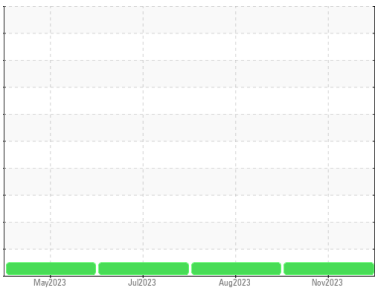
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
**[53561267]**
Machine Id
**102-LYO-901**
Component
**Hydraulic System**
Fluid
**NAVI-GUARD PREMIUM AW-32 HYDRAULIC (--- LTR)**

## DIAGNOSIS

**Recommendation**
This is a baseline read-out on the submitted sample.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0770770** | WC0770761 | WC0789087 |
| Sample Date | | Client Info | | **09 Nov 2023** | 07 Aug 2023 | 17 Jul 2023 |
| Machine Age | yrs | Client Info | | **0** | 0 | 0 |
| Oil Age | yrs | Client Info | | **0** | 0 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Chromium | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Nickel | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Lead | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >20 | **0** | <1 | <1 |
| Tin | ppm | ASTM D5185m | >20 | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **<1** | 2 | 3 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | **0** | 5 | 5 |
| Manganese | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Magnesium | ppm | ASTM D5185m | | **6** | 23 | 24 |
| Calcium | ppm | ASTM D5185m | | **71** | 120 | 135 |
| Phosphorus | ppm | ASTM D5185m | | **310** | 319 | 321 |
| Zinc | ppm | ASTM D5185m | | **432** | 398 | 400 |
| Sulfur | ppm | ASTM D5185m | | **2311** | 4816 | 4822 |

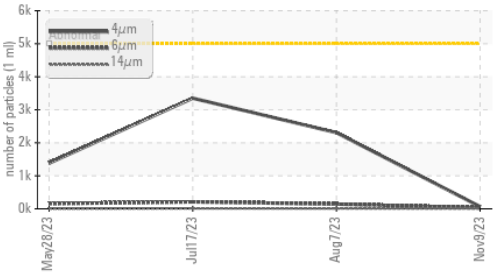
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >15 | **0** | <1 | 1 |
| Sodium | ppm | ASTM D5185m | | **1** | <1 | <1 |
| Potassium | ppm | ASTM D5185m | >20 | **0** | <1 | <1 |
| Water | % | ASTM D6304 | >0.05 | **NEG** | 0.005 | NEG |
| ppm Water | ppm | ASTM D6304 | >500 | **---** | 55.6 | --- |

| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >5000 | **67** | 2307 | 3351 |
| Particles >6µm | | ASTM D7647 | >1300 | **33** | 143 | 211 |
| Particles >14µm | | ASTM D7647 | >160 | **6** | 10 | 13 |
| Particles >21µm | | ASTM D7647 | >40 | **3** | 3 | 3 |
| Particles >38µm | | ASTM D7647 | >10 | **0** | 0 | 0 |
| Particles >71µm | | ASTM D7647 | >3 | **0** | 0 | 0 |
| Oil Cleanliness | | ISO 4406 (c) | >19/17/14 | **13/12/10** | 18/14/10 | 19/15/11 |

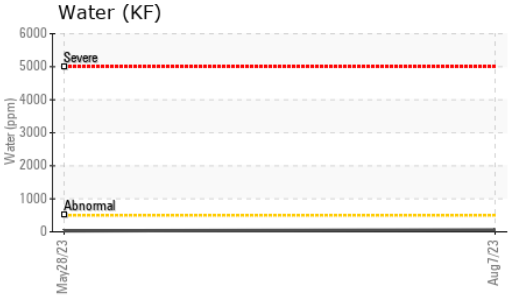
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Acid Number (AN) | mg KOH/g | ASTM D8045 | | **0.21** | 0.41 | 0.35 |

