To: Reeves, T Brent (TRI-CITY SERVICES)[Brent.Reeves@bp.com]; dderr@boots-coots.com[dderr@boots-coots.com]; Quitzau, Robert[robert.quitzau@anadarko.com]; dstrickland@spemail.org[dstrickland@spemail.org]
From: Sharadin, John H
Sent: Wed 5/5/2010 3:01:47 PM
Importance: Normal
Sensitivity: None
Subject: FW: DO NOT DISTRIBUTE: BP_MC252_Intercept_Kill_Operations_R1_5.5.10.doc
Categories: urn:content-classes:message

BP_MC252_Intercept_Kill_Operations_R1_5.5.10.doc.docx

Thanks,
John

-----Original Message-----
From: Lasley, Barbara M
Sent: Wednesday, May 05, 2010 5:48 AM
To: Barnett, David (UNKNOWN BUSINESS PARTNER); Sharadin, John H; Grace, Bob (GSM)
Cc: Roland Gomez; jfairbairn@orbisengr.com; Larrison, Jace; Jerry Shursen
Subject: DO NOT DISTRIBUTE: BP_MC252_Intercept_Kill_Operations_R1_5.5.10.doc

DO NOT DISTRIBUTE PAST THIS LIST!

The work can be conducted in our workroom and saved, but DO NOT FORWARD.

All,

Attached is the work from the night crew. Sections highlighted in green are either not correct, or have not been vetted for accuracy. If you work on this today, please redistribute to this list so that we can continue our efforts tonight.

Thanks

Good luck!

Barb

BP EXPLORATION & PRODUCTION

MISSISSIPPI CANYON 252 #1 RELIEF WELL

INTERCEPT & KILL OPERATIONS PLAN

Revision 1.0 – 5 May 2010

1.0 Introduction

This document discusses the strategy for drilling the intercept phase of the MC 252 relief well(s) which is targeted to kill and secure the MC 252 #1 blowout well. The "intercept phase" is defined as the section of the relief well between the last casing shoe in the relief well (9 7/8" liner) and the intercept point. Preparations will be made so that all personnel are prepared and resources are in place to immediately implement the dynamic kill upon intercept.

This document includes:

- Results of dynamic kill modeling – blowout flow rates, kill requirements & associated pressures
    - Mark Hafle has been contacted to provide the PWD numbers to help populate the WWCI model for well kill.
    - Jerry Shursen working with reservoir engineers to run independent calculations for comparison purposes.
- Fluid management plan for the kill operation
    - Rolly is working with the intervention team for fluid storage and pumping capabilities.
- Simultaneous Operations (SIMOPS) guidelines for coordination of concurrent activities onboard the relief well and the blowout wellsite
    - To be used in conjunction with established BP policy and best practices.

2.0 Dynamic Kill Modeling

Modeling has been done to determine the estimated blowout flow assuming various flow paths. These estimated flow rates have been used to determine the necessary pump rates and fluid properties required to implement a dynamic kill of the MC 252 #1. The modeling was done using SPT Group's OLGA Advanced Blowout Control model which is a transient, multiphase dynamic kill model. A more complete discussion of the modeling work can be found in "######". OLGA model output will be provided by David Barnett, WWCI. Also, calculations will be provided by Jerry Shursen for kill operations.

2.1 Blowout Flow & Kill Rates

Table 1.0 shows a summary of three scenarios including:

1. Flow up 9 7/8" x 7" casing with no drill pipe in hole
2. Flow up 9 7/8" x 7" casing with drill pipe dropped in the hole
3. Flow up the 9 7/8" x 7" casing annulus

The planning team has been advised that the investigation of the events associated with the incident clearly points to the higher likelihood of annular flow (up 9 7/8" x 7" annulus).

Modeling indicates a maximum pump rate of 26 bpm using 16.0 ppg mud - (Double check that these numbers are applicable to flow from the annulus with no riser). (Table 1.0). The

objective of the dynamic kill operation is to establish hydrostatic control that will result in a static wellbore which will allow precise placement of isolation cement.

