The following case studies and observations 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 DP technical crew in appropriately determining how to safely conduct their own operations. Any queries should be directed to IMCA at dpreports@imca-int.com. Members and non-members alike are welcome to contact IMCA if they have experienced DP events which can be shared anonymously with the DP industry.

1 Important PRS considerations when operating close to an asset that is not rigidly fixed to the seabed

1.1 Overview

It has come to the attention of the IMCA DP Committee that, in recent years, there have been a number of collisions between vessels undertaking DP operations near to a mobile asset, such as a drilling vessel, FPSO, or heavy lift vessel. The causes of these collisions could also impact offshore floating wind assets in the future.

From the DP Station Keeping Event reports received by IMCA, it is clear that the set-up and mixing of position reference systems have contributed to these events. The IMCA DP Committee wants to promote understanding to reduce incidents of this nature. Therefore, instead of identifying a Position Reference System as either absolute or relative, this bulletin defines absolute and relative DP positioning and provides examples of how the different position reference systems can be used in both circumstances.

IMCA DP Station Keeping Event reports, in recent years, confirm that the following issues were contributory factors:

- Setup and mixing of relative & absolute Position Reference Sensors,
- Lack of special functionality within the DP Control Systems to cope with the demands of relative position keeping of moving targets,
- Lack of focused training on the perils of mixing absolute and relative PRS without special DP functionality installed or in use,
- Lack of training in use of such special functionality,
- Improper PRS management along with operator error.

1.2 Absolute Position referencing

Absolute position referencing for station keeping is when the vessel maintains its position over a fixed point on the ground.

DGNSS has become by far the most used system for absolute referencing. Tautwire is a sub-surface system using its clump weight as the fixed reference point on the seabed. Similarly, hydro-acoustic, when the transponder is fixed to the seabed or fixed sub-surface structure, provides absolute position referencing.

Microwave and laser systems traditionally known as relative position references may also provide absolute positioning, providing their reference points are on fixed structures.

1.3 Relative Position Referencing

Relative position referencing for station keeping is when the vessel maintains its position relative to an asset that may or may not be moving.

Typically, microwave and laser systems are used when a vessel is required to maintain position relative to another vessel or a structure that is not fixed to the seabed. This may include drilling vessels, FPSOs, heavy lift vessels and offshore floating wind assets. Relative DGNSS and accommodation support vessel gangways (with 3-axis measuring sensors) are also used for relative positioning. Hydro-acoustic systems can be used for relative positioning to track subsea vehicles such as ROV's and trenchers in follow-sub mode or using the appropriate functionality of the DP control system.

Example:

As an absolute reference, a microwave system measures the bearing and distance from a transponder on a fixed asset. The vessel position is maintained over the ground, which is useful for tasks such as positioning a vessel alongside a fixed asset. As a relative position reference, the same system measures the bearing and distance from a transponder on a moving asset such as another vessel or other floating structure.

The hydro-acoustic reference system is used as an absolute reference when referencing a transponder on the seabed. Alternatively, the same system can be used for relative positioning when the transponder is located on a moving asset such as an ROV or trencher.

1.4 Weighting

Weighting is the process of assigning different levels of importance to different position reference systems (PRS). This is carried out to ensure that the DP system is using the most accurate and reliable data to control the vessel's position.

There are a number of factors that can be considered when weighting PRS, including:

- The accuracy of the PRS
- The update rate of the PRS
- The stability of the PRS
- The availability of the PRS

In general, a PRS with higher accuracy, faster update rates, and greater stability will be given more weight than a PRS with lower accuracy, slower update rates, and less stability.

The weighting of PRS is typically assigned automatically by the DP control system's software. The software will calculate a variance for each PRS, and the PRS with the lowest variance will be given the most weight. The variance is a measure of how much noise is present in the PRS data. Some older DP systems permit manual weighting adjustment.

PRS weighting is complex, but it is an important function in dynamic positioning. By understanding how weightings are assigned, DP operators can help to ensure that their vessels are operating safely and efficiently.

IMCA recommends that reference is made to specific OEM operational documentation for further details.

1.5 What are the concerns when operating next to a non-fixed structure?

The concerns become apparent when a combination of absolute and relative Position Reference Systems (PRS) are used. There is no conflict in the position measurements when a vessel is holding position adjacent to a fixed asset as all PRS are capable of absolute positioning and the DP system maintains the vessels position over the ground.

However, when a vessel attempts to maintain position near to a moving asset, there is cause for concern as measurements between absolute and relative position reference systems will differ when the asset moves.

The DP control system estimates position based on motion in the “XY” plane of a measured reference. If the DP control system measures a PRS as moving and it is in use by the system (has weight) the system will compensate for the motion according to its auto-control model (position, heading, track, target, etc.). When the DP control system observes motion on a relative target which is considered “fixed” and it has a reference measuring the position of the vessel relative to earth “absolute” it will perceive the relative target motion as vessel drift. When both an absolute and relative target (in fixed mode) are compared, one is measuring motion of the controlled vessel and the other is measuring the position of the controlled vessel relative to the mobile asset. This can cause the DP control system to drive off station when it is compensating for motion of the reference asset rather than the vessel it has control over. The mitigating methods for these phenomena are explained in the following sections.

1.6 Mitigation

Mitigations to be considered:

Ref Fig 1.1 below.

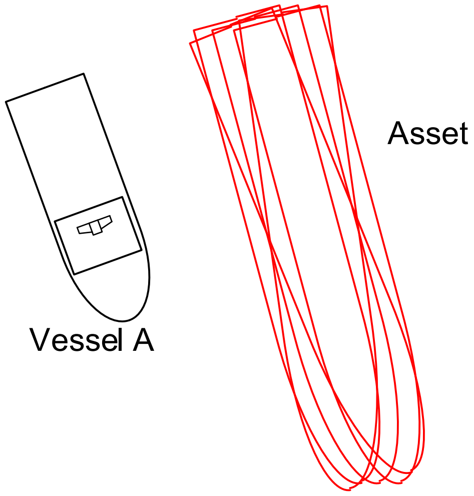

Figure 1-1 Representation of Vessels

1.6.1 Minimum Position Reference Systems online for Vessel A

Before executing DP Operations from a non-fixed asset, the operator (DPO) must examine the DP Control system and its capacity to accomplish the task safely. The operator must be aware of the capabilities of the DP Control system in order to choose which alternatives are most appropriate for the operation.

Option 2 below is not a recommended practice but it is known that the industry is utilising this method of vessel poitioning. If Option 2 is to be used then the operator needs to know the risks of such an operation, the OEMs should always be consulted.

MSC.1/Circ.1580 3.4.8 Position reference systems – states:

.3 For equipment classes 2 and 3, at least three independent position reference systems should be installed and simultaneously available to the DP control system during operation.

.4 When two or more position reference systems are required, they should not all be of the same type, but based on different principles and suitable for the operating conditions.

Option 1 – Using Follow Target / Ship Follow Functionality:

- One absolute PRS (typically DGNSS)
- Two relative PRS with two targets (reflectors / responders on the asset) based on different principles, set as mobile targets and the DP control mode selected to Follow Target (Follow Position or Follow Position & Heading).

Note: Using Absolute PRS in conjunction with Relative PRS should only be considered if Vessel A is equipped with the appropriate follow target / ship follow functionality suitable for the Industrial Mission. I.e., capable of dealing with the expected movement velocities of the asset they are working with.

Note: Standard follow target functionality may not meet the performance criteria for the industrial mission. The OEM should be consulted.

Note: Redundancy of both absolute and relative reference systems should be considered.

Note: Vessels intending to follow position and heading of a target vessel will need multiple targets with horizontal spatial separation. OEM minimum recommended spatial separations is essential.

Note: The use of this functionality may necessitate the need for the operator to set up a 'Reaction Radius/area' when set to mobile follow target mode (position and heading) and select specific features (e.g. quick response, auto position fallback).

- Operator defined area within which the target can move without causing the vessel to follow.
- When the target is at the edge of reaction radius/area, the position setpoint is updated automatically to restore the vessel position relative to the target.
- Reaction radius/area is redrawn around the new position of the vessel.

Option 2 – Using Auto-position:

- One absolute PRS – set to monitoring
- Three relative PRS based on different principles such as Laser and Microwave - selected into DP Control without follow target mode (i.e. auto position mode).

Note: Practical experience has shown that employing relative targets with moving assets and not using follow target functionality allows the DP system to maintain a relative distance satisfactorily. This method avoids the additional risks involved in mixing absolute and relative PRS's when maintaining a relative position off a moving asset, for DP Vessels without a bespoke Follow Target Functionality required for the Industrial Mission.

- The above approach can only work when the movement in surge sway and yaw of the target vessel is not excessive in velocity or distance.
- DP Operators must be diligent and competent to recognise degraded station keeping and take action to suspend ongoing operations and exit to safe zone. (E.g., excessive alarms and or movement of relative PRS's, thruster oscillation, thrusters ramping up too quickly, etc.)
- OEMs are consistent that the Autopos mode with Kalman filter is not designed for this, even when only using relative systems. PRS's may be rejected if the movement velocity of the target asset is excessive.

Lack of understanding of the functionality, improper/ineffective use of relative PRS and rapid / excessive movements of the target vessel may introduce unacceptable risk and consequences of a loss of position and or heading.

1.6.2 ASOG

The vessels Activity Specific Operating Guidelines (ASOG) needs to address the correct setup and calibration protocols. When an issue emerges, the operator must be provided with clear instructions to assist them in the execution of clear and concise action.

The development of the ASOG needs to explicitly consider and address the following:

1. Verification of target locations (Targets on DP Control System display matching physical locations on target vessel)
   - Proper target management (e.g. reinstatement in safe area, prediction errors at the DPCS or PRS receiver, instability in reference systems observed on DPCS, eroded confidence in reference system management by DPCS) Instruction on absolute PRS to be in monitoring mode and controls to ensure that Absolute PRS is not enabled if only relative PRSs are used for Station Keeping when in close proximity to target vessel (Close proximity to be defined (based on Industrial Mission)).
2. If "Follow-Target" Mode functionality is installed:
   - Instructions specific to the version of the functionality installed and its use in the Industrial Mission being undertaken, including any specific features (e.g. auto position fallback functionality) – *Applies to Option 1 only.*
3. Actions to be taken upon loss of redundancy:

Specific Operator interventions are required (note that variability exists in different versions of DP Control systems). ASOG must contain instructions relevant to the control system version that is installed.

For any option, it is imperative that OEM documentation is referred to and if necessary, OEMs are consulted regarding the best solution for the mission.

1.6.3 PRS Calibration - disabling and re-enabling the PRS

Calibration is used by the DP Control system to centre a PRS with the vessel model. This action should stay a stationary 'correction' after completion. If a PRS is then 're-calibrated,' this might introduce unanticipated flaws in the model location, resulting in unexpected station-keeping difficulties.

Note: Frequent recalibration when in close proximity to an asset is not to be undertaken. If a need arises for recalibration when in close proximity, ongoing activities should be suspended and the vessel moved out to a safe position, recalibration carried out, stability of reference systems to be verified and steps used for initial set-up to be repeated to position vessel to resume Industrial mission.

It is important that calibration of each unit is current to ensure all offsets and bearings are correct in order to confirm the fore and aft lines as per OEM instructions. Prior to beginning operations, PRSs used must be confirmed and recorded to match the physical position on the host asset).

The operator needs to understand what is happening when the PRS diverges and how to respond. The typical DP Operator reaction is to reset the PRS (disabling and re-enabling the PRS) to bring it back to the central point. Such actions have the potential to induce position inaccuracies in the DP Model and vessel excursions with unacceptable outcomes when in close proximity to assets.

Note: All actions taken for the management of PRSs within the DP control system should align with the validated OEM design functionality of PRS management. (E.g., some DPCS are designed with a built-in function for aligning the error of PRS and others are not.)

Changes to PRS/DPCS (PRS related) set-up should not be attempted when in close proximity to assets.

1.7 DP Vessel to another DP Vessel Interaction

When two DP vessels are engaged in interacting with each other and/or close quarter DP operations, one of the two DP vessels shall be designated as the 'stationary' or 'master' vessel. When possible, this vessel will operate absolute positioning and maintain its position over the ground.

The vessel designated as the 'stationary' or master/reference vessel should be using the appropriate absolute PRSs such as DGNSS's, HPR, taut wire, etc., and meet the requirement for a minimum of three PRS using two different principles.

Any Relative PRS used in conjunction with an absolute PRS to reference the DP Control System from moving structures (drillship, turret FPSO, pipelay vessels etc) must be inputted into the DP operator station as a mobile follow-target reference, provided the DP control system has the appropriate industrial mission specific follow target functionality (Consult OEM Instruction).

If only relative PRS's are being used for relative positioning off a target vessel, the relative PRS's must be inputted into the DP desk as fixed target references.

The following IMCA Guidance would be relevant to this case study:

IMCA M117 *The Training and experience of key DP personnel*

IMCA M220 *Guidance on operational planning*

IMCA M252 *Guidance on Position Reference Sensors and Sensors for DP Operations*

2 Distraction - Don't Text and Navigate

2.1 Overview

A dynamic positioned (DP) PSV was conducting operations near a drilling rig in the North Sea.

The DPO of the PSV was using their phone while they were supposed to be monitoring the vessel's position. As a result, they were not paying attention to the vessel's movements, and it drifted too close to the rig. The vessel collided with the rig, causing significant damage to both assets.

The investigation into the incident found that the operator of the PSV had been using their phone for personal reasons while they were supposed to be monitoring the vessel's position. The investigation also found that the operator had not received adequate training on the use of DP Control System.

2.2 Recommendations

Recommendations included:

- Increased training for DP operators on the use of phones and other electronic devices while on duty.
- Increased supervision of DP operators to ensure they are not distracted from their duties.
- Improved procedures for monitoring the position of DP vessels.
- Operator stations should have a personal phone ban within a certain radius.
- Use of Mobile Phones and other personal smart devices should be addressed in the Master's and Chief Engineer's DP standing orders.

2.3 Conclusion

The incident involving the PSV is a reminder of the importance of operator attention when operating DP vessels. Distractions, such as the use of phones, can have serious consequences. By following the recommendations of the investigation, the offshore industry can help to prevent similar incidents from happening in the future.

The use of phones and other electronic devices while on duty is a major safety hazard in the offshore industry.

The following IMCA Guidance would be relevant to this case study:

IMCA M117 *The Training and experience of key DP personnel*

IMCA M220 *Guidance on operational planning*

3 What have the Alarms ever done for me?

3.1 Overview

A DP vessel with a two-way redundant split was engaged in cargo operations alongside a fixed platform, the environmental conditions at the time were marginal however the vessel was in a blow off situation.

The vessel was operating in a split bus configuration, in this case a two-way split, each bus had two generators connected with each generator delivering approx. 40-50% power.

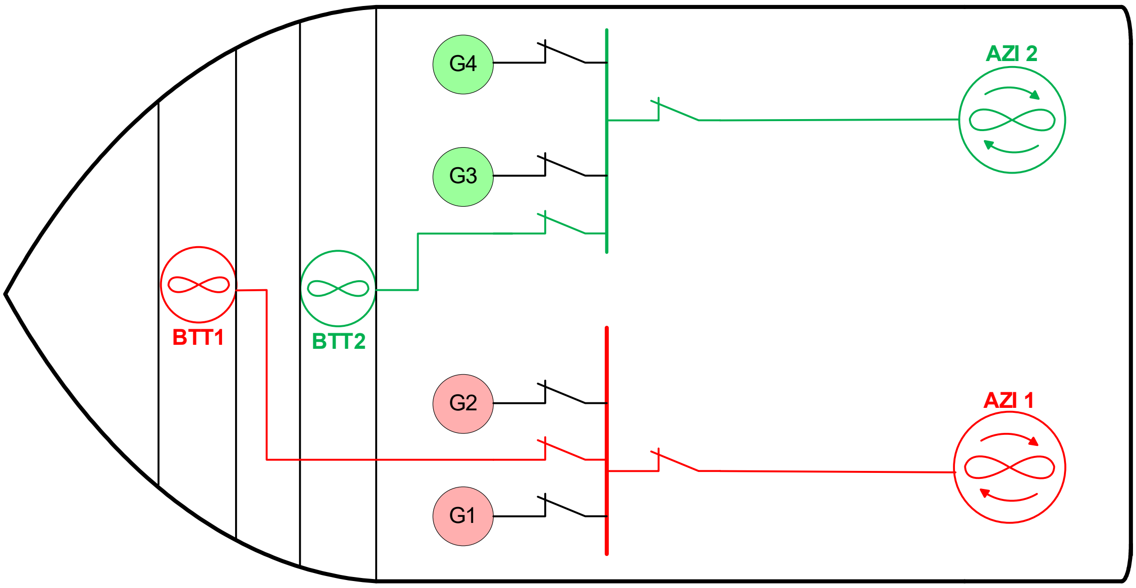

Figure 3-1 Power Configuration Prior to Event

Not long into the operation alarms were activated on the vessels management system indicating that there was a low fuel pressure on the port fuel system, the alarms were accepted and cleared, however they became more frequent. The duty engineer called the bridge and enquired how long the operation would last, they were informed that there were only two lifts left. The decision was made to continue the cargo operation and investigate once the vessel had completed and moved out of the 500M Zone.

The alarms continued, however after a short time further alarms reported low frequency of both Bus sections along with dimming lights, shortly afterward the vessel blacked out.

At the time of the black out the vessel deck crew had just connected the last container to the rig crane, with the vessel in drift off and the marginal weather conditions, the vessel drifted rapidly causing the container to drag across the deck and snagging on the vessel sides before the rig crane operator attempted to lift the container clear. When the crane operator understood the situation, they tried to lift however due to the container snagging, the lifting strop failed.

The vessel was left blacked out and drifting uncomfortably beam onto the swell, it took over 30 minutes for the vessel crew to restore power and propulsion, in that time a lot of damage was inflicted on the vessel due to the uncomfortable motion.

3.2 What happened?

The vessel was operating open bus, it wouldn't be unreasonable for the reader to assume all services were also split to provide independence and redundancy, and this was certainly what the vessel crew also assumed.

However, 24 hours earlier the vessel had a crew change, the off-signing crew failed to inform the on-signing crew that during their trip they had an issue with the starboard fuel system. The issue could not be immediately fixed as a part was required, so the vessels engineering staff cross connected the fuel systems forming a common system.