# OIL ANALYSIS REPORT

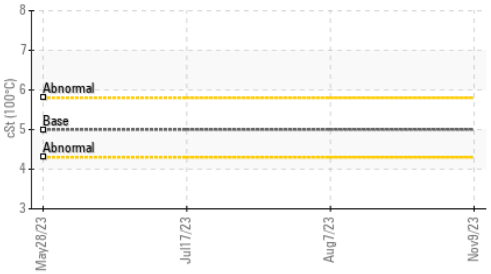
Particle Trend



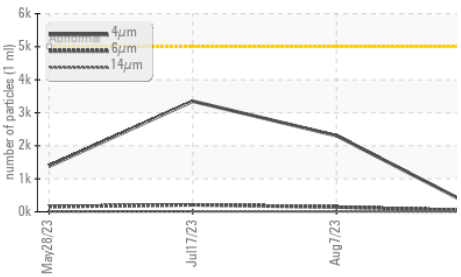

Water (KF)



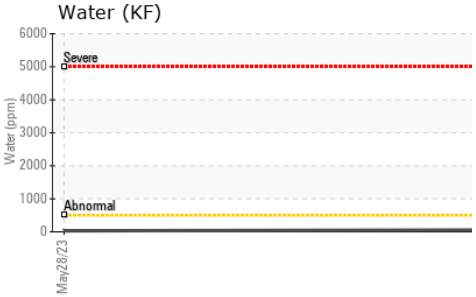

Viscosity @ 100°C




Particle Trend




Water (KF)



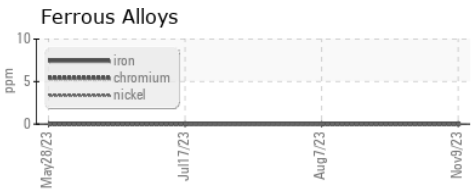

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 | 30 | **34.04** | 31.5 | 31.6 |
| Visc @ 100°C | cSt | ASTM D445 | 5 | **6.17** | --- | --- |
| Viscosity Index (VI) | Scale | ASTM D2270 | 87 | **130** | --- | --- |

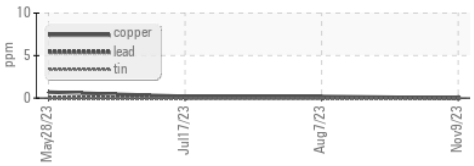
| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | | | | |
| Bottom | | | | | |
| MPC | | | no image | | no image |

GRAPHS

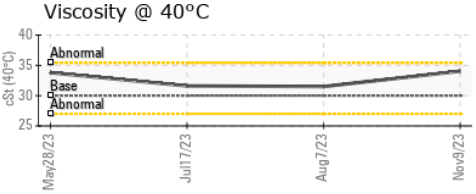
Ferrous Alloys



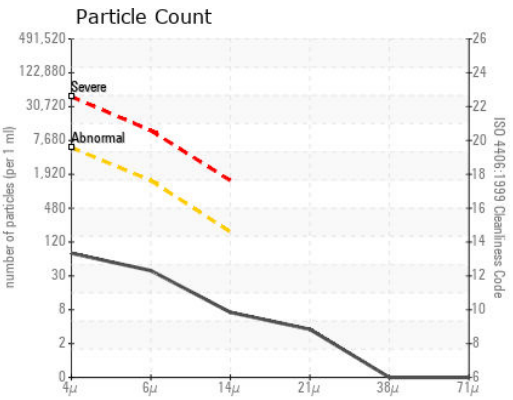

Non-ferrous Metals



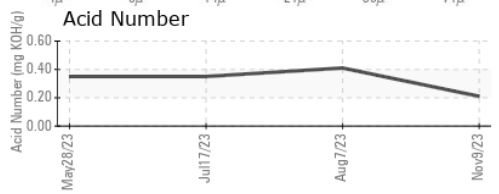

Viscosity @ 40°C




Particle Count




Acid Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0770770 **Received** : 16 Nov 2023
**Lab Number** : 06009958 **Diagnosed** : 05 Dec 2023
**Unique Number** : 10749102 **Diagnostician** : Doug Bogart
**Test Package** : IND 2 ( Additional Tests: KF, KV100, VI )

*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)*


**MERCK & COMPANY**
5325 OLD OXFORD RD
DURHAM, NC
US 27712
Contact: Mark Montalvo
mark_montalvo@merck.com
T: (919)884-4103
F: