

IMCA DP Station Keeping Event Bulletin 01/17

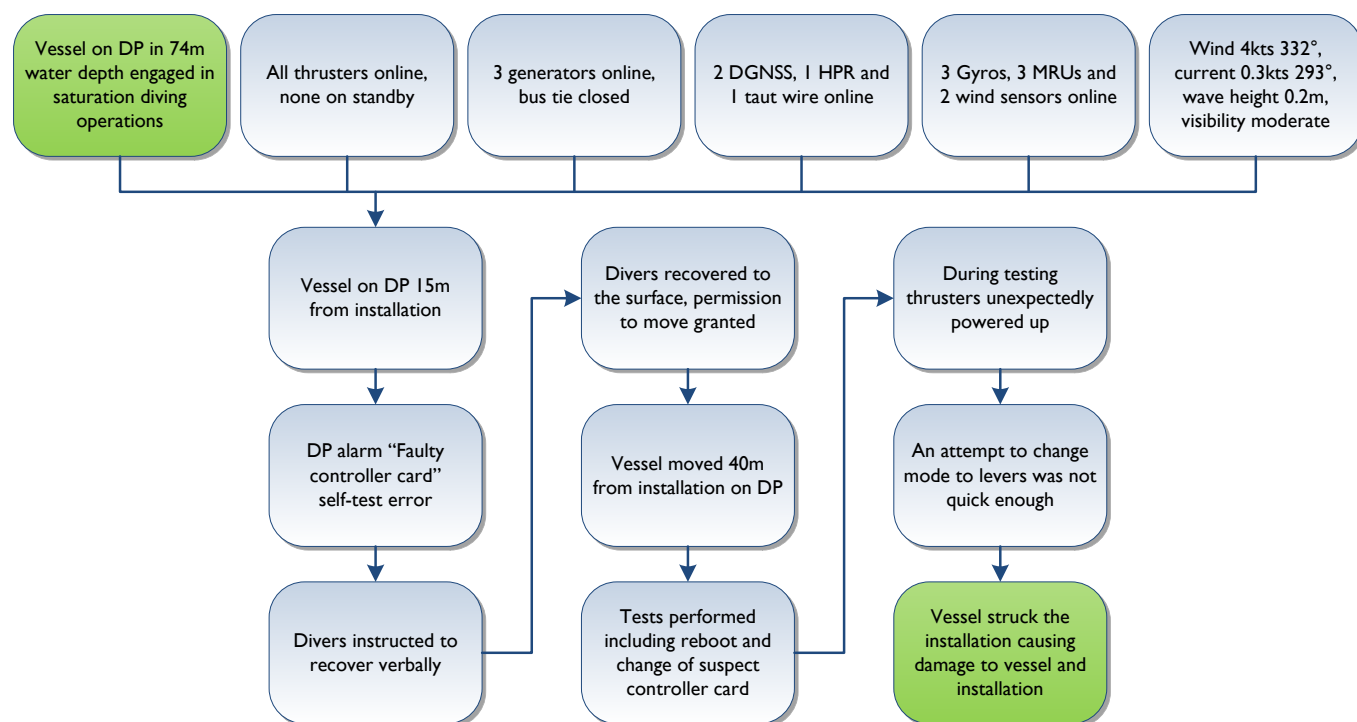
March 2017

The following event trees have been compiled from recent reports received by IMCA. The originators granted IMCA permission for the trees to be analysed and commented on by the IMCA DP Focused Workgroup. To ensure anonymity not all of the information contained in the original report was made available to the persons analysing these event trees.

Vessel managers, DP operators and DP technical crew should consider if these events and comments are relevant to their own vessel DP operation so that they can be used to assess and assist the safe operation of the vessel.

Any queries regarding this bulletin should be directed to IMCA Technical Adviser Andy Goldsmith (andy.goldsmith@imca-int.com). Members and non-members are welcome to contact Andy if they have experienced DP events which can be securely analysed and then shared anonymously with the DP industry.

DP Event Investigation and Testing Inside the 500m Zone – DP Incident



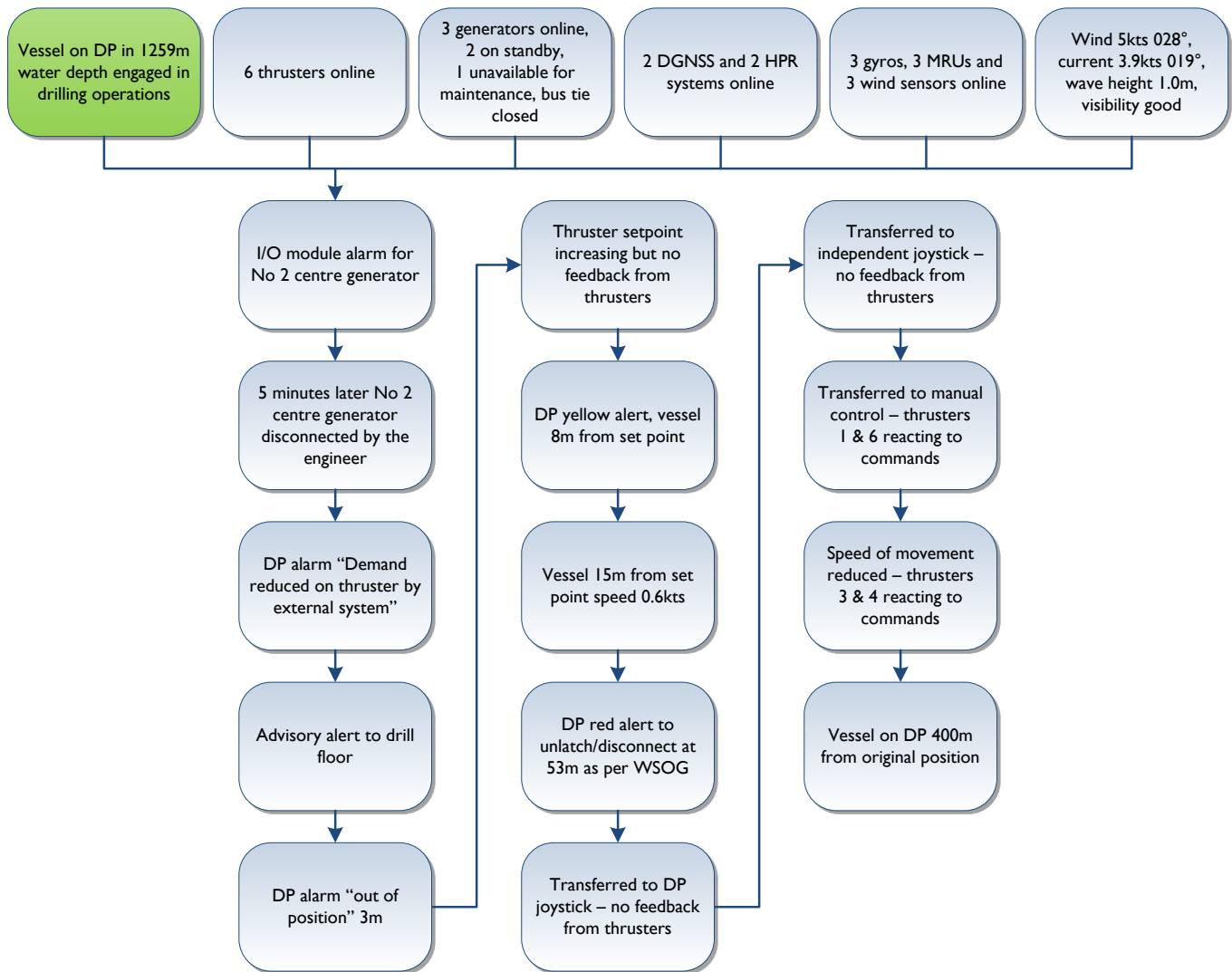
Comments:

The report concluded that the vessel should have proceeded out of the 500m zone to a safe area prior to investigating the fault and conducting tests.

