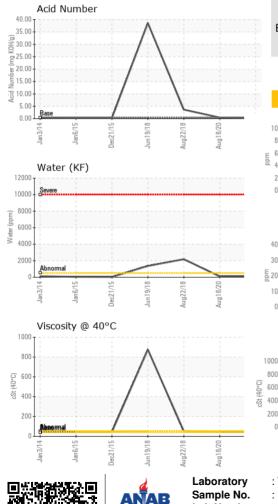
| Sample Number     Client Info     KC0607742     KC05075872     KC21913       Sample Date     Client Info     31 Oct 202     18 Aug 2020     22 Aug 2018       Machine Age     hrs     Client Info     0     3636     6344       Oil Age     hrs     Client Info     N/A     Changed     N/A       Sample Status     Client Info     N/A     Changed     N/A       WEAP METALS     method     Intro     0     3636     6344       Virance     ppm     ASTM 05155n     >50     0     -1     -1       Chromium     ppm     ASTM 05155n     >3     0     -1     0       Silver     ppm     ASTM 05155n     >2     0     0     0       Silver     ppm     ASTM 05155n     >10     0     -1     0       Copper     ppm     ASTM 05155n     >10     0     0     0       Autimom     ppm     ASTM 05155n     >10     0     0     0       Autimom     ppm     < | SAMPLE INFORM    | <b>MATION</b> | method       | limit/base | current           | history1    | history2      |
|--|------------------|---------------|--------------|------------|-------------------|-------------|---------------|
| Machine Age hrs Client Info 45191 41697 31179   Oil Age hrs Client Info 0 6636 634   Sample Status Client Info N/A ABNORMAL ABNORMAL ABNORMAL   WEAR METALS method limit/base current history1 history2   Iron ppm ASTM DS165m >50 0 <1  | Sample Number    |               | Client Info  |            | KC06007742        | KC05075872  | KC21913       |
| Machine Age hrs Client Info 45191 41697 31179   Oil Age hrs Client Info 0 6636 634   Sample Status Client Info N/A ABNORMAL ABNORMAL ABNORMAL   WEAR METALS method limit/base current history1 history2   Iron ppm ASTM DS165m >50 0 <1  | Sample Date      |               | Client Info  |            | 31 Oct 2023       | 18 Aug 2020 | 22 Aug 2018   |
| Oil Age     hrs     Client Info     0     3636     634       Oil Changed     Client Info     N/A     Changed     N/A       Sample Status      Imit base     current     history1     history2       Iron     ppm     ASTM 05185m     >50     0     <1  | Machine Age      | hrs           | Client Info  |            |                   | -           | 31179         |
| Sample Status     method     Imit/base     current     history1     ABNORMAL       WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     0     <1   | Oil Age          | hrs           | Client Info  |            | 0                 | 3636        | 634           |
| WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM D5185m     >50     0     <1  | Oil Changed      |               | Client Info  |            | N/A               | Changed     | N/A           |
| Iron     ppm     ASTM D5185m     >50     0     <1     <1       Chromium     ppm     ASTM D5185m     >30     0     <1   | Sample Status    |               |              |            | ABNORMAL          | ABNORMAL    | ABNORMAL      |
| Dromium     ppm     ASTM D5185m     >10     0     0     0       Nickel     ppm     ASTM D5185m     >3     0     <1   | WEAR METALS      |               | method       | limit/base | current           | history1    | history2      |
| Chromium     ppm     ASTM D5185m     >10     0     0     0       Nickel     ppm     ASTM D5185m     >3     0     <1  | Iron             | ppm           | ASTM D5185m  | >50        | 0                 | <1          | <1            |
| Titanium     ppm     ASTM D5185m     >3     <1     0     0       Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >10     0     0     <1   | Chromium         | ppm           | ASTM D5185m  | >10        | 0                 | 0           | 0             |
| Titanium     ppm     ASTM D5185m     >3     <1     0     0       Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >10     0     0     <1   | Nickel           | ppm           | ASTM D5185m  | >3         | 0                 | <1          | 0             |
| Silver     ppm     ASTM D5185m     >2     0     0     0       Aluminum     ppm     ASTM D5185m     >10     0     0     <1  | Titanium         |               | ASTM D5185m  | >3         | <1                | 0           | 0             |
| Aluminum     ppm     ASTM D5185m     >10     0     0     <1       Lead     ppm     ASTM D5185m     >10     0     0     0       Copper     ppm     ASTM D5185m     >50     19     7     ▲ 35       Tin     ppm     ASTM D5185m     >10     0     0     0       Vanadium     ppm     ASTM D5185m     <11   |                  |               |              |            |                   |             | 0             |
| Lead     ppm     ASTM D5185m     >10     0     0     0       Copper     ppm     ASTM D5185m     >50     19     7     ▲ 35       Tin     ppm     ASTM D5185m     >10     0     0     0       Antimony     ppm     ASTM D5185m      0     0     0       Vanadium     ppm     ASTM D5185m     0     0     0     0       Cadmium     ppm     ASTM D5185m     0     8     2       Boron     ppm     ASTM D5185m     0     8     2       Barium     ppm     ASTM D5185m     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0       Maganese     ppm     ASTM D5185m     0     0     0     0       Colcium     ppm     ASTM D5185m     0     0     0     <1   | Aluminum         |               |              |            |                   |             | <1            |
| Copper     ppm     ASTM D5185m     >50     19     7     ▲ 35       Tin     ppm     ASTM D5185m     >10     0     0     0       Antimony     ppm     ASTM D5185m      0     0     0       Vanadium     ppm     ASTM D5185m      0     0     0       Cadmium     ppm     ASTM D5185m      0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0     0       Magnesium     ppm     ASTM D5185m     0     0     0     0       Colacium     ppm     ASTM D5185m     2     0     0     0     2       Silicon     ppm     ASTM D5185m     2     0     <1   |                  |               |              |            |                   |             |               |
| Tin     ppm     ASTM D5185m     >10     0     0     0       Antimony     ppm     ASTM D5185m      0     0       Vanadium     ppm     ASTM D5185m     <1     0     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     8     2       Barium     ppm     ASTM D5185m     0     0     0     0       Magnesium     ppm     ASTM D5185m     0     0     0     0       Calcium     ppm     ASTM D5185m     90     0     <1     0     0       Dhosphorus     ppm     ASTM D5185m     20     0     <1     <1       Sodium     ppm     ASTM D5185m     20     <1     <1     <1       Sodium     ppm     ASTM D5185m     >20     <1     <1     <1     <  |                  |               |              |            |                   |             | -             |
| Antimony     ppm     ASTM D5185m      0     0       Vanadium     ppm     ASTM D5185m     <1  |                  |               |              |            | -                 |             |               |
| Vanadium     ppm     ASTM D5185m     <1     0     0       Cadmium     ppm     ASTM D5185m     0     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     8     2       Barium     ppm     ASTM D5185m     0     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0     0       Marganese     ppm     ASTM D5185m     90     0     <1     0     0       Calcium     ppm     ASTM D5185m     90     0     <1     0     0       Calcium     ppm     ASTM D5185m     2     0     0     0     1       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     0     <1     <1       Sodium     ppm     ASTM D5185m     >20     <1                                       |                  |               |              |            |                   |             |               |
| Cadmium     ppm     ASTM D5185m     0     0     0       ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     8     2       Barium     ppm     ASTM D5185m     90     0     0     0     0       Molybdenum     ppm     ASTM D5185m     90     0     0     0     0       Manganese     ppm     ASTM D5185m     90     0     0     0     0       Magnesium     ppm     ASTM D5185m     90     0     0     0     0       Colacium     ppm     ASTM D5185m     90     0     0     0     0       Contamin     ppm     ASTM D5185m     2     0     <1     1       Contamin     ppm     ASTM D5185m     >25     0     <1     1       Sodium     ppm     ASTM D5185m     >20     0     <1     <1       Sodium     ppm     ASTM D6185m     <  |                  |               |              |            |                   |             |               |
| ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     8     2       Barium     ppm     ASTM D5185m     90     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0     0       Magnese     ppm     ASTM D5185m     90     0     <1   |                  |               |              |            |                   |             |               |
| Boron     ppm     ASTM D5185m     0     8     2       Barium     ppm     ASTM D5185m     90     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0     0       Manganese     ppm     ASTM D5185m     90     0     <1   |                  | ρριιι         |              | 11 11 11   |                   |             |               |
| Barium     ppm     ASTM D5185m     90     0     0     0       Molybdenum     ppm     ASTM D5185m     0     0     0       Manganese     ppm     ASTM D5185m     90     0     <1   |                  |               |              | limit/base |                   |             |               |
| Molybdenum     ppm     ASTM D5185m     0     0     0       Manganese     ppm     ASTM D5185m     90     0     <1   |                  |               |              |            |                   |             |               |
| Marganese     ppm     ASTM D5185m     0     0     0     0       Magnesium     ppm     ASTM D5185m     90     0     <1  |                  |               |              | 90         |                   |             |               |
| Magnesium     ppm     ASTM D5185m     90     0     <1     0       Calcium     ppm     ASTM D5185m     2     0     0     0       Phosphorus     ppm     ASTM D5185m     2     0     0     0       Zinc     ppm     ASTM D5185m     0     9     50       Zinc     ppm     ASTM D5185m     0     0     0     <1       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     0     <1   | -                |               |              |            |                   |             |               |
| Calcium     ppm     ASTM D5185m     2     0     0     0       Phosphorus     ppm     ASTM D5185m     0     9     50       Zinc     ppm     ASTM D5185m     0     0     <1  | -                |               |              |            |                   |             |               |
| Phosphorus     ppm     ASTM D5185m     0     9     50       Zinc     ppm     ASTM D5185m     0     0     <1       CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     0     <1     <1       Sodium     ppm     ASTM D5185m     >20     0     <1     <1       Potassium     ppm     ASTM D5185m     >20     0     <1     <1       Water     %     ASTM D6304     >0.05     0.012     0.009     △     0.218       ppm Water     ppm     ASTM D6304     >500     126.0     94.2     △     2180       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     >1300     5978      565       Particles >14µm     ASTM D7647     >20     41      9       Particles >38µm     ASTM D7647     >3     0            | 0                |               |              |            |                   |             |               |
| ZincppmASTM D5185m00<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>250<1   |                  | ppm           |              | 2          | -                 |             |               |
| CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>250<1   |                  | ppm           |              |            |                   |             |               |
| Silicon   ppm   ASTM D5185m   >25   0   <1   <1     Sodium   ppm   ASTM D5185m   >20   0   <1   1   <1     Potassium   ppm   ASTM D5185m   >20   0   <1   <1   <1     Potassium   ppm   ASTM D5185m   >20   0   <1   <1   <1     Water   %   ASTM D6304   >0.05   0.012   0.009   △   0.218     ppm Water   ppm   ASTM D6304   >500   126.0   94.2   △   2180     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   33609    565     Particles >6µm   ASTM D7647   >1300   5978    154     Particles >14µm   ASTM D7647   >20   41    9     Particles >21µm   ASTM D7647   >3   0    1     Particles >38µm   ASTM D7647   >3   0    1     Particles >71µm   ASTM D764  | Zinc             | ppm           | ASTM D5185m  |            | 0                 | 0           | <1            |
| Sodium     ppm     ASTM D5185m     <1     1     <1       Potassium     ppm     ASTM D5185m<>20     0     <1  | CONTAMINANTS     | 3             | method       | limit/base | current           | history1    | history2      |
| Potassium   ppm   ASTM D5185m   >20   0   <1   <1     Water   %   ASTM D6304   >0.05   0.012   0.009   ▲ 0.218     ppm Water   ppm   ASTM D6304   >500   126.0   94.2   ▲ 2180     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   33609    565     Particles >6µm   ASTM D7647   >1300   5978    154     Particles >14µm   ASTM D7647   >80   183    25     Particles >21µm   ASTM D7647   >20   41    9     Particles >38µm   ASTM D7647   >3   0    0     Oil Cleanliness   ISO 4406 (c)   >/17/13   22/20/15    14/12     FLUID DEGRADATION   method   limit/base   current   history1   history2  | Silicon          | ppm           | ASTM D5185m  | >25        | 0                 | <1          | <1            |
| Water   %   ASTM D6304   >0.05   0.012   0.009   ▲ 0.218     ppm Water   ppm   ASTM D6304   >500   126.0   94.2   ▲ 2180     FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   33609    565     Particles >6µm   ASTM D7647   >1300   5978    154     Particles >14µm   ASTM D7647   >80   ▲ 183    25     Particles >21µm   ASTM D7647   >20   ▲ 41    9     Particles >38µm   ASTM D7647   >3   0    0     Oil Cleanliness   ISO 4406 (c)   >/17/13   22/20/15    14/12     FLUID DEGRADATION   method   limit/base   current   history1   history2  | Sodium           | ppm           | ASTM D5185m  |            | <1                | 1           | <1            |
| ppm Water     ppm     ASTM D6304     >500     126.0     94.2     ▲ 2180       FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     33609      565       Particles >6µm     ASTM D7647     >1300     5978      154       Particles >14µm     ASTM D7647     >80     183      25       Particles >21µm     ASTM D7647     >20     41      9       Particles >38µm     ASTM D7647     >4     1      1       Particles >71µm     ASTM D7647     >3     0      0       Oil Cleanliness     ISO 4406 (c)     >/17/13     22/20/15      14/12       FLUID DEGRADATION     method     limit/base     current     history1     history2  | Potassium        | ppm           | ASTM D5185m  | >20        | 0                 | <1          | <1            |
| FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   33609    565     Particles >6µm   ASTM D7647   >1300   5978    154     Particles >14µm   ASTM D7647   >80   183    25     Particles >21µm   ASTM D7647   >20   411    9     Particles >38µm   ASTM D7647   >4   1    1     Particles >38µm   ASTM D7647   >3   0    0     Oil Cleanliness   ISO 4406 (c)   >/17/13   22/20/15    14/12     FLUID DEGRADATION   method   limit/base   current   history1   history2   | Water            | %             | ASTM D6304   | >0.05      | 0.012             | 0.009       | ▲ 0.218       |
| Particles >4μm   ASTM D7647   33609    565     Particles >6μm   ASTM D7647   >1300   5978    154     Particles >14μm   ASTM D7647   >80   183    25     Particles >21μm   ASTM D7647   >20   41    9     Particles >38μm   ASTM D7647   >4   1    1     Particles >38μm   ASTM D7647   >3   0    0     Oil Cleanliness   ISO 4406 (c)   >/17/13   22/20/15    14/12     FLUID DEGRADATION   method   limit/base   current   history1   history2  | ppm Water        | ppm           | ASTM D6304   | >500       | 126.0             | 94.2        | <b>A</b> 2180 |
| Particles >6µm   ASTM D7647   >1300   ▲ 5978    154     Particles >14µm   ASTM D7647   >80   ▲ 183    25     Particles >21µm   ASTM D7647   >20   ▲ 41    9     Particles >38µm   ASTM D7647   >4   1    1     Particles >38µm   ASTM D7647   >4   1    0     Oil Cleanliness   ISO 4406 (c)   >/17/13   ▲ 22/20/15    14/12     FLUID DEGRADATION   method   limit/base   current   history1   history2   | FLUID CLEANLIN   | IESS          | method       | limit/base | current           | history1    | history2      |