Since the blowout well is flowing to the mudline, an increase of the kill mud weight is required in order to compensate for the lack of mud hydrostatic back to sea level as shown in Figure 1.0.

Table 1.0 – Flow Scenarios & Kill Rates Vs Fluid Density

Flow up the 7" x 9-7/8" Casing String (No Drillstring)			
Oil Rates	Gas Rate	Mud Weight	Kill Rate
146,000 bpd	147 mmscf	15 ppg	28 bpm
		16 ppg	26 bpm
		20 ppg	18 bpm
Flow up the 7" x 9-7/8" Casing String (Drillstring Dropped)			
Oil Rates	Gas Rate	Mud Weight	Kill Rate
77,000 bpd	78 mmscf	16 ppg	15 bpm
Flow behind the 7" x 9-7/8" Casing Annulus			
Oil Rates	Gas Rate	Mud Weight	Kill Rate
69,500 bpd	70 mmscf	15 ppg	18 bpm
		16 ppg	16 bpm
		20 ppg	10 bpm

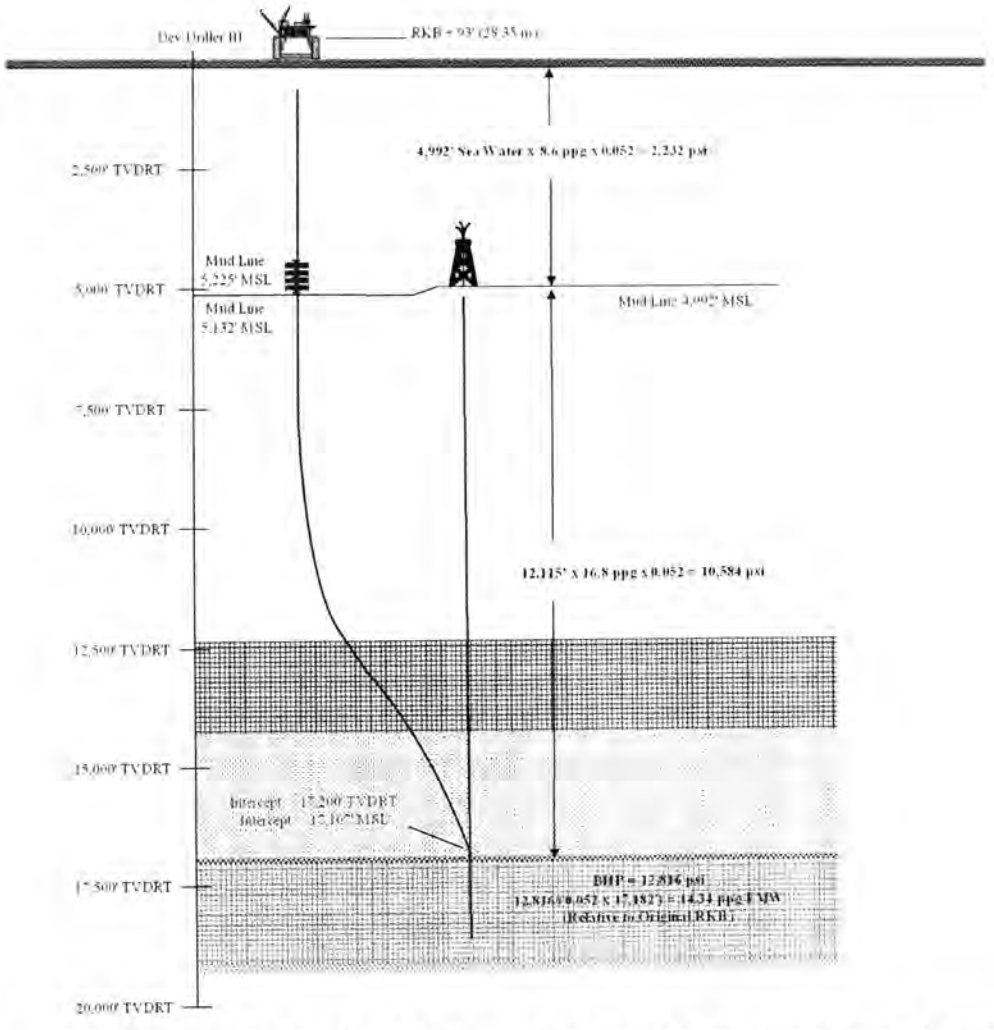

Figure 1.0 – Diagram of Relief Well & Blowout Well Fluid Levels Need to revise intercept point and bottom hole pressure (14.16 ppg at 17,798' TVD)

For the well to remain static requires that the BHP be maintained above pore pressure but below fracture pressure. The best available information indicates that the maximum pore pressure in the reservoir section of the blowout well is 14.2 ppg (17,797' TVD Geo Tap) and the expected minimum fracture pressure is equivalent to a 15.1 ppg EMW (to be confirmed – need APWD analysis from well planning team). Records indicate that the drill pipe was pulled for logging with a 14.2 ppg mud in the hole and the well remained static during logging operations.

To establish a 14.3 ppg EMW requires a column of 16.5 ppg mud from 18,100' TVD up to the mudline in addition to the hydrostatic column of the 5,000' of seawater.

The kill pumping rate required to dynamically control the blowout well using 16.5 ppg SOBM is 24.4 bpm. This is the maximum rate that could be required in the initial stages of the dynamic kill. The rate will decrease in order to avoid exceeding the fracture pressure in the open hole section. Sooner or later, won't the 16.5 ppg still blow the bottom out?