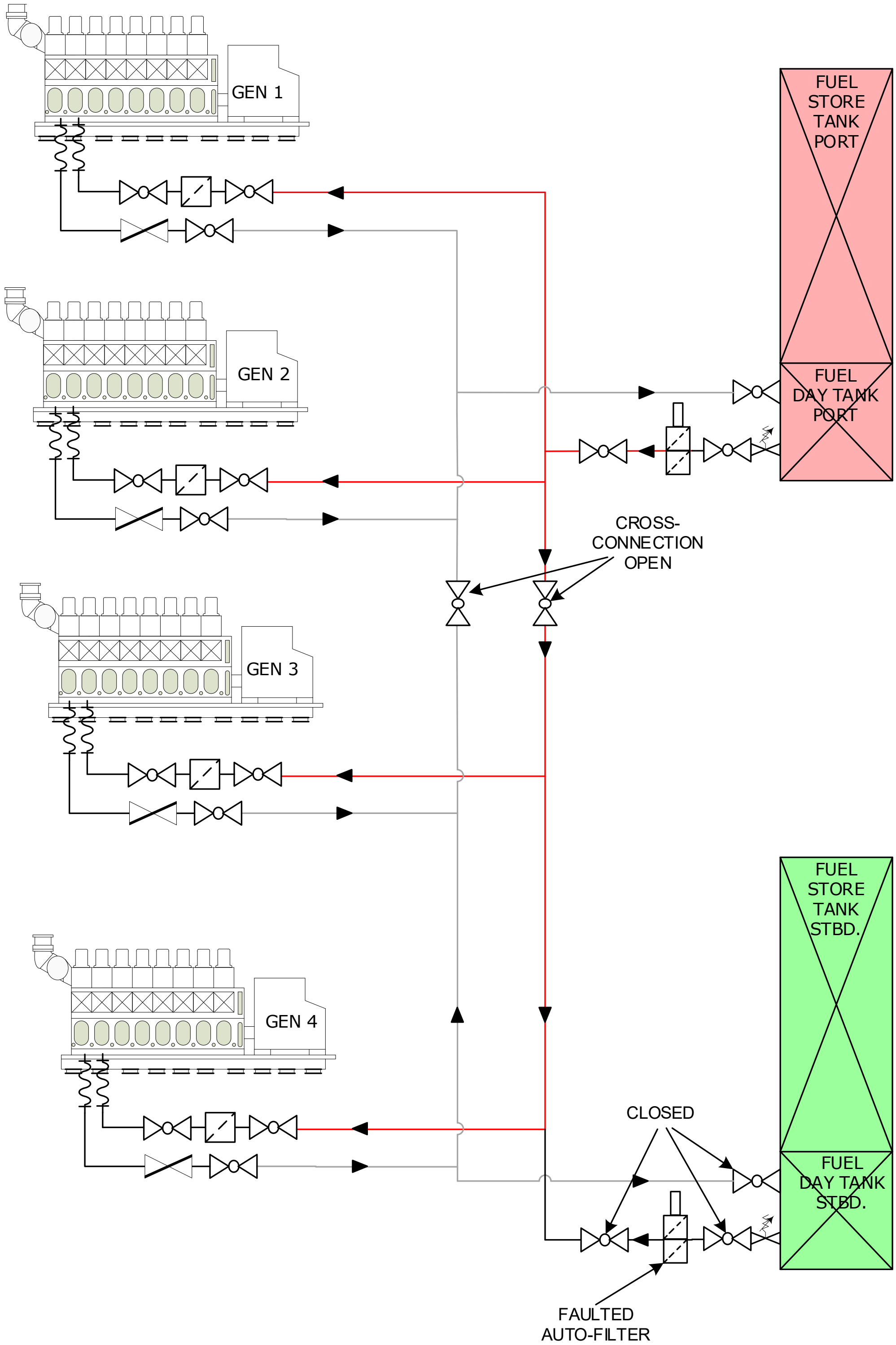

Figure 3-2 Fuel System Configuration at time of Event

The fuel system was configured as per Fig. 3-2 above with all the generators being supplied from a single fuel source, blockage of the port auto fuel filter then caused fuel starvation for the running generator which eventually tripped.

The scenario was further compounded by the fact that when the generators were being starved of fuel, their governors were forced to increase the actuator setting to deliver more fuel in order to maintain the power grid's frequency. When the vessel staff attempted re-starts the engines would overspeed and trip. Only when the governors were reset were they able to restore power.

3.3 What can be Concluded?

A number of conclusions can be drawn:

- No formal documenting of the issues with the fuel system
- No formal handover – the on signing crew unaware of changes, the crew change was literally a handshake due to travel arrangements.
- Field arrival Trials – are they suitable?
- Field arrival check lists – Did not pick up the cross connection.
- ASOG was effectively null void without the knowledge of the changes.

3.3.1 Management of Change

There was a significant change of system operation for a major system. Why was this not formally captured and documented? The vessel owners were unaware that the starboard fuel system could not be configured independently, this defeated the redundancy concept of the vessel. IMCA HSSE 001 gives guidance on Management of Change.

3.3.2 Complacency

We must address the use of arrival/DP check lists. In this case the vessel had a comprehensive set of field/pre-DP Checklists for both the bridge team and the engine room team. These checklists ask the user pertinent questions to assist in checking the status of the vessels redundancy and ability to survive a single point failure. Unfortunately, due to the repetitive nature of the process complacency can creep in and boxes are 'ticked' without a proper check.

Complacency is defined as a condition of being content with oneself or one's circumstances, particularly when coupled by a lack of awareness of genuine threats or limitations. It can be risky since it causes people to become less cautious and more prone to making mistakes.

It is important to be aware of complacency and to take steps to avoid it. Complacency is a dangerous thing, but it is something that can be avoided. By being aware of complacency and by taking steps to avoid it, you can stay motivated and successful.

