



16711/ DP MODU
77 FR 26562
June 19, 2013

From: David S. Fish, CAPT
COMDT (CG-5PC)

A handwritten signature in blue ink, appearing to read "DSF", written over the printed name of David S. Fish.

To: Distribution

Subj: VOLUNTARY REPORTING OF DYNAMIC POSITIONING (DP) INCIDENTS ON
MOBILE OFFSHORE DRILLING UNITS (MODUS)

- Ref:
- (a) Coast Guard Federal Register Notice 77 FR 26562, "Mobile Offshore Drilling Unit Dynamic Positioning Guidance," May 4th, 2012
 - (b) "DP Operations Guidance Prepared through the Dynamic Positioning Committee of the Marine Technology Society to aid in the safe and effective management of DP Operations", March 2012 Part 2 Appendix 1 (dynamically positioned MODUs), available at http://www.dynamic-positioning.com/dp_operations_guidance.cfm
 - (c) Marine Technology Society (MTS) Techop "Defining Critical Activities for Selection of Critical Activity Mode", June 2013

1. PURPOSE. This policy letter clarifies the protocol for voluntary reporting of MODU DP incidents and outlines how the Coast Guard would use voluntary incident reports to facilitate industry wide improvements to DP reliability by using lessons learned from voluntary reports.
2. DIRECTIVES AFFECTED. None.
3. DISCUSSION.
 - a. Reference (a) recommended that owners and operators of dynamically positioned MODUs (not leaseholders who contract MODUs) operating on the U.S. Outer Continental Shelf (OCS) voluntarily:
 - (1) Report to the Coast Guard reactive changes of DP status from "green" to "red" as described in paragraph 4.11 of reference (b) using the procedures listed in 46 CFR 4.05.
 - (2) Ensure Well Specific Operating Guidelines (WSOGs) are developed for operations at every well and location following the guidance in reference (b). An example WSOG is provided in enclosure (1).
 - (3) Ensure a MODU attached to the seafloor of the U.S. OCS is operated in accordance with the appropriate WSOG.

- (4) Identify the DP System's Critical Activity Mode of Operation (CAMO). An example CAMO is provided in enclosure (2).
- (5) Ensure the WSOG clearly states which well operations are critical and require the DP System configured in its CAMO for these operations. Section 2.10 to 3.1 of reference (c) should be referred to when defining critical activities.
- b. Reference (a) also signaled the Coast Guard's intent to initiate a rulemaking that addresses DP incident reporting requirements and minimum DP system design and operating standards. This policy provides amplifying guidance to reference (a) for owners and operators of dynamically positioned MODUs on how to voluntarily report DP incidents that occur on the U.S. OCS until such time the Coast Guard should publish a rule that addresses DP incident reporting.
- c. A dynamically positioned MODU should be operating under a location-specific WSOG consistent with the example in Appendix C of reference (b)¹. **The WSOG defines what a DP incident is** for that MODU, well and location.
- d. Reference (a) recommends voluntary reporting using the procedures listed in 46 CFR 4.05, "Notice of Marine Casualty and Voyage Records." The Coast Guard encourages owners and operators of dynamically positioned MODUs to voluntarily report DP incidents as soon as practicable after they occur. We also encourage MODU owners and operators to voluntarily report historical DP incidents² where, in the judgment of the MODU owner or operator, there are significant lessons learned that may benefit the entire industry.
- e. When the Coast Guard identifies significant lessons learned that may benefit the entire industry, it will publish a Marine Safety Alert transmitting these lessons learned. Such alerts will not intentionally include vessel names, locations, or other identifying information.

4. ACTION.

- a. After addressing any resultant safety concern(s), the owner or operator of the dynamically positioned MODU should voluntarily submit a written report of the incident as described in 46 CFR 4.05-10. However, voluntarily reported DP incidents should not be reported on a form CG-2692 (Report of Marine Casualty), unless that DP incident is also a marine casualty defined by 46 CFR 4.03-1 required to be reported under 46 CFR 4.05. Instead, the report should be sent via email to the Outer Continental Shelf National Center of Expertise (OCSNCOE) supervisor at voluntaryDPIncidentReport@uscg.mil using the recommended format of enclosure (3).

¹ See reference (b) Section 4.8 for more information on development of a location-specific WSOG.

² Reference (b) Section 3.2, Table A, Item 10 calls for dynamically positioned MODUs to retain records of DP incidents.

- b. Historical DP incidents where, in the judgment of the MODU owner or operator, there are significant lessons learned that may benefit the entire industry should also be sent to the OCSNCOE supervisor using the procedures in paragraph 4.a. above.

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Encl: (1) Example WSOG
(2) Example CAMO
(3) Recommended DP Incident Reporting Format

Dist: Anadarko, Atwood, BHP Billiton, BP, Chevron, Cobalt International, ConocoPhillips, Diamond Offshore, ENI, Ensco, Hess Corp., IADC, LLOG, Noble Drilling, Noble Energy, Pacific Drilling, Petrobras, Transocean, Seadrill, Shell, Statoil, Stena Drilling, Vantage Drilling

Copy: COMDT (CG-ENG), (CG-INV), (CG-CVC) & (CG-TI)
CG Marine Safety Center
CG OCSNCOE
All Area/District (p) offices
All Eighth District Sectors and MSUs
Bureau of Safety and Environmental Enforcement

EXAMPLE OF A WSOG – XXX WELL/LOCATION NAME				
Well Specific Operating Guidelines - Name of DP Drilling Rig				
Condition	GREEN	ADVISORY	YELLOW	RED
Notify Driller, Master, Chief Engineer, Rig Superintendent, Toolpusher and Client	NO	YES	YES	YES
Action	CONTINUE NORMAL OPERATIONS	INFORMATIVE/CONSULTATIVE STATUS (RISK ASSESS)	HALT OPERATIONS AND INITIATE CONTINGENCY PROCEDURES (Prepare for disconnect)	INITIATE EDS (disconnect sequence)
Water Depth XXXX m				
Emergency Disconnect Time XXs	The Emergency Disconnect time is to be established from field trials. If the time is measured by a surface test, 10 seconds is to be added for conservatism. (Note There may be more than one EDS time. Appropriate one to be used for activity)			
The Red watch circle below is to be established from calculated drift off curves at 1 year environment, defined Point of Disconnect (POD) and the measured EDS (disconnect sequence) time. If environmental conditions are in excess of the 1 year environment and a blackout occurs, a Red status is to be issued immediately.				
From FMEA proving trials, blackout restart time was established at around 1minute 30 seconds from blackout to recovery of all thrusters				
1 Year Winter storm is 41 knots of wind, Hs 16 feet, Surface current is 0.7 knots	POD 4.1%, Time to POD 142 s			
10 Year Winter storm is 50.5 knots of wind Hs21.7 ft, Surface current is 0.86 knots				
10 year Loop current is 19 knots of wind, Hs 6 ft; current is 2.2 knots	POD 10%, Time to reach POD 352 s			
For Total EDS(disconnect sequence) and unlatch time XX s	Red watch circle at 39m	Based on mud weight aa ppg; top tension cccc kips		

