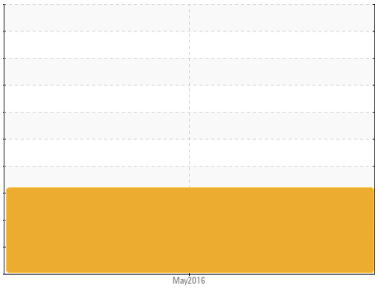
# PROBLEM SUMMARY

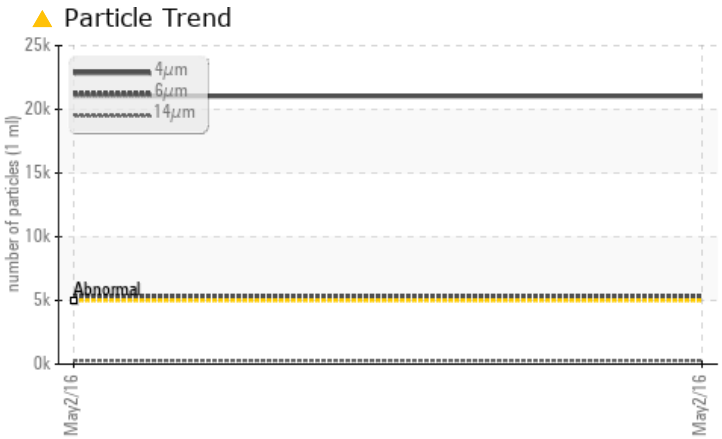
Sample Rating Trend




**VISUAL METAL**

Machine Id
## KM3301 MOTOR ELECT AC
Component
**Hydraulic System**
Fluid
**{not provided} (--- GAL)**

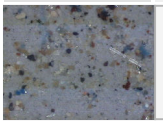
## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

The component was not specified so we have determined that this is a hydraulic system based on the fluid type in use. Please specify the correct component type on your next sample. 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. We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. 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. Please specify the brand, type, and viscosity of the oil on your next sample. We suspect that the abnormal contaminant(s) is the result of incorrect sampling technique. DISCLAIMER: Interpretation of laboratory tests is based on sample, as received from client. Source of sample and sampling technique cannot be verified.

## PROBLEMATIC TEST RESULTS

| | | | | | | |
|---|---|---|---|---|---|---|
| Sample Status | | | | **ABNORMAL** | --- | --- |
| Particles >4µm | | ASTM D7647 | >5000 | ▲ **21037** | --- | --- |
| Particles >6µm | | ASTM D7647 | >1300 | ▲ **5304** | --- | --- |
| Particles >14µm | | ASTM D7647 | >160 | ▲ **276** | --- | --- |
| Particles >21µm | | ASTM D7647 | >40 | ▲ **76** | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | ▲ **22/20/15** | --- | --- |
| White Metal | scalar | Visual* | NONE | ▲ **VLITE** | --- | --- |
| Debris | scalar | Visual* | NONE | ▲ **VLITE** | --- | --- |
| PrtFilter | | | |  | *no image* | *no image* |

**Customer Id:** HIBSTJ
**Sample No.:** WC
**Lab Number:** 02072478
**Test Package:** MAR 2

*To manage this report scan the QR code*

*To discuss the diagnosis or test data:*
Kevin Marson +1 (289)291-4644 x4644
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*To change component or sample information:*
Gloria Gonzalez +1 (289)291-4643 x4643
gloria.gonzalez@wearcheck.com

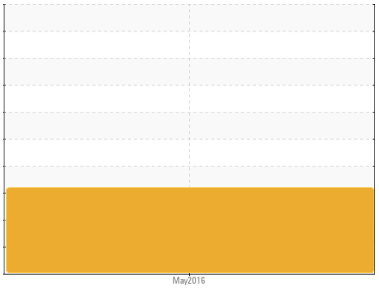
## RECOMMENDED ACTIONS

| Action | Status | Date | Done By | Description |
|---|---|---|---|---|
| Change Filter | MISSED | Feb 10 2017 | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. |
| Resample | MISSED | Feb 10 2017 | ? | We recommend an early resample to monitor this condition. |
| Alert | MISSED | Feb 10 2017 | ? | 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. |
| Information Required | MISSED | Feb 10 2017 | ? | Please specify the brand, type, and viscosity of the oil on your next sample. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. |
| Check Dirt Access | MISSED | Feb 10 2017 | ? | We advise that you check all areas where contaminants can enter the system. |
| Check For Visual Metal | MISSED | Feb 10 2017 | ? | We advise that you check for visible metal particles in the oil. |
| Filter Fluid | MISSED | Feb 10 2017 | ? | We advise that you perform a filter service, and use off-line filtration to improve the cleanliness of the system fluid. |

## HISTORICAL DIAGNOSIS

# OIL ANALYSIS REPORT

Sample Rating Trend




**VISUAL METAL**

Machine Id
## KM3301 MOTOR ELECT AC
Component
**Hydraulic System**
Fluid
**{not provided} (--- GAL)**

## DIAGNOSIS

**Recommendation**

The component was not specified so we have determined that this is a hydraulic system based on the fluid type in use. Please specify the correct component type on your next sample. 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. We advise that you check all areas where contaminants can enter the system. We advise that you check for visible metal particles in the oil. 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. Please specify the brand, type, and viscosity of the oil on your next sample. We suspect that the abnormal contaminant(s) is the result of incorrect sampling technique. DISCLAIMER: Interpretation of laboratory tests is based on sample, as received from client. Source of sample and sampling technique cannot be verified.

**Wear**

Light concentration of visible metal present. All suspended wear metals are normal.

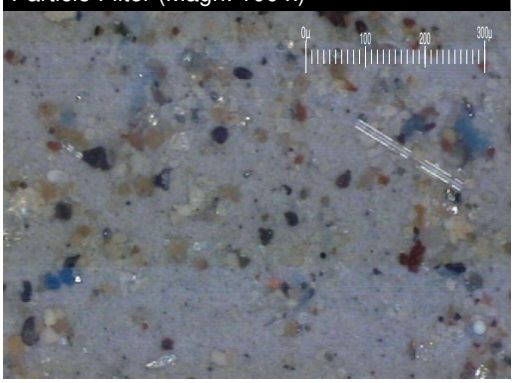
**Contamination**

Particles >4µm are abnormally high. Particles >6µm are abnormally high. Particles >6µm are abnormally high.. Particles >14µm are notably high. Particles >21µm are notably high. Light concentration of visible dirt/debris present in the oil.

**Fluid Condition**

The AN level is acceptable for this fluid.

Particle Filter (Magn: 100 x)



| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC** | --- | --- |
| Sample Date | | Client Info | | **02 May 2016** | --- | --- |
| Machine Age | cyc | Client Info | | **0** | --- | --- |
| Oil Age | cyc | Client Info | | **0** | --- | --- |
| Oil Changed | | Client Info | | **N/A** | --- | --- |
| Sample Status | | | | **ABNORMAL** | --- | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |
| Chromium | ppm | ASTM D5185(m) | >10 | **0** | --- | --- |
| Nickel | ppm | ASTM D5185(m) | >10 | **0** | --- | --- |
| Titanium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Silver | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Aluminum | ppm | ASTM D5185(m) | >10 | **0** | --- | --- |
| Lead | ppm | ASTM D5185(m) | >20 | **<1** | --- | --- |
| Copper | ppm | ASTM D5185(m) | >20 | **<1** | --- | --- |
| Tin | ppm | ASTM D5185(m) | >10 | **1** | --- | --- |
| Antimony | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Vanadium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Beryllium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Cadmium | ppm | ASTM D5185(m) | | **<1** | --- | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | | **<1** | --- | --- |
| Barium | ppm | ASTM D5185(m) | | **<1** | --- | --- |
| Molybdenum | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Manganese | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Magnesium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Calcium | ppm | ASTM D5185(m) | | **56** | --- | --- |
| Phosphorus | ppm | ASTM D5185(m) | | **340** | --- | --- |
| Zinc | ppm | ASTM D5185(m) | | **435** | --- | --- |
| Sulfur | ppm | ASTM D5185(m) | | **3739** | --- | --- |
| Lithium | ppm | ASTM D5185(m) | | **<1** | --- | --- |

