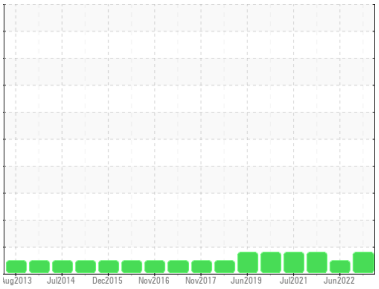
# PROBLEM SUMMARY

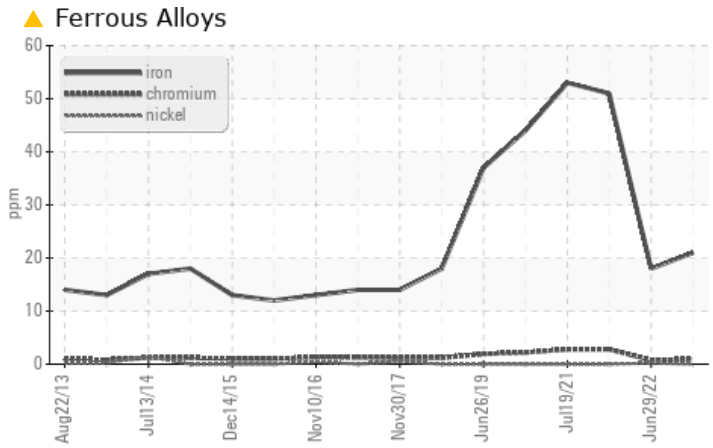
Area
**HIGHLAND [600380501]**
Machine Id
**23WEA80815**
Component
**Hydraulic System**
Fluid
**SHELL TELLUS ARTIC 32 (--- LTR)**

Sample Rating Trend




**WEAR**

## COMPONENT CONDITION SUMMARY




## RECOMMENDATION

No corrective action is recommended at this time.
Resample at the next service interval to monitor.

## PROBLEMATIC TEST RESULTS

| Sample Status | | | | **ABNORMAL** | NORMAL | ABNORMAL |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >20 | ▲ **21** | 18 | ▲ 51 |

**Customer Id:** NORHIG
**Sample No.:** NX05928182
**Lab Number:** 05928182
**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
customerservice@wearcheck.com

## RECOMMENDED ACTIONS

*There are no recommended actions for this sample.*

## HISTORICAL DIAGNOSIS

**29 Jun 2022 Diag: Angela Borella**

NORMAL

No corrective action is recommended at this time. Resample at the next service interval to monitor.All component wear rates are normal. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

**11 Aug 2021 Diag: Don Baldridge**

WEAR

No corrective action is recommended at this time. Resample at the next service interval to monitor.The iron level is abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

**19 Jul 2021 Diag: Don Baldridge**

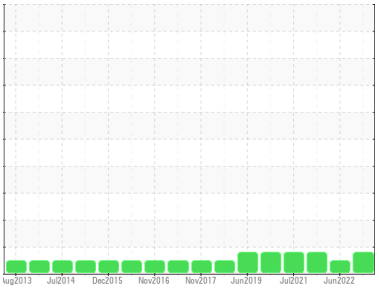
WEAR

No corrective action is recommended at this time. Resample at the next service interval to monitor.The iron level is abnormal. All other component wear rates are normal. There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

view report

# OIL ANALYSIS REPORT

Sample Rating Trend



**WEAR**

Area
**HIGHLAND [600380501]**
Machine Id
**23WEA80815**
Component
**Hydraulic System**
Fluid
**SHELL TELLUS ARTIC 32 (--- LTR)**

## DIAGNOSIS

**Recommendation**
No corrective action is recommended at this time. Resample at the next service interval to monitor.

**Wear**
The iron level is abnormal. All other component wear rates are normal.

**Contamination**
There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

**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 | | **NX05928182** | NX05602778 | NX05387368 |
| Sample Date | | Client Info | | **26 May 2023** | 29 Jun 2022 | 11 Aug 2021 |
| Machine Age | mths | Client Info | | **0** | 0 | 0 |
| Oil Age | mths | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **ABNORMAL** | NORMAL | ABNORMAL |

