OCS-G-23516
DESOTO CANYON 491 #1 ST01

SUSPENSION OF OPERATIONS FOR ADVERSE ENVIRONMENTAL CONDITIONS

Pursuant to **30 CFR 250.417 (e)** the rig will be prepared to suspend drilling operations and move off location in the event of emergency or adverse environmental conditions including tropical storm/hurricane, bad weather, well control incident, lost circulation and high currents.

The procedure to be followed will be dependent on the unique circumstances of each event. But a general process leading to full suspension of operations is as follows:

a. Suspension of Drilling Operations – when the environmental limits of the rig are reached as determined by the rig contractor the decision may be made to suspend drilling operations.

b. Pull out of Hole – The drillstring will be pulled to a depth that will allow the Emergency DP Hang Off Tool to be picked up (EDPHOT).

c. Isolation of Well & Hang off Drillstring – An EDPHOT will be picked up and the drillstring will be run back in the hole and hung off in the wellhead. To ensure isolation capability, a non-ported float valve (or back pressure valve) will be run in the drillstring prior to running the EDPHOT.

d. Displacement of Riser – After hanging off the drillstring, the blind rams will be closed. The riser will then be displaced with seawater. Conditions will be monitored to determine the need for further action.

e. Disconnect LMRP from BOP / Pull LMRP to Surface – If the decision is made to unlatch the LMRP from the BOP or pull the LMRP to surface, the procedures developed by the rig contractor will be used.

<u>Current and Operational Limitations:</u>

Anadarko Petroleum is a member of Horizon Marine's Eddy Watch service which provides regular update on the progress of the loop current an associated eddies. This system is used as an early warning of approaching events.

Per requirements of NTL No. 2009-G02 for Ocean Current Monitoring, the rig is equipped with an RD Instruments Acoustic Doppler Current Profilers (ADCPs) which measure the current velocity at multiple depths In the water column to a profile of currents to a depth of +- 3000'.

. See attached operating limits in provided package

SECTION V

Operation in High Current Areas

1 Purpose

1.1 To provide guidance to the DPO, OIM and Company Representative for operating the Ensco 8500 Series® rigs in high-current areas within the North and South America Business Unit (NSABU).

2 Objective

2.1 Ensure that key personnel understand how to anticipate and react to high current situations in a safe and effective manner.

3 Reference

3.1 NMS 6000 Operations and Maintenance Manual, NMS 6000 Vessel Management System & Power Management System Operations and Maintenance

4 Application

4.1 This procedure is applicable to all Ensco 8500 Series® rigs.

5 Definition

5.1 No definitions are required for the understanding of this document.

6 Process

6.1 Riserless Operations

6.1.1 The OIM, in consultation with the Company Representative, will determine the risks involved, the operating draft, and the DP watch circles to be maintained based on the projected operations. The operations guidelines may be less stringent than those defined in BOP CONNECTED OPERATION for the following reasons:

6.1.2 Riserless operations may allow for a change in vessel draft, which reduces the forces imposed on the vessel by surface currents.

6.1.2.1 Depending on the operation, the drill floor may clear the BHA from the well in a short period of time, and with little notice.

6.2 BOP Connected Operations

6.2.1 The rig normally maintains a 52 to 60 ft drilling draft during normal operations. The OIM has discretion to reduce the draft within design limitations in order to reduce environmental forces on the vessel.

6.2.2 The consequences of disconnecting the riser under high-current conditions due to the loss of station-keeping ability are:

6.2.2.1 Damage to the slip-joint due to high riser angles, making it difficult to pull the riser.

6.2.2.2 Harm to the environment as well as monetary losses due to the loss of the mud from the riser.

6.2.2.3 Complicate fishing problems if the bit is near the bottom of the hole.

6.2.2.4 Unfavorable current conditions forcing the rig towards shallow water or man-made obstructions that may impact the LMRP.

6.2.2.5 If the LMRP is to be recovered, the rig may be required to drift in order to pull the riser without damaging equipment.

6.3 **Normal DP Operations**

6.3.1 Normal DP operating conditions, as highlighted in dark green on the graph, are considered to be those allowing for normal vessel maneuverability, such as full freedom to change heading for enhanced operations, i.e., giving lee protection to supply boats alongside. During these periods, DP and operations personnel will review weather and current forecasts on a regular basis.

6.4 **Guarded DP Operations**

6.4.1 Guarded DP operations, as highlighted in light green on the graph, allow for normal drilling operations to continue provided that certain steps are taken. These steps depend on which of the three zones the guarded operations are in.

6.4.2 Upon reaching Zone 1, or forecasts predict the rig will experience Zone 1 environment within the contingency plan execution timeline, the DPO will immediately notify the OIM, and the following steps should be taken:

6.4.2.1 OIM to notify the Company Representative and update the contingency plan that includes the estimated time to secure the well with all pipe inside the last casing shoe and to displace the riser with sea water.

6.4.2.2 OIM will notify the Mechanical and Electrical Supervisors. All maintenance to engines and thrusters will be deferred or specifically agreed upon in advance until normal DP operations are resumed.

6.4.2.3 OIM will inform Subsea and other supervisors that non-essential work in the moonpool, at the riser tensioners, or over the side should not be planned until normal DP operations are resumed.

6.4.2.4 DPO will review weather forecasts at least once every hour and plot the rig's station holding capability based on the forecast. The OIM should be advised if transition to Zone 2 or 3 is predicted.

6.4.2.5 If Zone 3 conditions are predicted within the time required to secure the well and displace the riser, operations will be suspended immediately and the well should be secured.

6.4.2.6 The Company Representative will notify the ROV supervisor of currents over 2 knots since launch and recovery of the cage may not be possible.

6.4.2.7 The Company Representative will determine if boats in the area can aid in current reading measurements and forecasts for the rig's location.

6.4.2.8 Upon reaching **Zone 2** the DPO will immediately notify the OIM and the following additional steps should be taken:

- OIM will notify the Company Representative that while in Zone 2 no critical operations will commence without a risk assessment and approval from the Rig Manager.
- The DPO will review weather forecasts at least once every hour and plot the rig's station holding capability based on the forecast, then advise OIM if transition to Zone 3 is predicted.
- If Zone 3 conditions are predicted within the time required to secure the well and to displace the riser, operations should be suspended immediately and the well secured.

6.5 **Suspend Drilling Operations**

6.5.1 Suspend drilling operations, also called Zone 3, as highlighted in blue on the graph, are near the limits of the vessel's holding capabilities and rig heading maintenance is critical. The required heading may not be ideal for drill floor operations. At this point the OIM may elect to cease certain or all drill floor operations, regardless of the status of the planned well suspension.

6.5.2 Upon reaching Zone 3 the DPO will immediately notify the OIM, and the following steps should be taken:

6.5.2.1 DPO to confirm with OIM that well is secure, riser is displaced, and riser tension has been adjusted for change in mud weight.

6.5.2.2 Once the preceding conditions are confirmed, The Red Watch Circle for disconnect of LMRP is to be reduced to a suggested 50 ft. This will reduce the risk of slip joint or other damage in the event of position loss.

6.5.2.3 If forecasts indicate further deterioration of weather or currents, the OIM has the authority to immediately disconnect and move the vessel to deeper water and/or begin pulling riser.

7 Record Retention

7.1 There are no direct records issued further to the implementation of this procedure.

8 Training

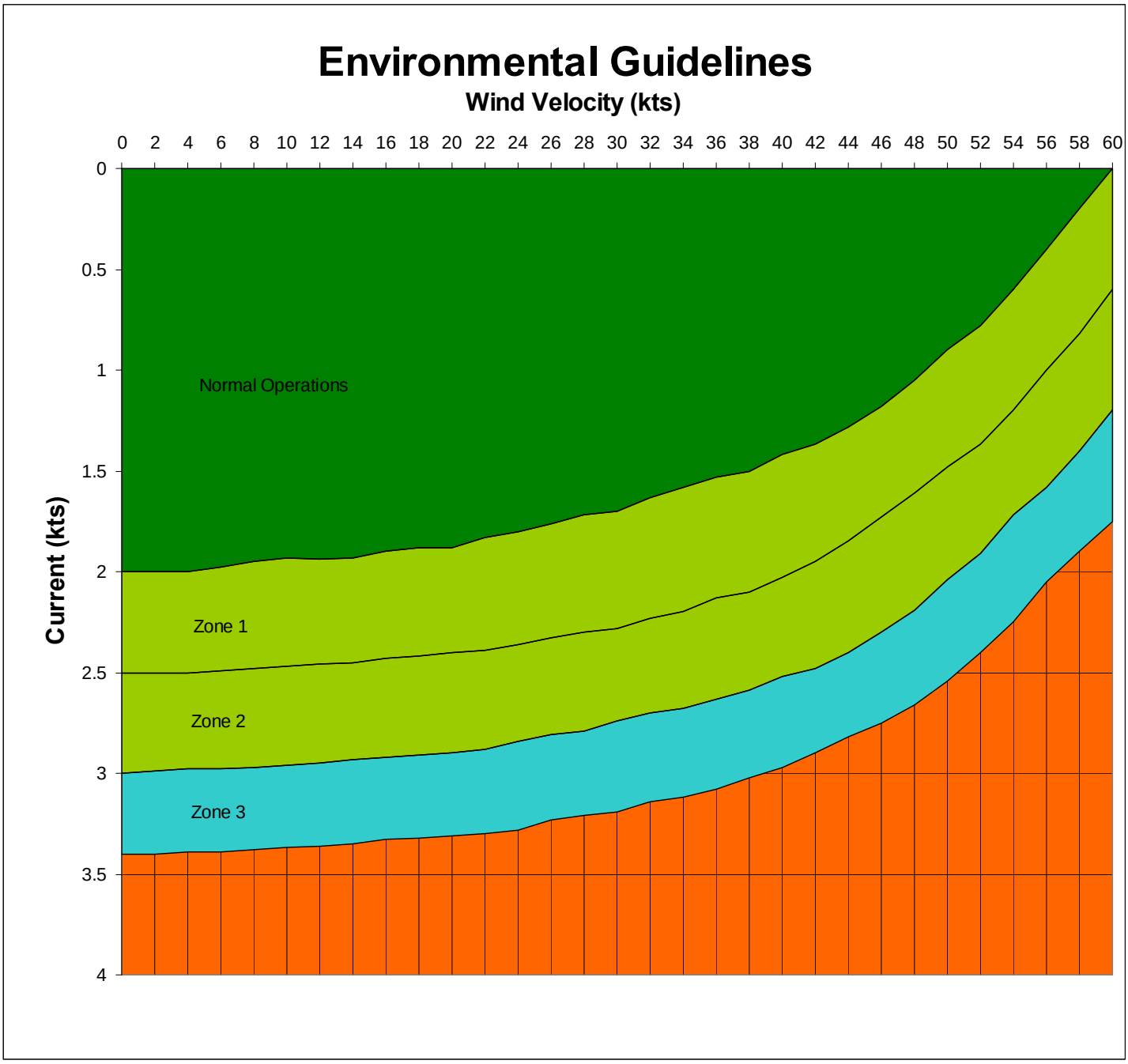
8.1 No additional training is envisioned for this procedure to be understood and implemented.

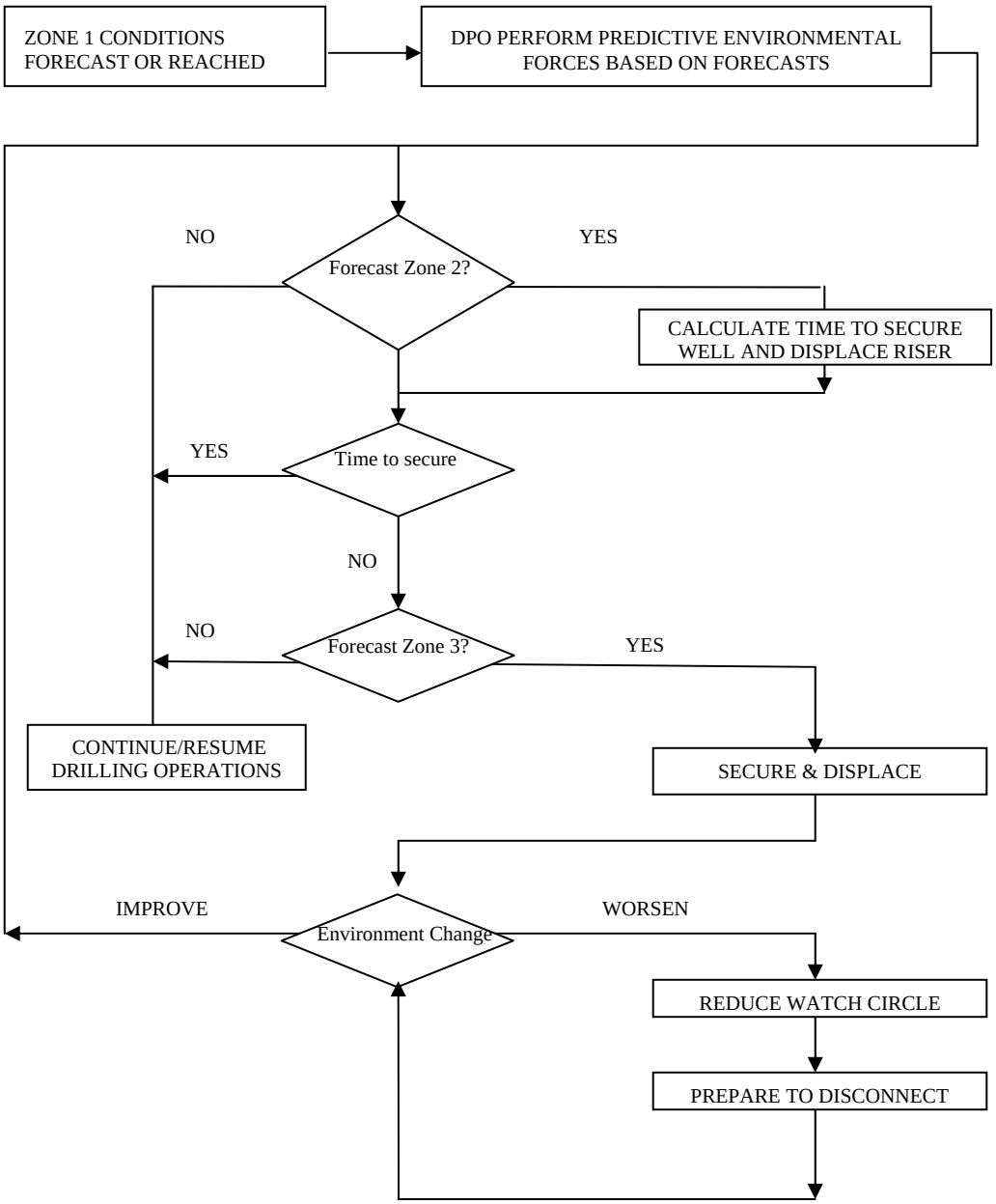
9 Audit

9.1 This document will be audited according to internal and external necessity.

10 Exception

10.1 Variations to the requirements set forth in this Procedure can only be granted in accordance with the Ensco Management of Change Standard (ST-CO-SHE-009).


Environmental Guidelines
Wind Velocity (kts)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60
Current (kts)
0 0.5 1 1.5 2 2.5 3 3.5 4
Normal Operations
Zone 1
Zone 2
Zone 3


ZONE 1 CONDITIONS FORECAST OR REACHED
DPO PERFORM PREDICTIVE ENVIRONMENTAL FORCES BASED ON FORECASTS
NO
YES
Forecast Zone 2?
CALCULATE TIME TO SECURE WELL AND DISPLACE RISER
YES
Time to secure
NO
NO
Forecast Zone 3?
YES
CONTINUE/RESUME DRILLING OPERATIONS
SECURE & DISPLACE
IMPROVE
Environment Change
WORSEN
REDUCE WATCH CIRCLE
PREPARE TO DISCONNECT