Considerations from the above event:

- ◆ There is no doubt that in circumstances such as this, where investigation and testing is required following a DP event, it should be conducted in a safe location and as a minimum outside the 500m zone.
- ◆ The DP system's level of redundancy always needs to be considered during investigation and testing.
- ◆ It is not evident from the report, but it is wondered whether complacency contributed to this bad practice.
- ◆ The original reported DP alarm should have resulted in a DP yellow alert.
- ◆ The vessel might have considered using the independent joystick (IJS) rather than individual levers.
- ◆ Emergency handling of the vessel should be practised on a regular basis.

Load Sharing Imbalance Causes Loss of Position – DP Incident



Comments:

The power plant was configured to work in closed bus mode. No 2 port, No 2 centre and No 2 starboard generator were online. No 1 port and No 1 centre generator were on standby. No 1 starboard generator was on long term isolation due to turbocharger overhaul.

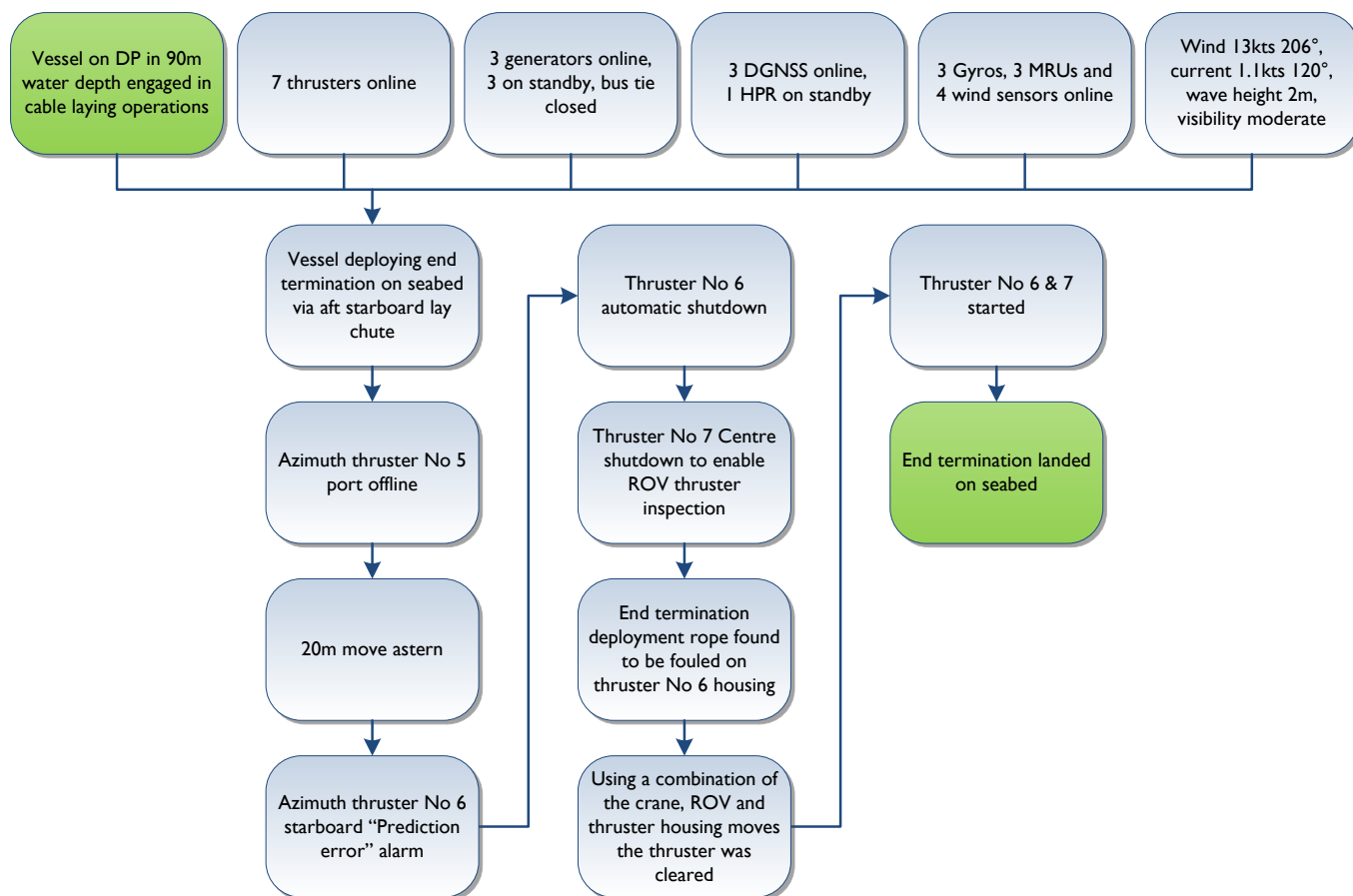
The vessel's power management system (PMS) developed a fault in an I/O module for No 2 centre generator. This fault caused the generator circuit breaker status to freeze in the 'closed' position. The alarm indicated a generator fault causing the engineer to disconnect the faulty generator. The breaker opened on the generator and due to the fault on the I/O module the status of the breaker was still showing connected and a load sharing imbalance was noticed by the PMS which attempted to correct it. As the disconnected generator could not take any load, the imbalance persisted and the PMS drove the bus frequency down to the point where it triggered the frequency based thrust limitation function on all thrusters leading to loss of position and an emergency disconnect.