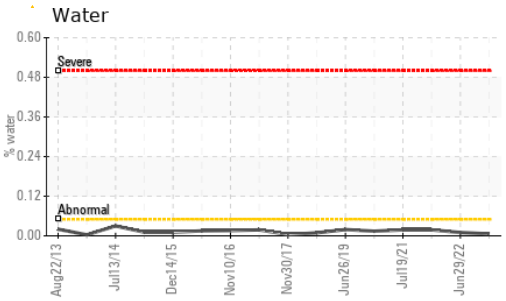
| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184 | | **19** | 26 | 20 |
| Iron | ppm | ASTM D5185m | >20 | ▲ **21** | 18 | ▲ 51 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | 3 |
| Nickel | ppm | ASTM D5185m | >20 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **<1** | 0 | <1 |
| Lead | ppm | ASTM D5185m | >20 | **5** | 4 | 11 |
| Copper | ppm | ASTM D5185m | >20 | **<1** | <1 | 2 |
| Tin | ppm | ASTM D5185m | >20 | **<1** | <1 | 1 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | <1 | 0 |

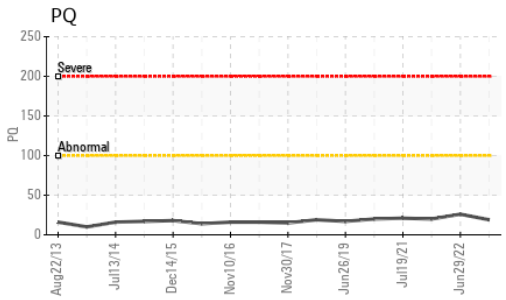
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 5 | **0** | <1 | 1 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 0 | **0** | 0 | <1 |
| Manganese | ppm | ASTM D5185m | 0 | **0** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 0 | **<1** | 0 | 1 |
| Calcium | ppm | ASTM D5185m | 5 | **15** | 14 | 48 |
| Phosphorus | ppm | ASTM D5185m | 600 | **608** | 581 | 565 |
| Zinc | ppm | ASTM D5185m | 50 | **81** | 65 | 180 |
| Sulfur | ppm | ASTM D5185m | 900 | **1005** | 1077 | 1725 |

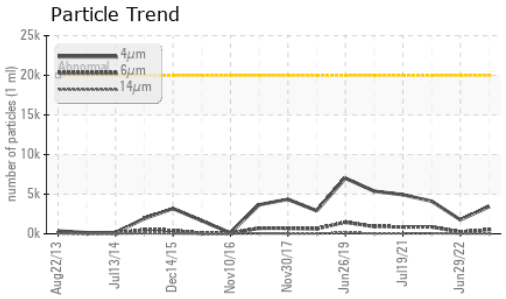
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >15 | **2** | 1 | 4 |
| Sodium | ppm | ASTM D5185m | | **0** | 0 | 3 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | 0 | <1 |
| Water | % | ASTM D6304 | >0.05 | **0.006** | 0.010 | 0.018 |
| ppm Water | ppm | ASTM D6304 | >500 | **69.3** | 103.9 | 180.1 |

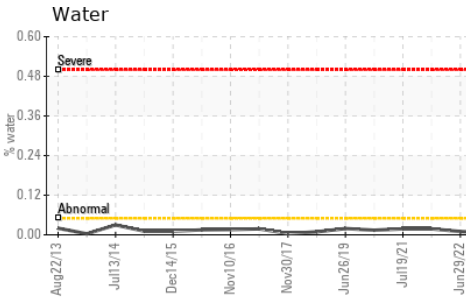
| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >20000 | **3415** | 1774 | 4115 |
| Particles >6µm | | ASTM D7647 | >2500 | **513** | 236 | 878 |
| Particles >14µm | | ASTM D7647 | >320 | **22** | 28 | 66 |
| Particles >21µm | | ASTM D7647 | >80 | **6** | 9 | 19 |
| Particles >38µm | | ASTM D7647 | >20 | **1** | 1 | 1 |
| Particles >71µm | | ASTM D7647 | >4 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >21/18/15 | **19/16/12** | 18/15/12 | 19/17/13 |