Maximum Watch Circles Radius (From Well Head position) <1 year condition (<=Wind 41 knots, current 0.7 knots, Hs 16ft)				39m
Maximum Watch Circles Radius (From Well Head position)- > 41 knots, current 0.7 knots Hs 16 ft and collinear				Immediately if blackout occurs (Dictated by riser analysis)
Colinearity (1 year winter storm)	If wind < 30 knots and current is less than 0.5 knots and colinearity > than 15 deg	If Wind is >30 knots and current is >0.5 knots and colinearity within 15 deg	If wind approaching 41 knots and current is approaching 0.7 knots and colinear	
Colinearity (loop current)	If wind < 15knots and current is less than 1.5 knots and colinearity > than 15 deg	If Wind is >15 knots and current is >1.5 knots and colinearity within 15 deg	If wind approaching 19 knots and current is approaching 2 knots and colinear	
Weather Forecast	Within Post WCF Operating limits	Approaching Post WCF operating limits	Exceeding Post WCF operational limits	
DRIVE OFF or	All systems operating correctly	Discrepancy in PRS. Inexplicable ramp up of thrusters	Immediately when recognized by DPO	Unable to control Drive Off
DRIFT OFF				
Drilling offset from well head position	Position directly over wellhead	Any offset from ZAP	=/>12.m	
Heading excursion	No Heading Alarms or warning	If heading warning limit reached (>3 degrees)	If heading Alarm limit reached (>5 degrees) or Heading instability with frequent alarms	
Vessel Footprint/Weather related excursion (From Set point)	No position alarms or warning	If warning position limits reach (>3m)	If Alarm position reached (>5m) or Position instability with frequent alarms	
Drape Hose Heading Limitation	> -200 ° < +200 °	+/-200 to 240°	> -240 ° < +240 °	To be established at Field Trials

Long Turn		Being considered	Under execution	
Riser Limitation (UFJ)	0 - 2°	>2 °	>4 °	
Riser Limitation (LFJ)	0 - 2°	>2 °	>4 °	
'Power Trains'/Thrusters in use	At least two diagonally opposite pairs of thrusters running and selected to DP (1 thruster in each corner)	Any selected thruster in alarm	Less than two diagonally opposite thruster pairs running and selected to DP	
Thruster loading (thrust)	all <values given in generator configurations and limits document	any approaching values given in generator configurations and limits document	All > values given in generator configurations and limits document	
Any change in thrusters/propulsion in or out of use		Advisory		
Diesel Generator Loads	All generators available with at least one generator on line on each bus, generators usually symmetric configuration. Generator configuration as per TAGOS if available	Power consumption >= power demand required to maintain position following WCF (usually loss of one Switchboard/ loss of one E/R) Or values in TAGOS document	Power demand > 65% for duration of one minute with maximum number of generators on line Or values as described in TAGOS document	
Any change in generators in or out of use		Advisory		
Thruster phase back, drilling phase back or DP control system power limiting	No Alarm	Approaching operating limits	Alarms and or phasing back or limiting	-
DP UPS's and 24 VDC Systems	Main and back up supply available no UPS in by pass. No UPS alarms	Any UPS in bypass or in alarm	Main supply cannot be reinstated or total UPS failure	
DP Control System	Power mimic information correct	Any wrong information	Critical information wrong or DP is in power limit	

DP Control System	Triplex	Any 1 CC Controller failed	Any 2 CC Controllers failed	
DP Network	Dual	Any alarms or poor performance	1 network lost	Complete loss of networks
VMS/PMS Controllers	Dual	Any alarms or poor performance	1 Controller failed	
Position References Available	Four references selected and enabled (2 DGPS and 2 LBL). DGPS 1, or 2 <u>and</u> DGPS 3 <u>and</u> LBL 1 <u>and</u> LBL 2	Three references available, or both DGPS 1 <u>and</u> 2 selected	Only two references available or One system(no redundancy in system - i.e. DGPS only or Acoustics only)	
Motion sensors (MRU/VRU) into DP	3 or 2 MAHR/MRU	1 MAHR/MRU or difference alarm	loss of all MAHR/MRU	
Heading Sensors (Gyro)	3 Gyros	2 Gyros	1 remaining Gyro	
Wind Sensors	3 or 2 wind sensors	1 wind sensor	No sensor and Gusty conditions	
Loss or problem with any essential Communications (DP / ECR / Driller / ROV)	Redundant Communications	One system remaining	No comms	-
Engine Room(s) Ventilation	Full ventilation	Any reduced ventilation	Complete loss of ventilation resulting in power reduction	
Air Conditioning to Critical Equipment	Full Air Conditioning	Any reduced Air Conditioning or frequent alarms (initiated from ECR)	Reduced Air Conditioning affecting critical equipment	
Starting Air	4 compressors available	Any compressor in alarm or not available	Any loss of start air	
Fire - E/R or elsewhere	No fire , no fire alarms	Any fire alarm	Fire Confirmed	-
Flood	No bilge alarms active, no flooding	Multiple bilge alarms	Flood Confirmed	-
Collision	No collision imminent / minimum approach >500m	Minimum approach will be < 500m	If collision possible	Collision Imminent

SIMOPS - Well Specific Operating Guidelines - Name of DP Drilling Rig				
Condition	GREEN	ADVISORY	YELLOW	RED
Notify Other vessels in the field, Driller, Master, Chief Engineer, Rig Manager, Toolpusher and Client	NO	YES	YES	YES
Action	CONTINUE NORMAL OPERATIONS	INFORMATIVE/CONSULTATIVE STATUS (RISK ASSESS)	HALT OPERATIONS AND INITIATE CONTINGENCY PROCEDURES	INITIATE EDS(disconnect sequence)
Change from Green DP Status of any other vessel in the field	Green	Advisory	Advisory	Advisory
Comms/interaction with other vessels	Vessels operating normally with no known problems	Comms problem or escape route compromised	No comms or escape route compromised	

Notes:

1. This document shall be followed as closely as possible during DP Operations.
2. Escape Route to be established.

Signed:

On behalf of Owner/Operator

Printed name

On behalf of Client

Printed name

EXAMPLE OF A CAMO				
CRITICAL ACTIVITY Mode (CAM) of Operation - Name of DP Drilling Rig				
This setup applies when the vessel is undertaking DP Drilling Operations. AFI (agreed for implementation)				
				DATE
Critical operations are when the vessel is having non shearables through the stack.				
Condition	GREEN	ADVISORY		
Notify Driller, Master, Chief Engineer, Rig Superintendent, Toolpusher and Client	NO	YES		
Action	CONTINUE NORMAL OPERATIONS	INFORMATIVE/CONSULTATIVE STATUS (RISK ASSESS)		
Power Distribution	11kV Bus Interconnectors A-B; C-D closed; B-C; A-D open All 480V bus Interconnectors open	Any of 11kV bus interconnector A-B; C-D open or A-D; B-C closed. Any 480V bus interconnector closed		
Diesel Generators	Tested at 100% within the last 6 months	Not tested at 100% within the last 6 months or problems found		
Diesel Generators	At least one generator on each bus bar	Any section running thrusters without at least one generator		
Diesel Generator MCC's	All supplied from respective main 480V	Any supplied from ESB 480V		
LVE and LVF (low voltage swbds E & F)	Auto changeover to 'A' or 'B' and 'C' or 'D' tested at field arrival	Not tested or problems found		

HRG earth (high resistance ground)	Not tripped and only one connected per isolated section of Bus	Tripped or more than one connected		
Thrusters	Tested at 100% on field arrival	Not tested at 100% on field arrival or problems found		
Thruster Hydraulic steering pump (critical operations)	All thrusters duty pump set to MCC 'A'	Any duty pump set to MCC 'B'		
Thruster Hydraulic steering pumps changeover	Tested on field arrival	Not tested on field arrival or problems found		
Thruster Emergency Stops (Bridge)	Tested on field arrival	Not tested on field arrival or problems found		
Power Management System	Automatic Generator stop disabled	Any other set up		
Power Management System (Critical Operations)	Fixed Load mode not selected	Any generator selected to Fixed load mode		
Power Management System	Load share in (isochronous mode/droop mode) as deemed appropriate for vessel) Note to be determined based on vessel design)	Load share failed to mode other than appropriate mode		
Power Management System	Blackout restart enabled	Blackout restart disabled		
DP and VMS UPS's; 24VDC and 110VDC systems	All connected to their respective 480V supply and back up changeover tested at field arrival	Any UPS connected to the emergency switchboard, failed or on bypass		
UPS and 24VDC and 110VDC Systems	Batteries tested on load on field arrival	Not tested on field arrival or problems found		

24V and 110VDC systems	Tested on field arrival to ensure no diode failures	Not tested on field arrival or problems found		
DP Control System	Consequence analysis enabled and not in alarm	Any other set up		
DP Control System	Kalman gains set to 0 (1 if acoustic update > 4 seconds)	Any other Kalman gain		
Back Up DP	Transfer of control tested at field arrival	Transfer not tested or known problems		
DP Reference System	Median Check set up and enabled, with agreed references	One of the agreed references unavailable		
Position References Available	Four references selected and enabled (2 DGPS and 2 LBL). DGPS 1 <u>or</u> 2 <u>and</u> DGPS 3 <u>and</u> LBL 1 <u>and</u> LBL 2	Less than three references available, or both DGPS 1 <u>and</u> 2 selected		
Position References Available	Both Acoustics (LBL) dedicated to DP control	Acoustics also being used actively by survey or others		
DGPS	Systems on different differential systems and elevation masks	Any other set up		
Acoustics	Frequencies in use planned with other DP vessels in the area	Not planned		
Acoustics	If both Acoustics in use, interfaced to alternative MARHS	Both Acoustics using same MAHRS		
Placement of targets for OSVs	Redundant targets placed at optimum locations suitable for diverse relative position reference systems on board OSV's (CyScan, Fanbeam, RadaScan, Radius)	Single targets, or obscured or poorly sited. Only one type installed.		

Fuel Systems	Purifier gravity discs matched Strict anti-contamination procedures in practice	Any other set up		
Main Engine SW cooling	Each main pump fed from its own sea chest.	Any main pump fed from the adjacent sea chest.		
Main Engine SW cooling	Port and stbd system isolated from each other	Port and stbd systems common.		
Electric' SW Cooling	Valves VELXXX and VELYYY closed. Valves VELZZZ and VELAAA open	Any other set up		
Electric' SW Cooling	Changeover of Duty/Standby pump tested at field arrival	Changeover of Duty/Standby pump not tested on field arrival or problems found		
Electric' FW Cooling	Standby start function of cooling pumps tested at field arrival.	Standby start function of cooling pumps not tested at field arrival or problems found.		
Start air	4 compressors available. 2 receivers isolated port/stbd cross connection isolated	less than 4 compressors available or all receivers on line or cross connection open		
ESD	Life boat station ESD's disarmed	Life boat station ESD's armed		
Air Conditioning to all DP critical areas	All AHU's running & changeovers tested recently for cooling pumps and compressor units	Any AHU off or changeover not recently tested or any HVAC alarm		
Engine Room Manning	ECR Manned by qualified Engineer	ECR not Manned or engineer not qualified		

Enclosure 3: Recommended DP Incident Reporting Format

To: voluntaryDPIncidentReport@uscg.mil

Email Subject: Voluntary DP Incident Report under Federal Register Notice 77 FR 26562

Attachments:

(1) **WSOG** for [name of dynamically positioned MODU] at [name of well or location] dated [date agreed for implementation by drilling contractor and operator]. (Attachment may be omitted if the operator does not agree to its release to the Coast Guard.)

(2) **CAMO** for [name of dynamically positioned MODU].

Email Body: On [date], the dynamically positioned MODU [name of MODU] experienced a reactive change of DP status from “green” to “red” as described in the MTS DP Operations Guidance for MODUs paragraph 4.11 and defined by its WSOG. This incident occurred at [location]. At the time of the DP incident, the [name of MODU] [was / was not] conducting a critical OCS Activity¹ as defined by its WSOG and [was / was not] in CAMO.

The portion of the WSOG applicable to the DP incident is [describe applicable portion of WSOG]. The cause(s) of the DP incident was/were [brief description of cause(s)]. The DP Operations guidance paragraph(s) most related to this DP incident is/are [list paragraph(s), e.g. 4.4 Position Reference Systems and Sensors].

At the time of this report, the [name of MODU]’s worst case failure operational limits [have / have not] been changed as a result of this incident. The [name of MODU]’s DP system [is / is not] capable of being configured in CAMO as a result of this incident.

¹ See “Marine Technology Society (MTS) Techop “Defining Critical Activities for Selection of Critical Activity Mode”, June 2013,” reference (c) of CG-5PC Policy 77 FR 26562 dated June 19, 2013