The following IMCA Guidance would be relevant to this case study:

IMCA M117 *The Training and experience of key DP personnel*

IMCA M220 *Guidance on operational planning*

4 Incorrect entry of DP Rotation Point offsets

4.1 Overview

A vessel was engaged in Driving and ROV work over a live manifold. During ROV dive the vehicle had taken receipt of a hot stab connected to a recently deployed downline with the intention of connecting the downline to the manifold on the seabed to enable de-watering of the pipeline.

Due to rising currents the vessel was required to change heading, with a move agreed between Bridge and Dive Control to pivot around the over boarding chute housing the downline deployed to the worksite, such to minimise disruptions to the works being carried out subsea.

The move required was a heading change of around 30 degrees with the chute location known to be approximately: 25m Astern and 11.5m Port from centre ship. An input error from the operator occurred and the DP system was instructed to rotate 30 degrees on a point 25m Forward and 11.5m Port from centre ship.

During the move the ROV reported that it was losing position and an 'All Stop' was called to the move. It was then discovered by the DP Operator that the input error had occurred, and the vessel was returned to its desired position prior to re-commencing the work scope.

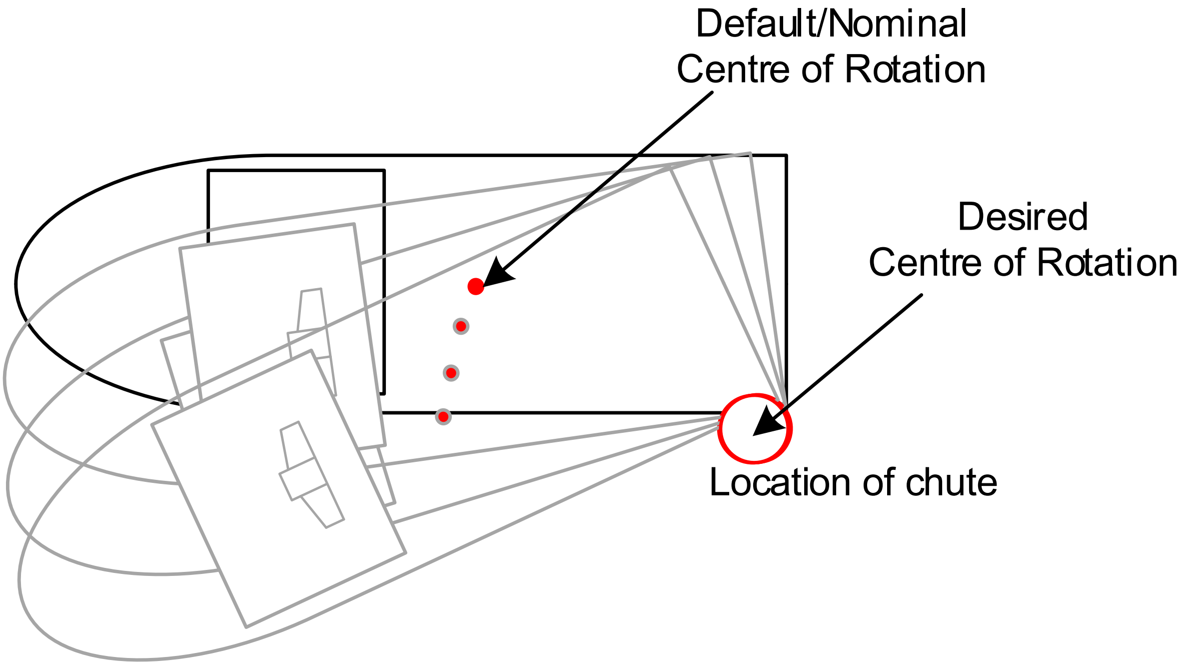

Figure 4-1 Desired heading change Move

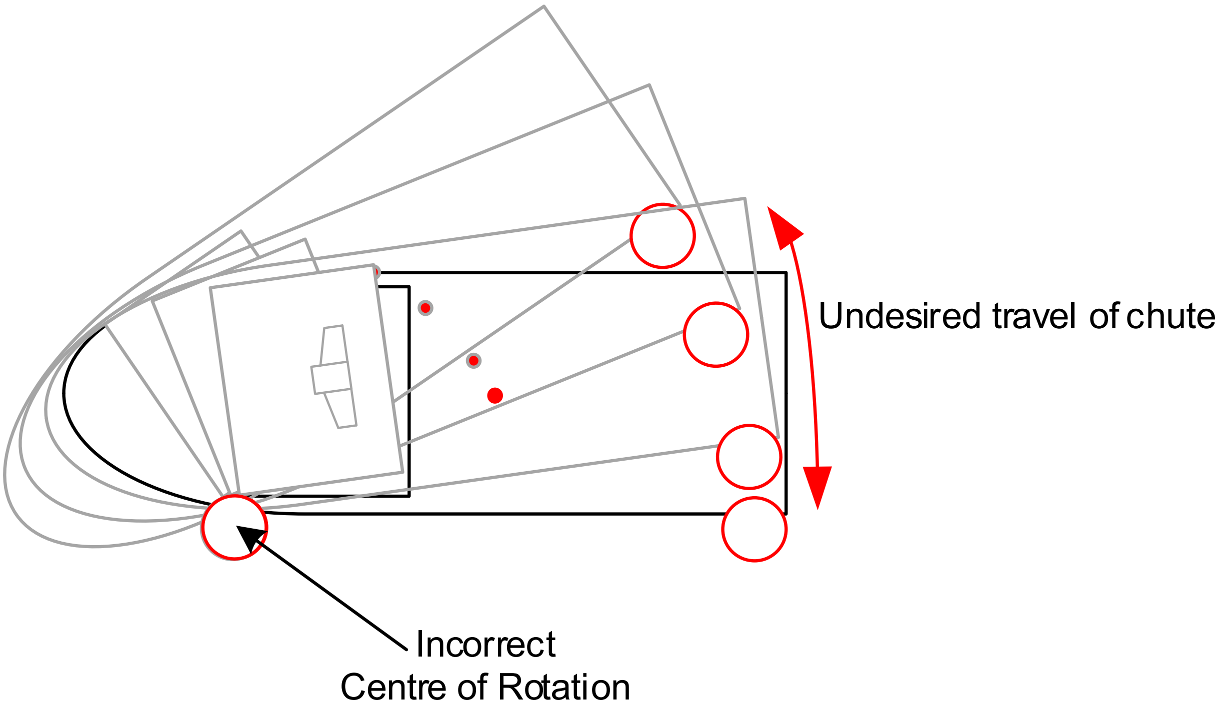

Figure 4-2 Actual heading change/vessel move

4.2 Observations

- ASOG/CAMO was in operation at the time of incident.
- At no point did vessel lose control, DP system (correctly) responded to input command (which was incorrect)
- the DP operator stopped the move immediately upon becoming aware.
- Vessel operating in DP Class 3 configuration. At no point was DP compromised or at risk (according to duty holder).
- Once the move was stopped, the correct inputs were entered, and vessel moved to the desired location and heading.
- The principles of Bridge Resource Management, including cross checking, have been reinforced with the DPOs. The CAMO/ASOG and Master's Standing Orders now include this.
- New Master Standing Orders for DP Operations have been rolled out. These emphasis cross-checking, DPO teamwork and focus during operations.

The following IMCA Guidance would be relevant to this case study:

IMCA M117 *The Training and experience of key DP personnel*

IMCA M220 *Guidance on operational planning*

5 DP Drill Scenario

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 setups including their failure modes.

Refer to IMCA M117 The training and experience of key DP personnel - Appendix 6.

EXERCISE SCENARIO LOSS OF MAIN DP SYSTEM UPS
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 in full auto DP control; power plant configured according to the vessel's DP operations Manual (and respective decision support tool); all other vessel equipment and systems set up in accordance with applicable DP checklists: 1. Vessel in a safe location. Simulated location and activities agreed and communicated to all participants. 2. Simulate the loss of a main DP system UPS by isolating all outputs simultaneously. 3. Check the vessel ability to maintain position using remaining online equipment. 4. Check the vessel DP crew ability to manage the situation in a controlled manner. 5. Discuss the results and determine how the risk of losing the UPS could be mitigated.
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 / lost? ♦ What are the risks of the exercise? ♦ Is the exercise scenario appropriately documented? ♦ What will be the communication channels during the exercise? ♦ Who will observe and accurately record exercise data including the DP system configuration pre-exercise? ♦ What is the anticipated loss of position? ♦ Are there any secondary failures expected, for example, mission equipment?
Observations During Exercise: 1. Is the DP emergency drill procedure being followed? 2. Is the equipment performing / reacting as expected? 3. Are those individuals directly involved in the exercise reacting appropriately given their assigned duties? 4. Are those individuals indirectly involved reacting in an appropriate manner?

EXERCISE SCENARIO	LOSS OF MAIN DP SYSTEM UPS

5. Is the degree of participation and diligence as expected?
6. What is the actual loss of position?
7. What is the duration from commencement to concluding a safe outcome for the vessel?
8. Was the communication effective during the drill?

Actual results witnessed:

EXAMPLE:

The vessel maintained accurate station keeping with remaining online equipment.

The DP system reacted well maintaining station keeping as did the crew's reaction and response to the failure….

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.

Handling of UPS failures in the correct manner requires knowledge of the DP specific equipment being supplied by the particular UPS, how the DP system reacts to multiple failures and alarms and the human intervention required if necessary to ensure station keeping. Items to consider include:

a. Awareness of the UPS DP supplies segregation (following the redundant groups)

EXERCISE SCENARIO	LOSS OF MAIN DP SYSTEM UPS
b. Appreciation that internal UPS failures can prevent bypass facilities operating in some designs c. DP system reaction to multiple failures d. What to look for on the operator stations e. What event and alarms indicate UPS failures f. Methods of fault finding and investigation g. Appropriateness of communication h. Training requirements	

6 News in Brief from the DP Committee

- M190 & M191 published June 2023.
- M117 published June 2023.