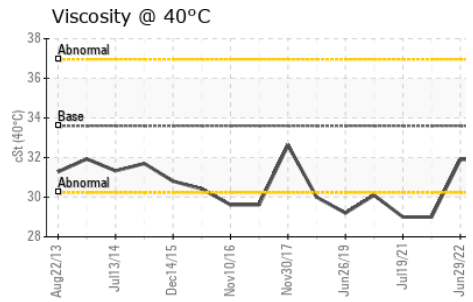
# OIL ANALYSIS REPORT



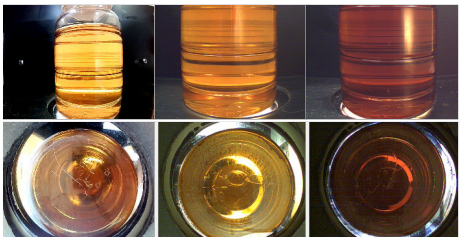




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.20 | **0.16** | 0.19 | 0.321 |

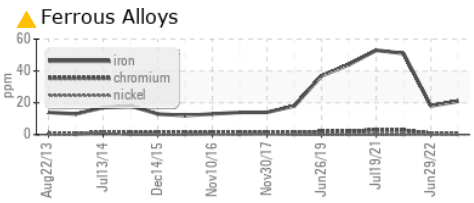
| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | 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 |

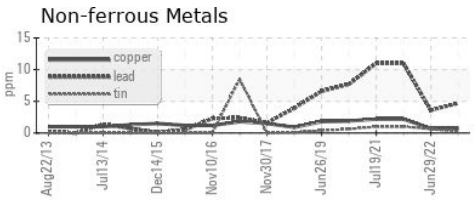
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 40°C | cSt | ASTM D445 | 33.6 | **31.9** | 31.9 | 29.0 |

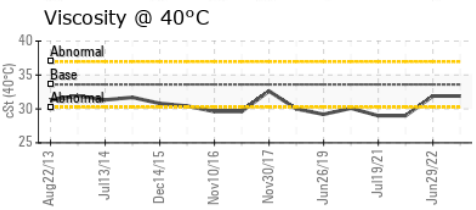
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |

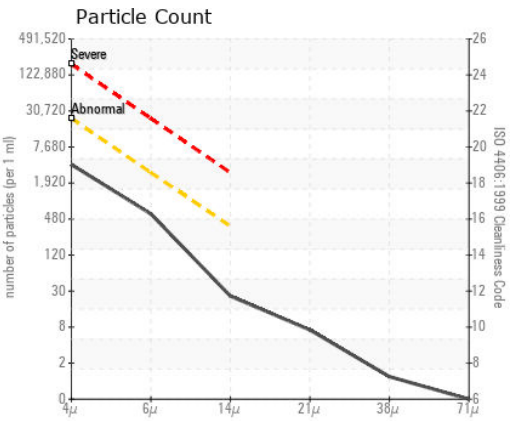


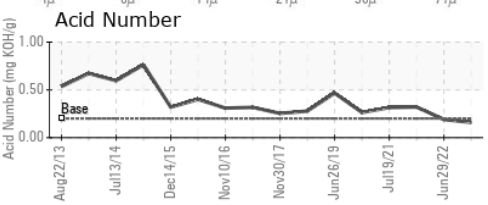
## GRAPHS




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : NX05928182 **Received** : 18 Aug 2023
**Lab Number** : 05928182 **Diagnosed** : 21 Aug 2023
**Unique Number** : 10608129 **Diagnostician** : Don Baldridge
**Test Package** : IND 2 ( Additional Tests: KF, PQ )

Certificate L2367

*To discuss this sample report, contact Customer Service at 1-800-237-1369.*
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
*Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)*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