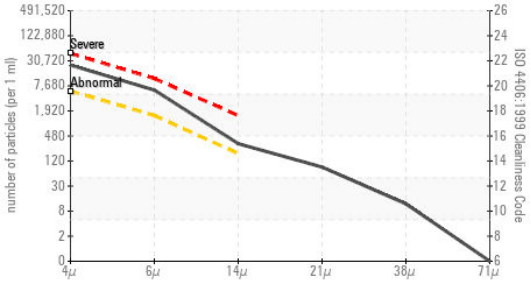
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >15 | **2** | --- | --- |
| Sodium | ppm | ASTM D5185(m) | | **<1** | --- | --- |
| Potassium | ppm | ASTM D5185(m) | >20 | **0** | --- | --- |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >5000 | ▲ **21037** | --- | --- |
| Particles >6µm | | ASTM D7647 | >1300 | ▲ **5304** | --- | --- |
| Particles >14µm | | ASTM D7647 | >160 | ▲ **276** | --- | --- |
| Particles >21µm | | ASTM D7647 | >40 | ▲ **76** | --- | --- |
| Particles >38µm | | ASTM D7647 | >10 | **10** | --- | --- |
| Particles >71µm | | ASTM D7647 | >3 | **0** | --- | --- |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | ▲ **22/20/15** | --- | --- |

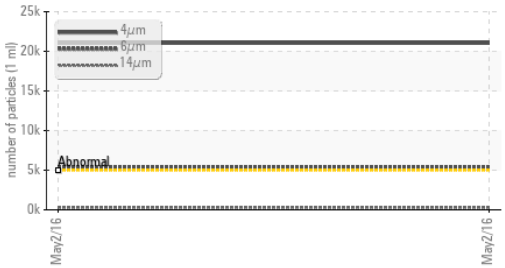
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D974* | | **1.14** | --- | --- |

# OIL ANALYSIS REPORT

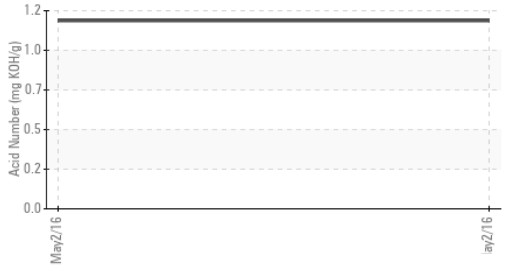
Particle Count



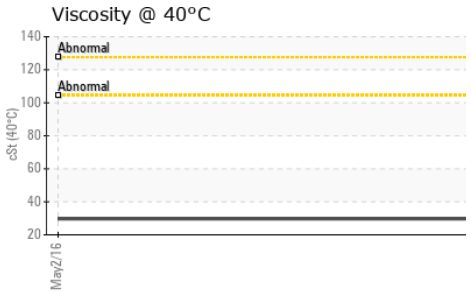

Particle Trend




Acid Number

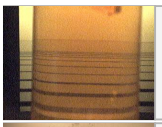



Viscosity @ 40°C




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

| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D7279(m) | | **29.7** | --- | --- |

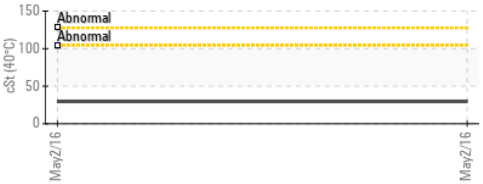
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | *no image* | *no image* |
| Bottom | | |  | *no image* | *no image* |
| PrtFilter | | |  | *no image* | *no image* |

GRAPHS

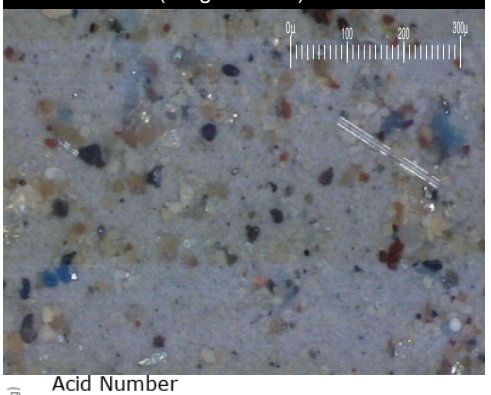
Ferrous Alloys


Non-ferrous Metals


Viscosity @ 40°C




Particle Filter (Magn: 100 x)



Acid Number


ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC
**Lab Number** : 02072478
**Unique Number** : 4314802
**Test Package** : MAR 2 ( Additional Tests: Bottom, BottomAnalysis, FilterPatch, TAN Man )

**Received** : 17 May 2016
**Diagnosed** : 19 May 2016
**Diagnostician** : Kevin Marson

**HIBERNIA MGMT & DEVELOPMENT CO. LTD**
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ST.JOHNS, NL
CA A1C 6K3
Contact: Sam Nash
samantha.m.nash@exxonmobil.com
T:
F: (709)722-3766

*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.*