

# DP INCIDENT REPORT

APRIL 2016



## EXTERNAL INTERFACE WITH DP STATION KEEPING EQUIPMENT (GPS SPEED LATITUDE INPUT TO GYROS) CAUSES POSITION AND HEADING EXCURSION ON DP 2 VESSEL

Target audience for this alert

- Vessel Management and Operations Teams on DP Vessels
- DP Technical Support Function of Vessel Owners/Contractors
- DP Assurance Teams of Operators/Charterers
- Vessel Designers, DP Equipment Vendors,
- FMEA Providers
- Classification Society DP Approval Authorities

### WHAT HAPPENED?

A DP class 2 project and construction vessel suffered a position and heading excursion while conducting coiled tubing operations. The incident had no consequences to people, assets or environment.

The following sequence of events were reported:

- The DP system displayed a “heading out of limit” alarm and a “position out of limit” alarm.
- The vessel experienced a maximum heading deviation of 6 degree and position deviation of 4 meters.
- Bow tunnel thruster’s ramped up in response to the deviation noted on the DP system and a high force warning alarm was recorded.
- Vessel crew deselected DGNSS #1 from the DP system assuming that the excursion was caused by a DGNSS jump.
  - o Vessel’s crew reported that GPS “jumps” were observed on the radar an hour prior to the excursion event.
  - o No alarms were recorded on the DP system indicating issues with the DGNSS.
  - o Subsequent follow up and review of the logged data by the vendor of the DGNSS’s did not reveal any issues with the DGNSS PRS.
- Yellow limits were triggered by thruster load criteria and operations were suspended in accordance with the ASOG and vessel departed the 500 m zone.

## **WHY IT HAPPENED**

- All three gyros experienced a 4 degree deviation.
- Speed and Latitude inputs into the gyros were fed from the navigation GPS.
- Erroneous inputs from the navigation GPS into the gyros, caused a heading “jump” in the gyros.
- Relative position reference sensors were affected by this jump indicating a position and heading deviation. Thrusters ramped up to address this deviation.
- Crew assumed jump was due to DGNS.
- Failure to follow an ASOG, ( ASOG specifically required manual inputs of speed and latitude to the gyros)

## **LESSONS LEARNED**

- Failure to follow ASOG still contributes to incidents.
- Speed and Latitude inputs into the gyros when on DP should be manually input, as stipulated in the ASOG. This should be specifically emphasized during the process of implementing and refreshing the ASOG.
- Similar incidents have occurred in the past. IMCA has produced a safety notice regarding such incidents and potential for same.
- External interfaces to DP Station Keeping Equipment should be minimized. In all cases such interfaces should go through a systems engineering approach ( eg detailed FMEA and proving trials). External interfaces, non essential for DP and those that have the potential to affect DP Station Keeping should be isolated when vessel is carrying out DP operations.

## **ADDITIONAL NOTES**

- All non-essential external interfaces to DP Station Keeping Equipment should be avoided,
- Similar interfaces have been found with speed inputs from navigation GPS's and Doppler speed logs being tied into retractable thrusters. Unexpected failures and consequence of loss of thrust has been known to occur in industry and has been attributed to such interfaces
- Such interfaces/inputs should be isolated during DP operations ( eg automatic speed and latitude input into gyros, external vessel speed input into thruster controls).
- Procedures should be developed and implemented to ensure that automatic inputs are isolated when on DP. If such features are deemed necessary when vessel is in transit, processes should be in place to reinstate when required.
- Vessel owners to evaluate and facilitate ease of vessels capability to manually input speed and latitude into gyro and isolate non-essential interfaces during DP operations

## **RECOMMENDATION**

It is recommended that owners of DP vessels disseminate this LFI to Vessel Management Teams on all DP Vessels as well as to their equipment vendors and vendors of DP FMEA;s and to their DP Technical Support Function.

It is recommended that Vessel Management Teams, DP Technical Support Functions, and DP Assurance teams, review this LFI and provide positive confirmation through their respective organizations to the accountable DP Technical/Quality Focal that their vessels designs and documentation have been reviewed against this LFI and subject vessels are not vulnerable to the potential for such an incident. Results of this effort should be communicated back within a mutually agreed time from the date of receipt of this LFI. If vulnerabilities have been identified Vessel Management Teams and DP Technical Support Functions, are recommended to communicate through their own internal process, the remediation measures being undertaken along with timelines to be concluded within Timelines to be mutually agreed to between all stakeholders.