

# Isolation of backup supplies to DP critical equipment

Undesired event ●

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A DP 2 vessel was engaged in open water ROV operations with both ROVs and cranes in the water.

## Overview

A DP 2 vessel was engaged in open water ROV operations with both ROVs and cranes in the water – the hook recovery was ongoing. The vessel was set up according to its critical activity mode (CAM) and, at the request of the end client, all identified cross connections were to be isolated. This included numerous backup supplies to a range of DP critical equipment. The vessel was being operated with two redundant groups.

## What happened?

The vessel suffered a partial loss of power from the port switchboard. This resulted in the loss of one redundant thruster group, one ROV and the main crane. The vessel maintained position post failure, allowing immediate investigations to take place in a controlled manner.

## Investigation

The ship's uninterruptible power supply (UPS) (for the failed redundant group) main supply change over switch was found in the 'emergency' position instead of the 'main' position.

As a result of the isolation of backup supplies, the UPS batteries had effectively discharged, and supplies failed thereafter causing the DP event.

The UPS switch was selected to 'main', which repowered the UPS to allow reinstatement of the redundant thruster group and mission related consumers.

Further investigation revealed that the position of the UPS supply switch was not part of the DP system setup checklist, nor was it highlighted as a critical setting within the CAM configuration.

## Lessons learned

- Any modification to a worse-case failure design Intent (WCFDI) configuration (which has been proved through the DP failure modes and effects analysis process (FMEA)) must be managed under a robust management of change (MoC) process with appropriate checks identified and undertaken. When clients are requesting particular operating modes of vessels, then the MoC process needs to also consider the DP FMEA and all associated operational criteria.
- A periodic review of the completeness of operational checklists prior to and during DP operations to ensure that the vessel is operating as designed is essential.
- In conjunction with the lesson above, it is vital that all equipment that has a selection choice is correctly labelled to clearly identify the selection and to avoid unnecessary confusion.

- The actions of the crew coupled with the robust redundancy concept meant that the vessel operated as expected post event and during the immediate investigations thereafter.

## Conclusion

This case study demonstrates the importance of robust consideration of requested mode changes that deviate from the vessels' failure analysis. It further highlights the importance of robust MoC procedures to understand the effects of the change on the equipment and/or redundancy concept.

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