

Loss of all position references

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Explore our drill scenario on the action required following the loss of PRS data into the DP Control System.

DP emergency drill scenarios are included to assist DP vessel management and DPOs / Engineers and ETOs to conduct DP drills onboard. The intent is that the template can be used on any DP vessel, so specific details regarding the technical outcome are not included.

The benefit of using this template is to monitor and learn from the human reactions of key DP personnel. It is also important that the crew are familiar with various DP system set-ups including their failure modes.

Refer to Code of practice for the training and experience of key DP personnel – Appendix six (IMCA M117).

Exercise scenario: Loss of all position references

Objective:

To identify risks and impacts of this occurrence, possibilities to reduce that risk, and suitable actions to be taken if such an occurrence happened.

Method:

With the vessel on full auto DP control and vessel equipment and systems set up in accordance with applicable DP checklists:

- Allow the Mathematical model to build until the integral component has stabilised for a 30-minute period.

Deselect all PMSs and monitor position using an independent Position Measuring Equipment (PME) over a five minute period. If possible, select a waypoint at the original position on DGPS and note the range and bearing.

Alternatively, use UTM coordinates and note heading, northings and eastings at one-minute intervals. Note environmental conditions then deselect all PMEs and note the position below

- This drill may be combined with Joystick, Independent Joystick, and/or Manual Thruster Control drills for DPOs.

Depending on vessel operations and Time to Safely Terminate, discuss how the vessel can be made safe for personnel and operations in actual operating scenarios.

Prior to executing, discuss the expected results:

- Is the methodology appropriate to gain the best outcome of the exercise?

- Who will be involved with the exercise and what roles will individuals have?
- What equipment will be impacted?
- What are the risks of the exercise?
- Is the exercise scenario appropriately documented?
- Who will observe and accurately record exercise data including the DP system configuration pre-exercise?

Observations during exercise:

- Is the drill procedure being followed?
- Is the equipment reacting as expected?
- Are those individuals directly involved in the exercise reacting appropriately given their assigned duties?
- Are those individuals indirectly involved reacting in an appropriate manner?
- Is the degree of participation and diligence as expected?
- What is the duration from commencement to concluding a safe outcome for the vessel?
- Bridge team should take the opportunity to take 'Footprint' plots.

Actual results witnessed:

EXAMPLE:

DP system alarm. The vessel is now on dead reckoning. The vessel will attempt to maintain its position based on the mathematical model and environmental conditions. A position change of no more than 20m in five minutes is generally considered acceptable.

Settings and Environment during Test				
Gain(H/M/L):	Speed: xx m/min	Draft: XXm		
Wind: XX kts	Current: XX kts	Wave: X m		
Time	Heading	Northings/Latitude	Eastings/Longitude	ΔL (m)
Start				
+1 min				
+2 mins				
+3 mins				
+4 mins				
+5 mins				
+20 mins				

Discussion points (post-exercise):

Human factors:

- What are the potential risks due to “multi-tasking” during DP operations that may directly lead to the scenario outlined during this drill?
(Examples include managing / monitoring deck operations, radio traffic, etc.)
- What are the potential risks due to distractions in the workspace (i.e., Bridge, Engine Room) that may directly lead to the scenario outlined during this drill? (Examples include routine maintenance procedures, social media, personnel interactions, etc.)
- Discuss the alternative actions / reactions that may occur in response to a similar scenario. Are there multiple paths to a successful resolution or is there a preferred solution? Why?
- Following a review of the simulated exercise and the vessel and crew’s reaction, what different operator (Bridge and/or ECR) reaction(s) might be warranted if faced with a similar situation during operation?

Review of DPO and other key DP personnel reaction:

- What potential gaps in the existing DP Familiarisation program have been highlighted as a result of the exercise?
- What changes / revisions should be considered for the training and familiarisation procedures?

Review the applicable checklists (ASOG CAM/TAM/DP operations Manual/bridge and engine room checklists/FMEA/DP

Annual Trials programmes/etc.):

- What additional necessary actions and considerations should be addressed
- What potential changes should be made to make the checklists more appropriate?
- Time to Safely Terminate (TST) is the time the vessel requires following a major incident to cease operations and to become fully capable of moving to a safe location. This time will vary depending on vessel operation and should be discussed in regard to the ASOG for a given project. If not provided in the available documentation, TST should be discussed and agreed upon by DP operating personnel.
- What additional necessary operating conditions and parameters should be considered?
- What potential changes should be considered to make Decision Support Tools more applicable to the vessel and her equipment?
- How would these changes improve / affect the vessel's capabilities and limitations?

Conclusion:

Based on the results of the exercise and related discussions before and after, any suggestions for follow up including any corrective actions deemed appropriate should be accurately detailed and managed to close out.

Related IMCA Guidance

IMCA M117

The case studies and observations above have been compiled from information received by IMCA. All vessel, client, and operational data has been removed from the narrative to ensure anonymity. Case studies are not intended as guidance on the safe conduct of operations, but rather to assist vessel managers, DP operators, and technical crew.

IMCA makes every effort to ensure both the accuracy and reliability of the information, but it is not liable for any guidance and/or recommendation and/or statement herein contained.

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