

Loss of redundant group

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Explore our scenario on what to do with the loss of any one redundant group.

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 IMCA M117 *A guide to conducting DP drills and ensuring preparedness for DP failures, Appendix A*

Exercise scenario: Loss of redundant group

Objective:

To observe the reaction of the crew and verify vessel's remaining capability following loss of any one redundant group.

Method:

With the vessel in full auto DP control; power plant configured according to the vessel's DP FMEA and DP operations Manual (and respective decision support tool); all other vessel equipment and systems set up in accordance with applicable DP checklists:

- Vessel in a safe location. Simulated location and activities agreed and communicated to all participants.
- Simulate the failure by tripping online generators on the applicable redundant group.
- Observe reaction of DPO crew, DP technical personnel, the equipment.

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?

Actual results witnessed:

EXAMPLE:

DP system loses redundant group thrusters. System allocates thrust so there is no loss of heading or surge control, the vessel maintains position with remaining thrusters. If vessel is set up with due regard to applicable ASOG parameters thruster and generator loads are within acceptable limits.

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?
- 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 M273 A guide to conducting DP drills and ensuring preparedness for DP failures

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.

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