

Position Reference Systems – correct set-up is essential

1 BACKGROUND

The IMCA Marine DP committee has identified a trend of DP station keeping events relating to the incorrect setup, use or selection of Position Reference Systems and Sensors. The result has been either a loss of automatic DP capability or, redundancy has been compromised.

These are real events happening in our industry now and often due to pressures outside the influence of the vessel. IMCA M 252, Guidance on position reference systems and sensors for DP operations, contains a wealth of information on the selection and use of Position Reference Systems and the operational considerations and failure modes of each system. Make use of the guidance contained within IMCA Guidelines to make your case for safe and efficient DP operations.

2 POSITION REFERENCE SYSTEM IN GENERAL

- Incorrect selection of Position Reference Systems – the requirement for at least two different principles not being followed leading to position instability
 - This is by far the most common cause of DP station keeping events reported to IMCA and stresses the need for three independent systems based on two different principles
- DP reference sensor UPS supplies not following the redundancy concept of the vessel – loss of one UPS led to no Position Reference Systems online
- Incorrect selection or set-up of Position Reference Systems for the mission requirements
- Poor management of change leading to the antenna of one GNSS being connected to two GNSS systems creating a common failure mode
- Incorrect Position Reference System set-up for use at a mobile installation leading to conflict between absolute and relative systems causing drift off.

3 EVENTS INVOLVING ABSOLUTE POSITION REFERENCE SYSTEMS

- Over reliance on one Position Reference System, Global Navigation Satellite system (GNSS), to the exclusion of others
 - Intermittent DGNSG signal outages in certain geographical locations
 - Use of GNSS without differential correction
 - Common mode failures of DGNSG caused by selection of hardware from single supplier and differential positioning services from one supplier
 - DGNSG signal reception becoming unsteady because of either shielding or shadowing

4 EVENTS INVOLVING RELATIVE POSITION REFERENCE SYSTEMS

- During cargo operations, removal of relative positioning system transponders / reflectors by MODU crew prior to station keeping activities being completed
- Laser based system locking onto crew member standing close to the reflector (in a restricted area).
- Inadequate or no reflective targets present on the operating side of the installation being serviced

IMCA store terms and conditions (<https://www.imca-int.com/legal-notice/terms/>) apply to all downloads from IMCA's website, including this document.

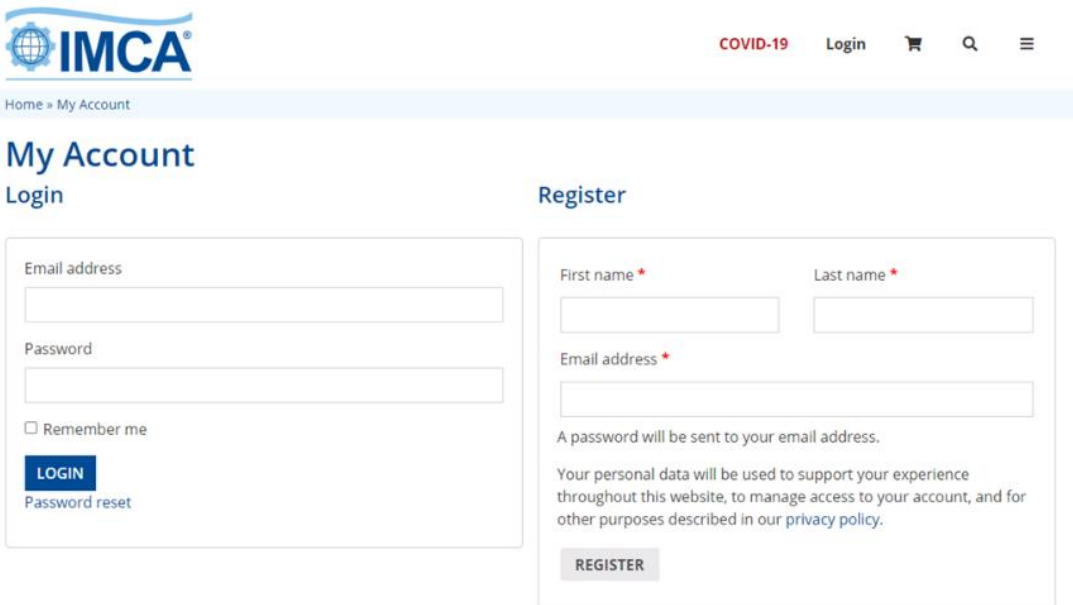
IMCA makes every effort to ensure the accuracy and reliability of the data contained in the documents it publishes, but IMCA shall not be liable for any guidance and/or recommendation and/or statement herein contained. The information contained in this document does not fulfil or replace any individual's or Member's legal, regulatory or other duties or obligations in respect of their operations. Individuals and Members remain solely responsible for the safe, lawful and proper conduct of their operations.

- Vessel approaching on DGNSS only to pass transponders or reflectors prior to setting up for operations

5 DP SYSTEM SENSORS

- Incorrect gyro procurement and installation leading to inaccurate latitude & speed correction signals.
- Gyro 3 was approximately ten (10) degrees different from gyro 1 and gyro 2. When both gyros 1 and 2 were deselected the DP controller rejected gyro 3 due to the large deviation.
- Poor management of change processes leading to loss of redundancy of sensors due to incorrect rewiring of sensors.

You can have free access to all IMCA guidance documents by registering with a member domain email address on the IMCA website, click the image for the link.



The screenshot shows the IMCA website's 'My Account' page. At the top left is the IMCA logo. To the right, there are links for 'COVID-19', 'Login', a shopping cart icon, a search icon, and a menu icon. Below the navigation bar, the breadcrumb 'Home » My Account' is visible. The main heading is 'My Account'. Underneath, there are two columns: 'Login' and 'Register'. The 'Login' form includes fields for 'Email address' and 'Password', a 'Remember me' checkbox, a blue 'LOGIN' button, and a 'Password reset' link. The 'Register' form includes fields for 'First name', 'Last name', and 'Email address', a note that 'A password will be sent to your email address.', a privacy policy statement, and a grey 'REGISTER' button.

The IMCA Marine DP Committee issue a DP bulletin four times a year covering the events that are happening in the industry. Check out the DP station keeping events page on the IMCA web site to see the latest events being reported to IMCA, bulletins are available to everyone free of charge, click the image for the link.



DP Event Bulletins