2.2 Pump Pressures

UNDER CONSTRUCTION

3.0 Fluid Management & Pump Capacities

The Development Driller III (DD 3) has an active mud system volume of approximately 10,000 bbls of useable mud and a reserve capacity (with agitation) of approximately 11,000 bbls. This should provide adequate capacity for the dynamic kill operation with sufficient contingencies for failed kill attempts and severe mud losses.

It is recommended that to split the active and reserve mud systems as follows:

- Half (5,000 bbls) of active filled with 14.3 ppg SOBM as primary system for drilling operations
- Half (5,000 bbls) of reserve filled with 14.3 ppg SOBM as reserve system for drilling operations
- Half (5,000 bbls) of active system filled with 16.5 ppg SOBM as primary for kill operations
- Half (5,000 bbls) of reserve system filled with 16.5 ppg SOBM as contingency for kill operations

Additional kill fluid will be provided by

Table X.0 – Stimulation Vessels & Capabilities

Company	Boat	BP Boat Class	DP-2	Coflex Hoses Sizes (inches)	Completion Brine Vol (bbls)	Mud Vol (bbls)	Boat Basic Pump Horsepower (hhp)	Can Vessel Handle Mud below Deck (Y/N)	What Rate can the Mud be delivered to the Pumps (bbl/min)
B J Services	Blue Ray	A	Yes	4 & 3	10,000	8600 @ 19 ppg	12,500	Yes *	+50
	Blue Dolphin	A	Yes	4, 4 & 3	12,000	9600 @ 19 ppg	23,000	Yes *	+50
Baker	HR Hughes	B	Yes	4 & 3	6,600		12,500		
	RC Baker	B	No	4 & 3	4,000		9,200		
	Blue Tarpon	A	Yes						
Halliburton	Stim Star II	A	Yes	4 & 3	5,400		17,500	Yes *	+50
	Stim Star III	B	Yes	4 & 3	9,000	5,324 @ 19 ppg	21,500	Yes *	+50
Schlumberger	Deepstim II	A	Yes	4 (45 BPM)	6,600		21,450		
	Deepstim III	A	No	3 (25 BPM)	4,140		12,850		