Considerations from the above event:

- ◆ It is recommended that the failure modes and effects analysis (FMEA) should consider the PMS interface so that this type of failure mode is identified.
- ◆ It would appear the PMS was not properly tested for operations in closed bus tie operations.

- ◆ The fact that frequency issues occurred suggests advance generator protection was either not present or not functioning correctly.
- ◆ The vessel's DP operations manual and well specific operating guidelines (WSOG) must be questioned.
- ◆ The value of the current factor (3.9kts) should be questioned.
- ◆ It should be noted that when thrusters are operated via the IJS they are still under the control of the PMS.

Inadequate Communication and Planning Causes Fouled Thruster – DP Undesired Event



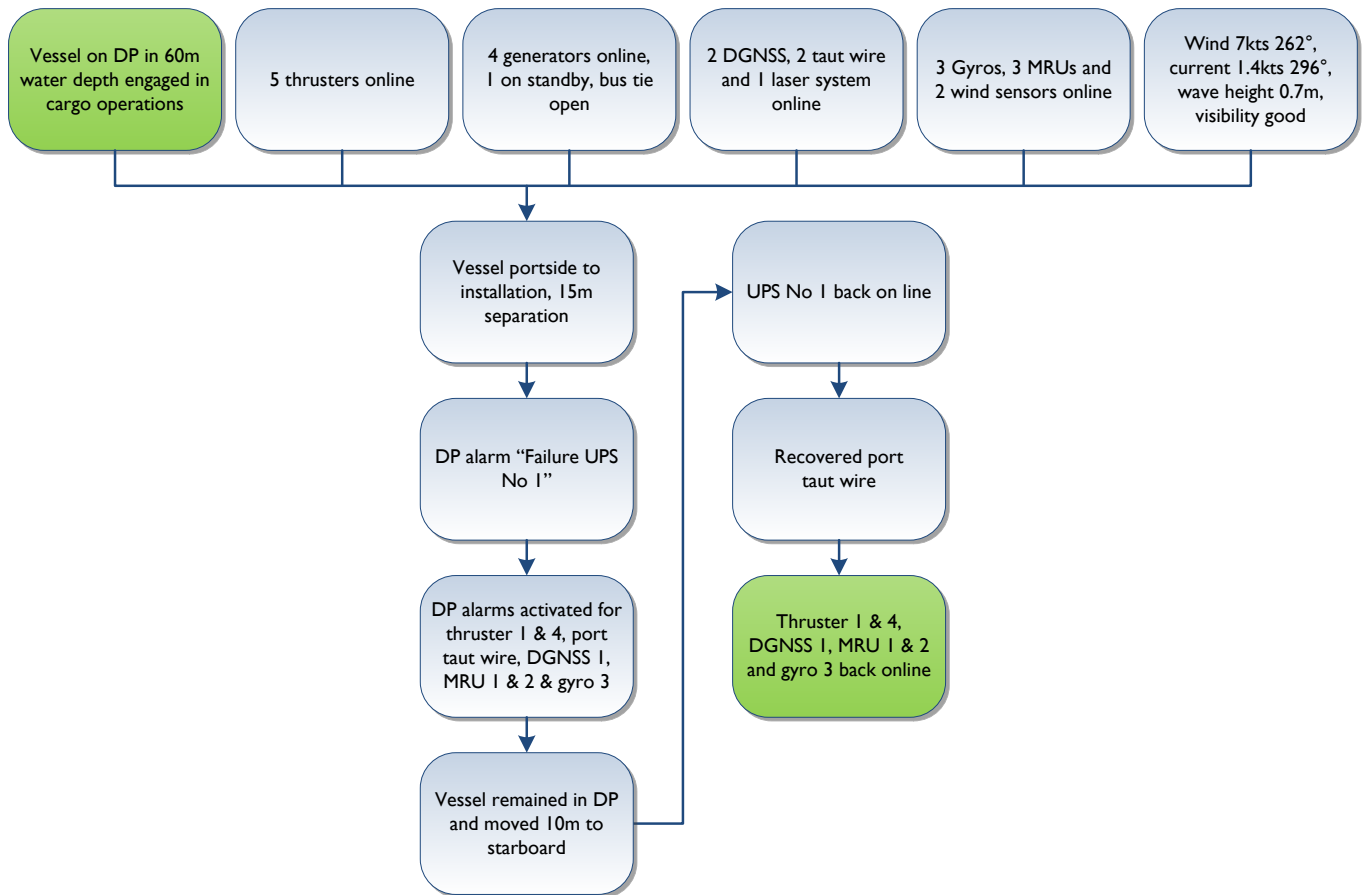
Comments:

During the over boarding of the end termination through the starboard aft chute, the cable laying shift supervisor asked the bridge to isolate thruster No 5 (port quarter) instead of thruster No 6 (starboard quarter). He did not realise he was isolating the opposite thruster and consequently the thruster closest to the lay chute was still running. Moreover, he asked the bridge to move backwards and in the same direction where the end termination was being laid down. This movement contributed to the end termination deployment rope fouling thruster No 6.

Considerations from the above event:

- ◆ There was either a lack of operational planning or it was inadequate.
- ◆ The event highlights the need for accurate and verified communication between key control centres.
- ◆ With three satellite derived position systems on line and the acoustic system on standby the vessel was not complying with the requirements of IMO Circular 645.

UPS Failure Causes Partial Blackout – DP Undesired Event



Comments:

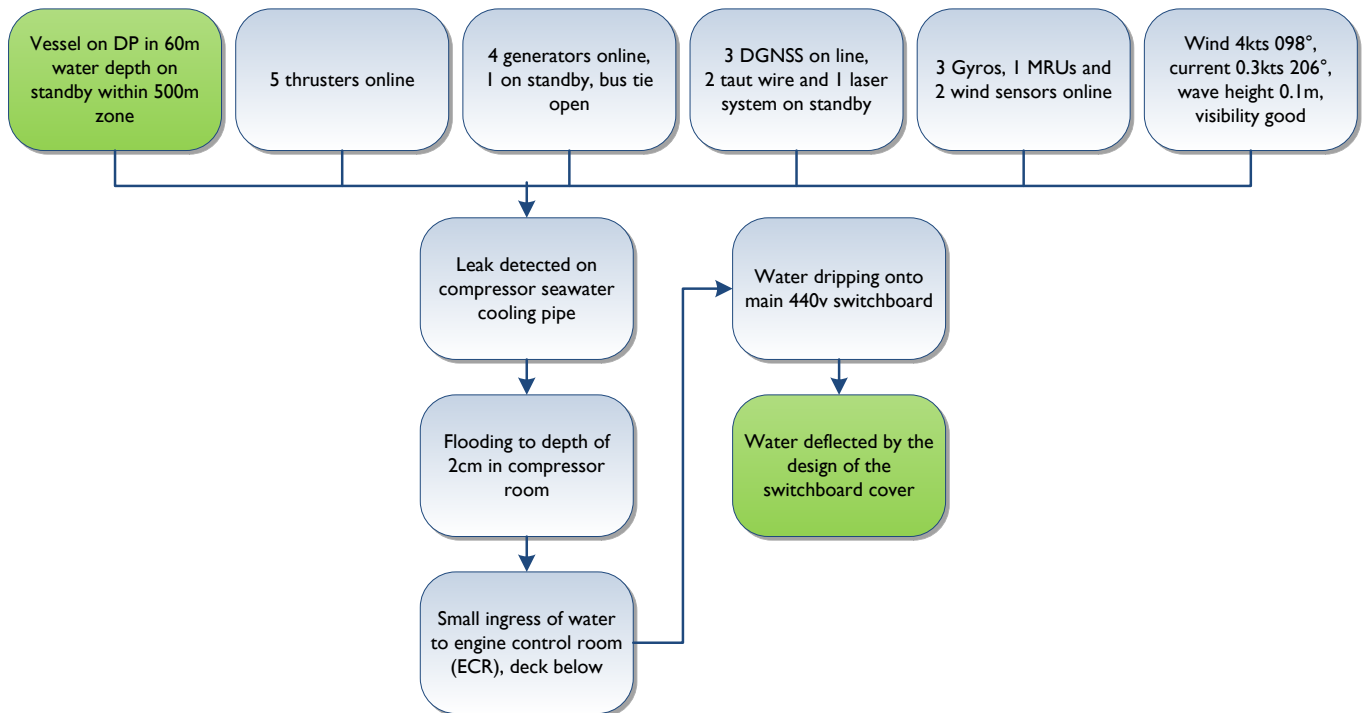
One of the fans in UPS No 1 failed causing the UPS to overheat and shut down.

The fan has been replaced and the temperature alarm tested.

Considerations from the above event:

- ◆ The failure of UPS No 1 and subsequent failure of the other equipment should have resulted in a DP yellow alert.
- ◆ With redundancy compromised the vessel needed to consider a move further away from the installation and out of the 500m zone.
- ◆ Fans, filters and alarms should be adequately covered at component and sub system level by the vessel planned maintenance system.

Cooling Pipe Leak Threatens Main Switchboard – DP Observation



Comments:

A failure of a plug (old decommissioned cooling line for fridge compressors) on seawater cooling pipe for the Ac compressors resulted in flooding in the incinerator room (the water level was about 2cm depth) with small ingress of water in the engine control room on top of main 440V switchboard through a cable penetration.

The small water ingress (water dripping onto switchboard) was deflected by the design of the switchboard cover (class approved design) with a small quantity of water collecting on top. The quantity of water on top of the switchboard was so small that no immediate action was necessary to remove or control it during the incident. The top of the switchboard was dried after the leak was stopped and accumulated water had been removed from the incinerator room above.

Due to the desire to inspect inside the switchboard, with the vessel on standby but inside the .500m zone, the decision was taken to move outside the 500m zone as a precaution.

The vessel continued operations but remained outside the 500m.

Considerations from the above event:

- ◆ The good practice of moving outside the 500m zone is noted.
- ◆ Decommissioning of pipework by removal rather than plugging is the preferred method.
- ◆ With only one motion reference unit (MRU) on line its failure would affect the stability of all position reference systems selected to the DP system.
- ◆ Submission of DP observations, as learning opportunities, is much appreciated by members of the IMCA DP Focused Workgroup.