

IMCA DP Safety Flash 01/14

December 2014

These flashes summarise key safety matters and incidents, allowing wider dissemination of lessons learnt from them. The information below has been provided in good faith by members and should be reviewed individually by recipients, who will determine its relevance to their own operations.

The effectiveness of the IMCA DP safety flash system depends on receiving reports from members in order to pass on information and avoid repeat incidents. Please consider adding the IMCA secretariat (imca@imca-int.com) to your internal distribution list for safety alerts and/or manually submitting information on specific incidents you consider may be relevant. All information will be anonymised or sanitised, as appropriate.

A number of other organisations issue safety flashes and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at www.imca-int.com/links. Additional links should be submitted to webmaster@imca-int.com.

Loss of 3 Gyros on DP-3 Drill Ship

Three gyro compasses connected to DP system had a “heading freeze” within 5 minutes of time.

What happened?

Three DP System connected gyros heading froze within 5 minutes of time. With all three gyros out of service, drill ship’s DP Model took over. 34 minutes later all gyros had been rebooted and were online in the DP System. Gyros were of modern fiber optic style.

The max excursion of vessel position was 20 meters over 34 minutes. Calm weather was benign enough to allow accurate model control of drilling vessel for duration of 34 minutes. Drill ship was connected to well head while tripping into hole when incident occurred but emergency disconnect was not required.

What went wrong?

The investigation is ongoing which will require analysis of all three gyros in a laboratory by original manufacturer. Nothing can be stated conclusively until root cause analysis and investigation is complete. Drill ship had been in service less than a year at the time of the incident.

What were the causes of the incident?

As of the writing of this safety flash, the proximate cause is unknown. Initial review reveals observations that may or may not have contributed to this incident, in whole or part and is not intended to reflect negatively upon any vendor or operators approach to construction/design:

- ◆ Commonality of three identical MAKE & MODEL gyros with common software, firmware, and hardware;
- ◆ Common backup 24 volt power source among three gyros could have allowed voltage instability to affect all three gyros at the same moment in time;
- ◆ Out of date firmware existed on 3 gyros;
- ◆ Automatic feed of GPS inputs existed;
- ◆ Manufacturer’s technical bulletins existed but it remains unclear if that is relevant;
- ◆ Simultaneous initial power-up start time of internal gyro clocks in shipyard possible;
- ◆ Unknown age of gyros installed in shipyard.

What lesson were learned?

- ◆ An active, approved & well-rehearsed Well Specific Operating Guideline (WSOG) contributed to the safe reaction of on-board staff;
- ◆ Calm weather contributed to the effectiveness of the DP Model;
- ◆ Open and clear communications are crucial to successful response and resolution;
- ◆ Common mode faults should be interrupted thru use of different brands, different power connections, and thoroughly tested during a Failure Mode Effect and Analysis (FMEA) conducted by an independent third party;
- ◆ Concerns identified during FMEA testing should be followed up by management & risk assessed according to IMCA/Industry recommended guidelines.

Actions

Deep root cause analysis is to be conducted; and a step change to installed equipment is ongoing.