WEAR CONTAMINATION **FLUID CONDITION**

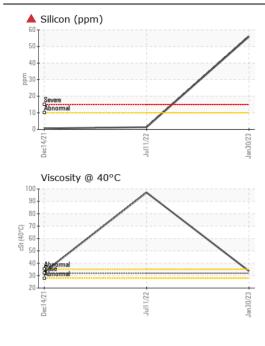
NORMAL SEVERE NORMAL

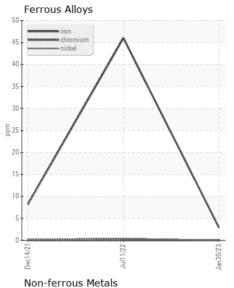
Machine Id

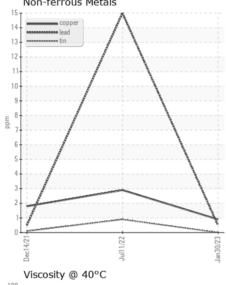
PORT STEERING (S/N 115841-080001)

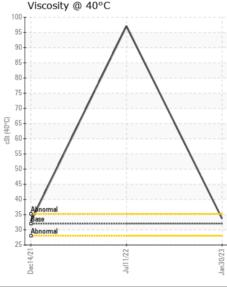
Component Port Steering

| CASTROL HYSPIN AWH-M ISO 32 (800 LTR) | | | | | | | |
|--|------------------|--------|---------------|-----------|---------------|-------------|-------------|
| RECOMMENDATION | Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
| Check seals and/or filters for points of contaminant entry. The filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition. Please specify the component make and model with your next sample. Please contact your representative for information regarding the proper sampling kits for your service. NOTE: We recommend using MAR 2 test kits, this testkit includes AN to determine the suitability of the fluid for continued use. this testkit includes Particle Count to determine the ISO cleanliness of the fluid. | Sample Number | | Client Info | | WC0474211 | WC0474242 | WC0643446 |
| | Sample Date | | Client Info | | 30 Jan 2023 | 11 Jul 2022 | 14 Dec 2021 |
| | Machine Age | hrs | Client Info | | 0 | 0 | 0 |
| | Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| | Filter Age | hrs | Client Info | | 0 | 0 | 0 |
| | Oil Changed | | Client Info | | N/A | Not Changd | Not Changd |
| | Filter Changed | | Client Info | | Changed | None | Not Changd |
| | Sample Status | | | | SEVERE | ATTENTION | NORMAL |
| WEAR | Iron | ppm | ASTM D5185(m) | >60 | 3 | 46 | 8 |
| All component wear rates are normal. | Chromium | ppm | ASTM D5185(m) | >12 | 0 | 0 | 0 |
| | Nickel | ppm | ASTM D5185(m) | >6 | 0 | <1 | <1 |
| | Titanium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| | Silver | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| | Aluminum | ppm | ASTM D5185(m) | >4 | 0 | <1 | <1 |
| | Lead | ppm | ASTM D5185(m) | >12 | <1 | <u> </u> | <1 |
| | Copper | ppm | ASTM D5185(m) | >30 | <1 | 3 | 2 |
| | Tin | ppm | ASTM D5185(m) | | 0 | <1 | <1 |
| | Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| | White Metal | scalar | Visual* | NONE | NONE | NONE | NONE |
| | Yellow Metal | scalar | Visual* | NONE | NONE | NONE | NONE |
| CONTAMINATION | Silicon | ppm | ASTM D5185(m) | >10 | ▲ 56 | 1 | <1 |
| Elemental level of silicon (Si) above normal indicating ingress of seal material. | Potassium | ppm | ASTM D5185(m) | >20 | <1 | 0 | <1 |
| | Water | | WC Method | | NEG | NEG | NEG |
| | Silt | scalar | Visual* | NONE | NONE | NONE | NONE |
| | Debris | scalar | Visual* | NONE | NONE | VLITE | 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* | | NEG | NEG | NEG |
| FLUID CONDITION | Sodium | ppm | ASTM D5185(m) | | 0 | 1 | <1 |
| The fluid is no longer serviceable due to the presence of contaminants. | Boron | ppm | ASTM D5185(m) | | <1 | 2 | <1 |
| | Barium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| | Molybdenum | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| | Manganese | ppm | ASTM D5185(m) | | 0 | <1 | <1 |
| | Magnesium | ppm | ASTM D5185(m) | | <1 | <1 | 2 |
| | Calcium | ppm | ASTM D5185(m) | | 43 | 3 | 46 |
| | Phosphorus | ppm | ASTM D5185(m) | | 409 | 493 | 384 |
| | Zinc | ppm | ASTM D5185(m) | | 455 | 14 | 426 |
| | Sulfur | ppm | ASTM D5185(m) | | 4294 | 9978 | 3801 |
| _ | Visc @ 40°C | cSt | ASTM D7279(m) | | 33.7 | 97.1 | 32.8 |
| Report Id: HORIZONKJG [WCAMIS] 02541873 (Generated: 04/25/2024 07:05:31) Rev: 1 | | | Con | tact/Loca | ation: Engine | Room - HO | RIZONKJG |











CALA ISO 17025:2017 Accredited Laboratory

Laboratory Sample No.

: WC0474211 Lab Number : 02541873 Unique Number : 5538878 Test Package : MAR 1

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 Received **Tested**

: 27 Feb 2023 : 27 Feb 2023 Diagnosed

: 28 Feb 2023 - Kevin Marson

Horizon Maritime Services Ltd. - K.J. Gardner 101 Research Drive, Main Floor Dartmouth, NS

CA B2Y 4T6 Contact: Engine Room chiefeng.kjgardner@horizonmaritime.com

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.

Contact/Location: Engine Room - HORIZONKJG

T: