

Statement: NORSUB MRU3000 Is Calibration Free when used with HMS-900

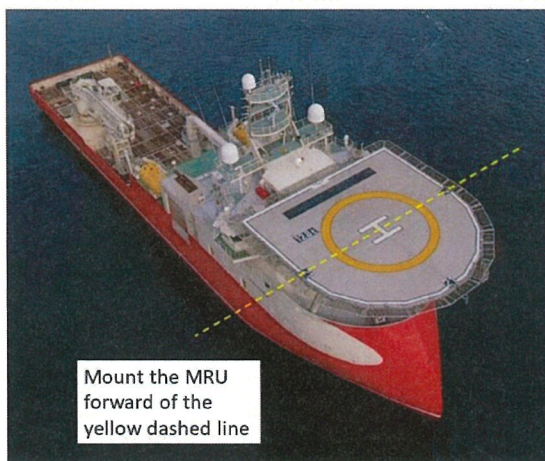
In relation to the CAA UK/ CAP437 9th Edition and Helideck Monitoring System (HMS) Standard 9c, the Motion Reference Unit (MRU) used by an CAA International Certified HMS 9b/c like our HMS-900 must comply to the following accuracy requirements.

- Pitch / Roll / Inclination: $< \pm 0.1^\circ$ RMS (Root Mean Square) in the range 0 to 3.5° .
- Heave Rate: $< \pm 0.1$ m/s RMS (Root Mean Square) in the range 0 to 1.3 m/s.
- Helideck Accelerations (MSI): $< \pm 0.01$ m/s² RMS (Root Mean Square) in the range 0 to 0.2 m/s².

The MRU should be mounted on the helideck support structure. In addition:

- If mounted within a hemisphere under the helideck of radius 4.0 meters centered at the center of the yellow Touchdown/Positioning Marking circle, lever arm corrections will not be required, and the accuracy of the MRU will be considered to be sufficient if it meets the requirements stated above.*
- If mounted outside of the hemisphere described in a) above:*
 - *lever arm corrections should be applied, and the accuracy of the MRU increased appropriately, or*
- *the MRU should be mounted at a location further from the pitch and roll axes of the vessel than the center of the yellow TDPM circle (see figures below) and within 3.0 meters of the surface of the helideck.*

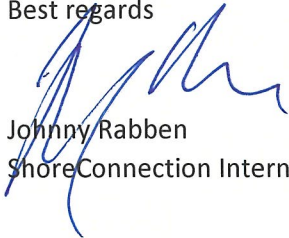
If the above criteria are not met, a sea trial should be conducted to confirm that the MRU installation meets the specified accuracy by comparison with a reference MRU located on the surface of the helideck at the center of the yellow Touchdown/ Positioning Marking circle.



- The NORSUB MRU 3000 series accuracy is within the Standard HMS 9c accuracy requirements over its lifetime without any re-calibration needed when mounted as described above.
- The MRU 3000 specified heave accuracy of 5 cm / 5% is maintained over the MRU's lifetime, without re-calibration.
- The lifetime accuracy in roll & pitch, without re-calibration, will not exceed 0.1 under normal operating conditions.
- Normal operating conditions for an MRU3000 used for HMS is minus 40 degrees to plus 80 degrees Celsius.
- The computed MTBF lifetime of MRU3000 is conservatively set to 100 000 hours or 11,4 years. When used on a helideck a longer lifetime is expected.

The NORSUB MRU3000 is Calibration Free when used in our HMS-900 for offshore helidecks.

Best regards



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Bekkjarvik 24.02.2023