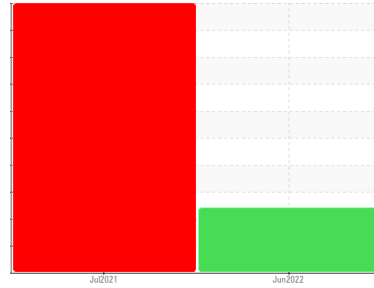




PROBLEM SUMMARY

Sample Rating Trend

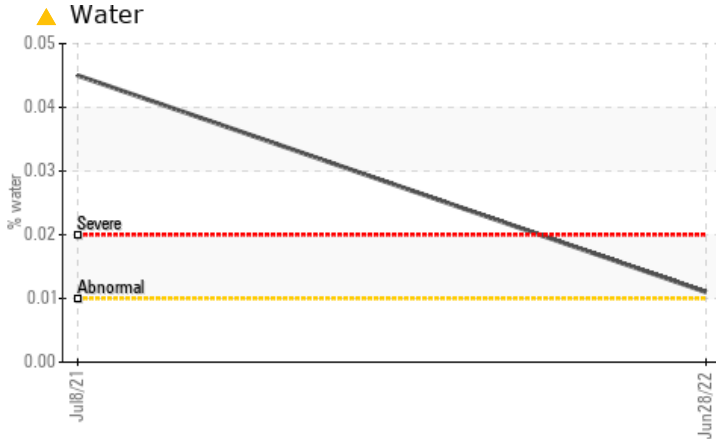


WATER



Machine Id
BDE PH #2 UNIT #7 (S/N BX00004-001)
 Component
Transformer Oil
 Fluid
TRANSFORMER NATURAL ESTER FLUID (2445 LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend an early resample to monitor this condition.

PROBLEMATIC TEST RESULTS

| Sample Status | | | | ABNORMAL | SEVERE | --- |
|---------------------|------|---------------|-------|-----------------|---------------|-----|
| Water | % | ASTM D6304* | >0.01 | ▲ 0.011 | ● 0.045 | --- |
| ppm Water | ppm | ASTM D6304* | >100 | ▲ 113.2 | ● 454.5 | --- |
| Interfacial Tension | mN/m | ASTM D971(e)* | | ▲ 12.97 | ▲ 12.61 | --- |

Customer Id: NEWMIL
 Sample No.: WC0645954
 Lab Number: 02560014
 Test Package: TRF 2



To manage this report scan the QR code

To discuss the diagnosis or test data:
 Bill Quesnel CLS,OMA II,MLA-III,LLA-I +1
 (289)291-4641 x4641
Bill.Quesnel@wearcheck.com

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. |
| Resample | --- | --- | ? | We recommend an early resample to monitor this condition. |
| Information Required | --- | --- | ? | Please specify the brand, type, and viscosity of the oil on your next sample. |
| Check Breathers | --- | --- | ? | The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. |

HISTORICAL DIAGNOSIS

COMBUSTION



08 Jul 2021 Diag: Bill Quesnel

We recommend that you drain the transformer oil from the component if this has not already been done. The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend you service the filters on this component. We recommend an early resample to monitor this condition. Please specify the brand and type of insulating fluid on your next sample. {not applicable} The ethane level is high indicating low energy arcing in a confined space. There is a light amount of silt (particulates < 14 microns in size) present in the transformer oil. There is a high concentration of water present in the transformer oil. The AN level is above the recommended limit. The Interfacial Tension (IFT) of the fluid is low. The transformer oil is no longer serviceable.

view report





OIL ANALYSIS REPORT

Sample Rating Trend



WATER



Machine Id
BDE PH #2 UNIT #7 (S/N BX00004-001)

Component
Transformer Oil

Fluid
TRANSFORMER NATURAL ESTER FLUID (2445 LTR)

DIAGNOSIS

Recommendation

The air breather requires service. If unrated, we recommend that you replace with a suitable micron rated and/or desiccant air breather. If rated, we recommend that you service/replace the breather. We recommend an early resample to monitor this condition.

Wear

{not applicable}

Contamination

There is a moderate concentration of water present in the transformer oil. The system cleanliness is acceptable for your target ISO 4406 cleanliness code.

Fluid Condition

The Interfacial Tension (IFT) of the fluid is low. The AN level is acceptable for this fluid. The transformer oil is no longer serviceable.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|----------|
| Sample Number | Client Info | | WC0645954 | WC0475722 | --- |
| Sample Date | Client Info | | 28 Jun 2022 | 08 Jul 2021 | --- |
| Machine Age | hrs | Client Info | 0 | 0 | --- |
| Oil Age | hrs | Client Info | 0 | 0 | --- |
| Oil Changed | Client Info | | N/A | N/A | --- |
| Sample Status | | | ABNORMAL | SEVERE | --- |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|-------------|---------|----------------|----------|
| Water | % | ASTM D6304* | >0.01 | ▲ 0.011 | 0.045 |
| ppm Water | ppm | ASTM D6304* | >100 | ▲ 113.2 | 454.5 |

FLUID CLEANLINESS

| | method | limit/base | current | history1 | history2 |
|-----------------|--------------|------------|-----------------|------------|----------|
| Particles >4µm | ASTM D7647 | >5000 | 8094 | ▲ 6276 | --- |
| Particles >6µm | ASTM D7647 | >1300 | 1436 | ▲ 2134 | --- |
| Particles >14µm | ASTM D7647 | >160 | 17 | ▲ 210 | --- |
| Particles >21µm | ASTM D7647 | >40 | 2 | ▲ 70 | --- |
| Particles >38µm | ASTM D7647 | >10 | 0 | 4 | --- |
| Particles >71µm | ASTM D7647 | >3 | 0 | 1 | --- |
| Oil Cleanliness | ISO 4406 (c) | >19/17/14 | 20/18/11 | ▲ 20/18/15 | --- |

DISSOLVED GAS ANALYSIS (DGA)

| | method | limit/base | current | history1 | history2 |
|-----------------------------|--------|----------------|--------------|----------|----------|
| DGA - H2 | ppm | ASTM D3612(e)* | 0 | 6 | --- |
| DGA - O2 | ppm | ASTM D3612(e)* | 182 | 255 | --- |
| DGA - N2 | ppm | ASTM D3612(e)* | 59204 | 53853 | --- |
| DGA - CO | ppm | ASTM D3612(e)* | 28 | 43 | --- |
| DGA - CO2 | ppm | ASTM D3612(e)* | 827 | 998 | --- |
| DGA - Methane | ppm | ASTM D3612(e)* | 2 | 2 | --- |
| DGA - Acetylene | ppm | ASTM D3612(e)* | 0 | 0 | --- |
| DGA - Ethylene | ppm | ASTM D3612(e)* | 1 | 4 | --- |
| DGA - Ethane | ppm | ASTM D3612(e)* | 158 | ▲ 157 | --- |
| DGA - Total Gas Content | % | ASTM D3612(e)* | 60402 | 55318 | --- |
| DGA - Total Combustible Gas | ppm | ASTM D3612(e)* | 189 | 212 | --- |

FLUID DEGRADATION

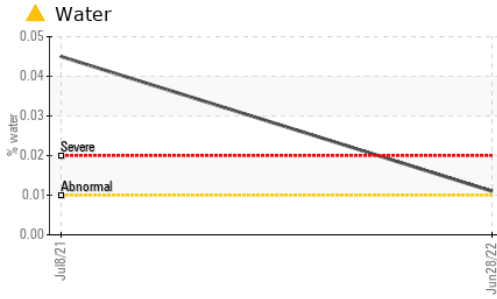
| | method | limit/base | current | history1 | history2 |
|------------------|----------|------------|---------|-------------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.02 | 0.08 | ▲ 0.09 |

VISUAL

| | method | limit/base | current | history1 | history2 |
|--------------|--------|------------|---------|--------------|----------|
| White Metal | scalar | Visual* | NONE | NONE | NONE |
| Yellow Metal | scalar | Visual* | NONE | NONE | NONE |
| Precipitate | scalar | Visual* | NONE | NONE | NONE |
| Silt | scalar | Visual* | NONE | NONE | NONE |
| Debris | scalar | Visual* | NONE | NONE | NONE |
| Sand/Dirt | scalar | Visual* | NONE | NONE | NONE |
| Appearance | scalar | Visual* | NORML | NORML | NORML |
| Odor | scalar | Visual* | NORML | NORML | NORML |



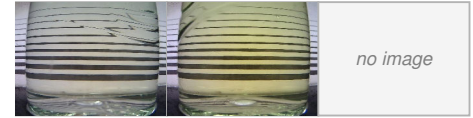
OIL ANALYSIS REPORT



| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|----------------------|----------------------|------------|----------------|----------|----------|
| Specific Gravity | ASTM D4052(e) | 0.920 | 0.921 | 0.921 | --- |
| Dielectric Breakdown | kV ASTM D3612(e)* | | 50 | 44 | --- |
| Interfacial Tension | mN/m ASTM D971(e)* | | ▲ 12.97 | ▲ 12.61 | --- |
| ASTM Color | scalar ASTM D1500(e) | 0.5 | <0.5 | L1.0 | --- |

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

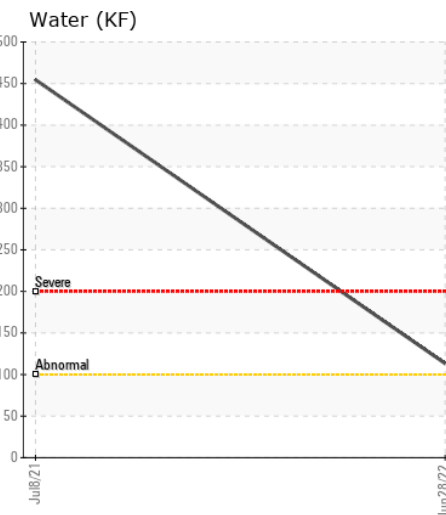
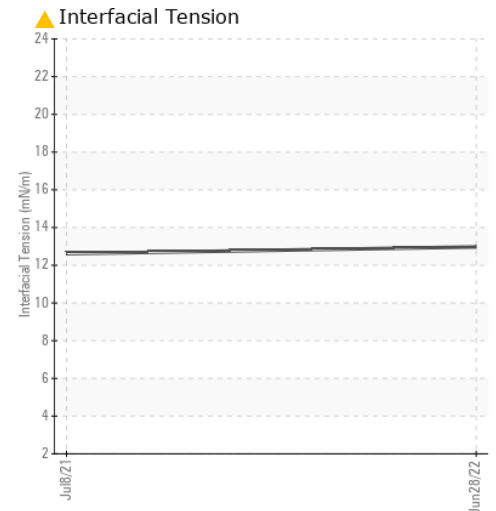
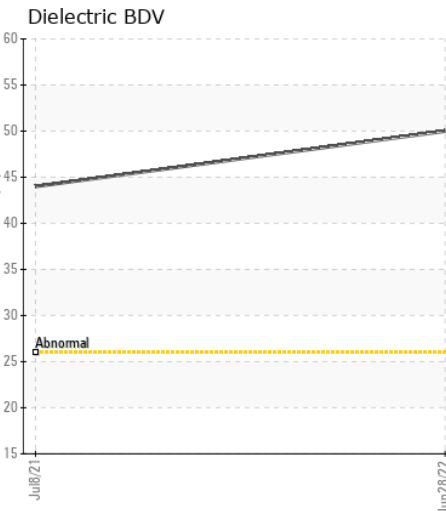
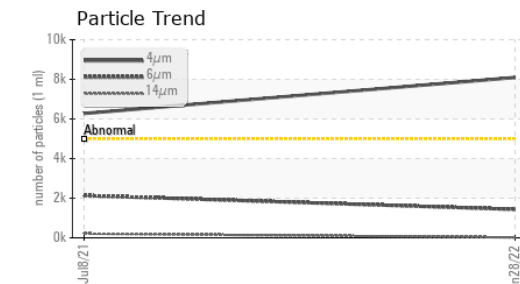
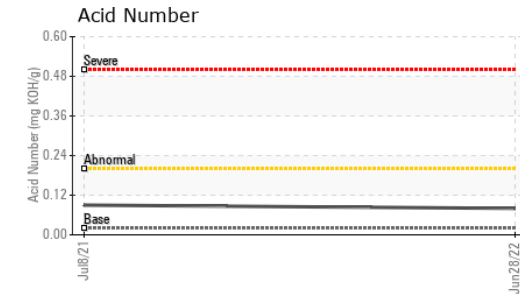
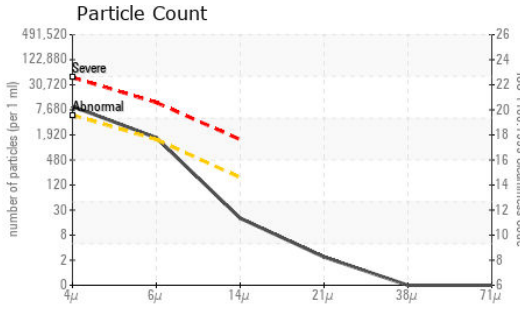
Color



Bottom



GRAPHS



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 NEWFOUNDLAND & LABRADOR HYDRO
Sample No. : WC0645954 **Received** : 26 May 2023
Lab Number : 02560014 **Diagnosed** : 13 Jul 2023
Unique Number : 5581054 **Diagnostician** : Bill Quesnel
Test Package : TRF 2 (Additional Tests: PRTCOUNT)

BAY D'ESPOIR WHSE., 1 CAMP BOGGY RD., PO BOX 100
 MILLTOWN, BAY D'ESPOIR, NL
 CA A0H 1W0

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.

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