| Particles >14µm   ASTM D7647   >80   ▲ 183    25     Particles >21µm   ASTM D7647   >20   ▲ 41    9     Particles >38µm   ASTM D7647   >4   1    1     Particles >38µm   ASTM D7647   >3   0    0     Particles >71µm   ASTM D7647   >3   0    0     Oil Cleanliness   ISO 4406 (c)   >/17/13   ▲ 22/20/15    14/12     FLUID DEGRADATION   method   limit/base   current   history1   history2  | Particles >4µm   |               | ASTM D7647   |            | 33609             |             | 565           |
| Particles >21μm     ASTM D7647     >20     ▲ 41      9       Particles >38μm     ASTM D7647     >4     1      1       Particles >38μm     ASTM D7647     >4     1      1       Particles >71μm     ASTM D7647     >3     0      0       Oil Cleanliness     ISO 4406 (c)     >/17/13     22/20/15      14/12       FLUID DEGRADATION     method     limit/base     current     history1     history2   | Particles >6µm   |               | ASTM D7647   | >1300      | <u> </u>          |             | 154           |
| Particles >38μm     ASTM D7647     >4     1      1       Particles >71μm     ASTM D7647     >3     0      0       Oil Cleanliness     ISO 4406 (c)     >/17/13     22/20/15      14/12       FLUID DEGRADATION     method     limit/base     current     history1     history2   | Particles >14µm  |               | ASTM D7647   | >80        | <u> </u>          |             | 25            |
| Particles >71μm     ASTM D7647     >3     0      0       Oil Cleanliness     ISO 4406 (c)     >/17/13     ▲ 22/20/15      14/12       FLUID DEGRADATION     method     limit/base     current     history1     history2  | Particles >21µm  |               | ASTM D7647   | >20        | <u> </u>          |             | 9             |
| Oil Cleanliness     ISO 4406 (c)     >/17/13     ▲ 22/20/15      14/12       FLUID DEGRADATION     method     limit/base     current     history1     history2   | Particles >38µm  |               | ASTM D7647   | >4         | 1                 |             | 1             |
| Oil Cleanliness     ISO 4406 (c)     >/17/13     ▲ 22/20/15      14/12       FLUID DEGRADATION     method     limit/base     current     history1     history2   | Particles >71µm  |               | ASTM D7647   | >3         | 0                 |             | 0             |
|  |                  |               | ISO 4406 (c) | >/17/13    | <b>A</b> 22/20/15 |             | 14/12         |
| Acid Number (AN) mg KOH/g ASTM D8045 0.4 0.29 0.454 🔺 3.629  | FLUID DEGRADA    | TION          | method       | limit/base | current           | history1    | history2      |
|  | Acid Number (AN) | mg KOH/g      | ASTM D8045   | 0.4        | 0.29              | 0.454       | ▲ 3.629       |



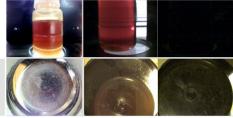
## **OIL ANALYSIS REPORT**



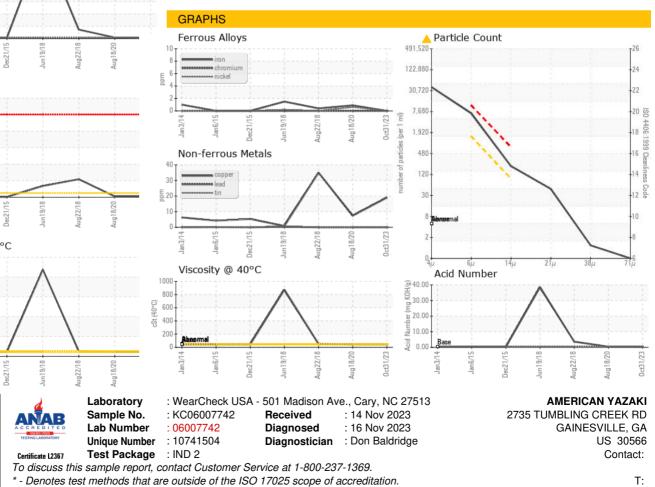




| VISUAL           |        | method    | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal      | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Yellow Metal     | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Precipitate      | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Silt             | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Debris           | scalar | *Visual   | NONE       | LIGHT   | 🔺 MODER  | NONE     |
| Sand/Dirt        | scalar | *Visual   | NONE       | NONE    | NONE     | NONE     |
| Appearance       | scalar | *Visual   | NORML      | NORML   | NORML    | NORML    |
| Odor             | scalar | *Visual   | NORML      | NORML   | NORML    | NORML    |
| Emulsified Water | scalar | *Visual   | >0.05      | NEG     | NEG      | NEG      |
| Free Water       | scalar | *Visual   |            | NEG     | NEG      | NEG      |
| FLUID PROPERT    | IES    | method    | limit/base | current | history1 | history2 |
| Visc @ 40°C      | cSt    | ASTM D445 | 46         | 44.8    | 45.5     | 50.69    |
| SAMPLE IMAGES    | S      | method    | limit/base | current | history1 | history2 |
| Color            |        |           |            | A.      |          |          |



Bottom



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Contact/Location: ? ? - AMEGAIKC