



# DP Incidents

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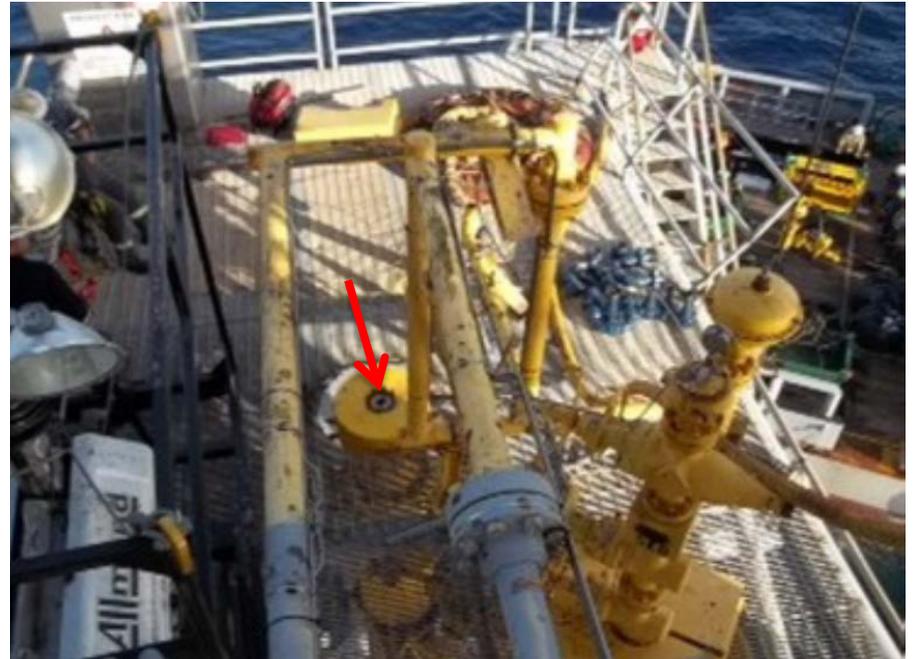
“To promote safety, protect the environment and conserve resources offshore through vigorous regulatory oversight and enforcement.”

# DP Incident- background

- On October 10, 2015 a OSV was tied onto surface well cap
- The OSV lost station keeping due to unknown reasons at this time
- The OSV was only a DP1 vessel
  - Which does not require a disconnect sequence
- No disconnect was initiated and the tree cap was pulled off the well
- Quote from the Safety Alert:

At the time of the position loss, the OSV was being utilized to support pump and electric line equipment which was connected to the well at the time of the incident. Specifically, when the vessel lost position, the vessel operator was in the process of removing a downhole DX plug from the well via wireline. High pressure pump lines were also connected to the well, although actual pumping operations were not in progress. When the vessel lost position, the Christmas tree was sheared from the well because of the force exerted on it by virtue of the connected high pressure lines. Severe consequences were averted because a subsurface safety valve was activated and there was an absence of hydrocarbon flow from the well.

# Incident Photos



As a result of the DP incident the well cap was pulled of the well entirely

# BSEE Conclusions

- A BSEE and USCG joint safety alert was issued on 02/24/2015 for this very incident
  - [BSEE alert #315](#)
    - Alert points out MTS Appendix 2 (DP Project/Construction vessels)
- Warning signs were not followed from the OSV
- Had the OSV meet the requirement of a DP Equipment Class 2, a disconnect sequence would have occurred
  - This is mainly a intervention issue. Deepwater drilling has DP2 vessels

# BSEE Conclusions Con't

- USCG identified that the vessel had inadequate Activity Specific Operating Guideline (ASOG) and Critical Activity Mode of Operations (CAMO)
  - ASOG prescribes the emergency disconnect procedures and capability to prevent equipment damage and pollution

Activity Specific Operating Guidelines - Name of DP Project/Construction Vessel				
Condition	GREEN	ADVISORY	YELLOW	RED
Notify Master, Chief Engineer, Winch Control, Offshore Facility and Clients Representative	NO	YES	YES	YES
Action	CONTINUE NORMAL OPERATIONS	INFORMATIVE / CONSULTATIVE STATUS (RISK ASSESS)	HALT OPERATIONS AND INITIATE CONTINGENCY PROCEDURES (Prepare Vessel to enable cessation of operations and movement to safe location)	INITIATE EMERGENCY PROCEDURES
Current and predicted weather conditions	Within Operating limits	Approaching operating limits	Exceeding operational limits	
DRIVE OFF or Drift Off	All systems operating correctly	Discrepancy in PRS. Inexplicable ramp up of thrusters	Immediately when recognized by DPO	Unable to bring vessel under control
Vessel Footprint/Weather related excursion	No position alarms or warning	If warning position limits reach (>3m )	If Alarm position reached (>5m )	
Heading excursion	No Heading Alarms or warning	If heading warning limit reached (>3 degrees)	If heading Alarm limit reached (>5 degrees)	
Maximum Heading change within 500 m zone or carrying out critical activities	maximum step change 5 degrees	Step Change exceeding 5 degrees being contemplated.		
Bow Thruster Loads	All < 45%	Any approaching 50%	Any > 50%	
Aft Thruster Loads	All < 45%	Any approaching 50%	Any > 50%	
All thrusters	Operational with no alarms	Any alarm, poor performance, unexpected or unexplained event	Loss of any one thruster	
Diesel Generator – Engines	All diesel generators online, no alarms or known deficiencies.	Any alarm, poor performance, unexpected or unexplained event	Loss of one main diesel generator	

# BSEE Conclusions Con't

- CAMO in MTS
  - Vessel failed to have a CAMO on file, which would have recommended the operator change the operating condition from a “normal” to a “risk assess” mode.
  - Excerpt from MTS:

Critical Activity Mode of Operation (CAMO)

*Any DP vessel, including DP Class 2 and 3, can have the redundancy concept defeated if its systems and equipment are not configured or operated in the correct way.*

**Critical Activity Mode of Operation (CAMO):** *This is generally a tabulated presentation of how to configure the vessel's DP system, including power generation and distribution, propulsion and position reference systems, so that the DP system, as a whole is fault tolerant and fault resistant. The CAMO table also sets out the operator actions should the required configuration fail to be met. The term Safest Mode of operation (SMO) has been previously used to describe CAMO*

*The CAMO sets out the required equipment configurations and operational standards necessary for the vessel to meet its maximum level of redundancy, functionality and operation so that no single failure will exceed worst case failure. Every DP vessel/ rig has a unique configuration (aka Critical Activity Mode Configuration) which must be determined from a detailed understanding of the vessel's DP FMEA and its operational characteristics. The CAM configuration should be the default operational mode for a DP vessel when conducting activities deemed or identified as critical.*

*A detailed review of the DP FMEA is done with a view to identify critical activity mode. It is suggested that the results of this review are summarised in a vessel overview document.*

# MTS Appendix 2 (Construction Vessels)

- According to the table this vessel should have been a minimum of DP 2?
  - Would this fall under a construction vessel even though it was doing well work?
- If the vessel is doing well work, then it should be held to these standards, meaning this vessel should have been a minimum of DP 2
- BSEE is looking into how to enforce the minimum standards that are embedded in this document
  - Nothing has been decided as of yet

It is recommended that DP vessels with the following DP equipment class notations be used for the following activities.

Application on DP	Minimum Recommended DP Equipment Class (See Note 1 below)	Remarks
Drilling	2	
Diving	2	
Pipelay	2	
Umbilical Lay	2	
Lifting	2	
Accommodation	2	
Shuttle Offtake	2	
ROV Support (Open Water)	1	
ROV Support (Close Proximity - Surface/ Subsea)	2	
Floating Production	2	
Seismic and Survey vessels (Open water- outside 500 m zone)	**	Class in accordance with contractual requirements
Well Stim	2*	Vessels of lesser Class may be used with the appropriate structured risk identification and mitigation measures in place.
Logistics Operations	2*	Vessels of lesser Class may be used with the appropriate structured risk identification and mitigation measures in place.

**Note 1** The vessel's DP system should be set up and operated in the identified Critical Activity Mode (CAM) configuration. However, on occasion and after a proper assessment of the risks, the vessel may be set up in accordance with the identified Task Appropriate Mode. (TAM)

**Note 2** The suggested default mode for Project and Construction vessels is to be set up and operated in CAM.

# BSEE Path forward

- 2 BSEE and USCG safety alerts have been published since 2014
  - [BSEE alert #312](#)
  - [BSEE alert #315](#)
- Are Operators following these Safety Alerts/standards?
  - Multiple documents to follow
    - MTS
      - Appendix 2 (DP Project/Construction Vessels) July 2012)
      - Appendix 1 (DP MODUs) March 2012
      - Appendix 3 (DP Logistics Vessels) July 2012
    - DNV
      - Competence of Dynamic Positioning Operators Station Keeping (October 2009)
    - ABS
      - Dynamic Positioning System (Updated July 2014)

# Where does Subsea Well Intervention fall?

- **Well Intervention Units** – any non-rig BOP subsea operation that uses riser or riserless technology to conduct well work.
- **Three types:**
  - Intervention Riser System (IRS)
  - Subsea Intervention Lubricator (SIL)
  - Well Stimulation Tool (WST)
- **BSEE and USCG working closely to adequately address these types of vessels**

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Bureau of Safety and  
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“To promote safety, protect the environment and conserve resources offshore through vigorous regulatory oversight and enforcement.”