6.1 Station Keeping Events STATS:

The information below is a snapshot of the DP Station Keeping events to date for 2023.

How many in 2023

- Total 106 Reported to date

What type

- 4 Observation
- 66 Undesired Event
- 36 Incident

Bus Configuration

- 64 Open
- 20 Closed

Main Cause (Overall Effect)

- 1 Human
- 24 Computer
- 43 Thruster/Propulsion
- 27 Power
- 0 Electrical
- 0 External Factors
- 11 Position References
- 0 Environmental
- 0 Mechanical
- 0 Sensors

Secondary (Root) Cause

- 15 Human
- 15 Computer
- 0 Thruster/Propulsion
- 0 Power
- 34 Electrical
- 2 External Factors
- 6 Position References
- 10 Environmental
- 21 Mechanical
- 3 Sensors

Figure 6-1 Event Stats

The percentage of DP incidents (Loss of position/heading) reported per year has increased since 2019, a year before the pandemic, which is a concerning trend. The 2022 figures showed that the percentage of incidents had decreased, and this was encouraging. However, so far this year we are seeing a sharp increase to date. See the graph below;

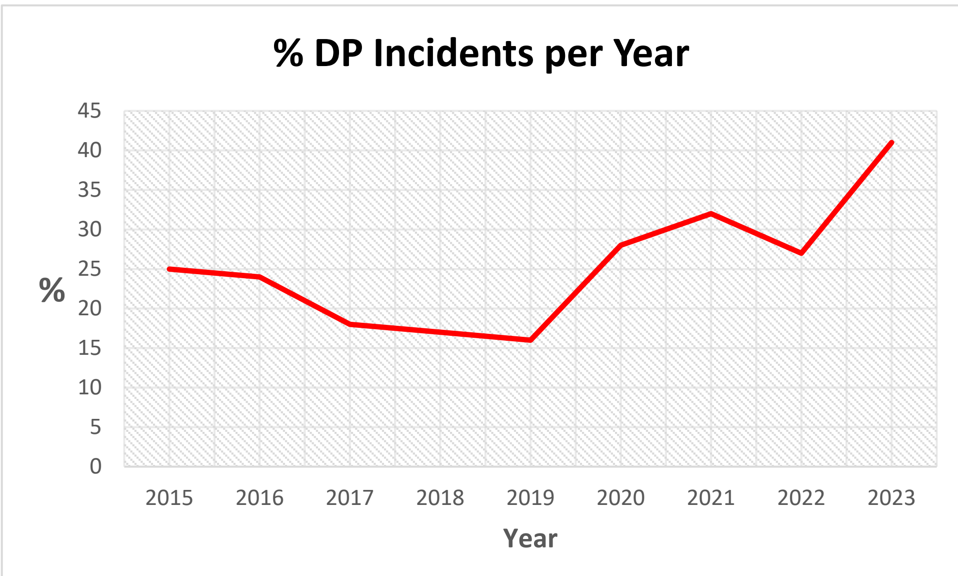

Figure 6-2 Percentage of DP Event Reports received resulting in DP Incidents (Loss of Position/Heading)

Dynamic Positioning Station Keeping Review – Incidents and Events Reported for 2022 can be downloaded from our website

If you are employed by an IMCA member company, you can register on the website using your company domain email address. Once registered, you will be given direct access to the members area including all guidance and publications. This also applies to Bridge, ECR or Rank email addresses onboard vessels.

The IMCA DP reporting form available here. You may want to consider using this form for your vessels. Please forward reports to dpreports@imca-int.com

6.2 Continuous Professional Development (CPD)

Following the announcement from the Nautical Institute (NI) about the new requirements for revalidating the DPOs Certificate, a Key DP Personnel continuing professional development (CPD) learning programme has been developed by IMCA and the Nautical Institute to provide valuable CPD learning to DPOs who perform a safety critical role onboard offshore DP vessels.

The learning programme is accessible to all Key DP Personnel to ensure that their technical knowledge of the latest industry practices is up to date and measured though questions delivered through an application available on desktop and on mobile devices. This will ensure professional currency with the latest IMCA / industry guidance, DP safety bulletins, DP exercise and training drills, and help prevent knowledge and skill fade in the various DP related roles on vessels,

The content has been designed for use on mobile devices. The delivery of the content is through the EdApp application software which is a mobile device learning management software. The application is available across a wide range of operating systems, for example, IoS and Android, and the app functionality provides offline capability meaning the content remains available without internet connection, an important factor for seagoing personnel.

Registration and payment for the app is undertaken via the NI Alexis Platform which is accessible by all Key DP Personnel who wish to purchase the CPD programme.

Find out more @ https://www.imca-int.com/certification/dp/cpd/