The BJ stimulation vessel rig has a total of 1,843 bbls (293 m^3) of useable pit volume as shown in Figure 1.0. It is estimated that the rig can mix 1.08 sg (13%) KCL at a rate of 200 bbls/hour (32 m^3 / hour) using big bags to convey the KCL additives. The ability to replenish the KCL at a rate of 3.0 bpm (477 lpm) means that the surface volume of KCL can be reduced to provide some storage capacity for contingency kill mud (1.56 sg DeepDrill mud). A recommended 1,500 bbls of 1.56 sg mud should be available for the contingency dynamic kill operation – this is almost 3.5 x hole

volume from the intercept window.

The pit system should be divided between a working volume of 642 bbls of 1.08 sg brine with the remainder (1,200 bbls) being filled with 1.56 sg kill mud. The pit arrangement should provide the following:

- Best configuration to facilitate KCL mixing activities
- Ability to draw kill mud from pits at a minimum of 30 bpm using booster / mixing pumps as required to charge mud pump suctions
- Condition 1.56 sg kill mud to maintain properties while performing milling, cementing & DST operations

The proposed pit segregation is:

Table 2.0 – Scarabeo-4 Pit Segregation Plan

Pit	Total Volume (bbls/m^3)	Useable Volume (bbls/m^3)	Useable 1.56 sg Mud	Useable 1.08 sg Brine
1	447 / 71	421 / 67	421 / 67	
2	415 / 66	390 / 67	390 / 67	
3	415 / 66	390 / 67	390 / 67	
4	415 / 66	390 / 67		390 / 67
5	151 / 24	132 / 21		132 / 21
6	138 / 22	120 / 19		120 / 19
Total	**1,981 / 315**	**1,843 / 293**		
	Total Useable Mud (bbls/m^3):		**1,200 / 191**	
		Total Useable Brine (bbls/m^3):		**642 / 102**

Additional kill mud and KCl should be maintained onboard the standby vessels. A volume of 1,000 bbls of each type fluid should be stored onboard the ALADIN and the MAHONE. See Table 4.0 - Supply Vessel Specifications for mud/brine storage volumes and transfer rates. If losses are beyond the capability of the rig to mix KCL, sea water will be pumped to maintain fluid level in the relief well.

4.0 Operations Summary

Current plans are to set the relief well 9 7/8" casing ~ 50' TVD (verify against directional plans) above the 9 7/8" shoe of the blowout well. Drill out 9 7/8" shoe & clean rat hole. Perform LOT. *LOT is preferred over an FIT to establish the maximum formation integrity to provide the best information for cement isolation procedures.* Since it is unclear if the blowout flow path is up the annulus or through the 7" x 9 7/8" casing string it is possible that the relief well could establish hydraulic communication with the blowout before contacting and penetrating the 7" casing. This requires the highest level of preparedness while drilling the 8 ½" hole section since the dynamic kill could start at any minute.

One of the primary safeguards associated with the relief well is to prevent getting the BHA stuck

when the intercept is made and the dynamic kill is implemented. The best way to reduce the chances of getting the BHA stuck is to raise it above the 9 7/8" casing shoe while the kill operations are underway. It is preferable to maintain a configuration that allows pulling the BHA to the shoe without stopping to break out a stand of drill pipe (this also ensures that we can continue pumping down the drill pipe throughout the kill). The ability to raise the BHA to the casing shoe is a function of open hole length and position of the top drive in the derrick when the intercept is made. When the intercept depth is known these parameters can be planned with adequate detail. However, in this situation where communication with the blowout could happen at any point below the casing shoe, the ability to plan these parameters is reduced. The only real options are to minimize the open hole section length and keep the top drive as close to the rig floor as possible by drilling with single joints. Since it is likely that short sections will be drilled in the 8 ½" section followed by Vector Magnetics proximity logs, drilling with singles should not present added difficulty.

The initial kill procedure will involve keeping the relief well annulus full with the rig pumps while the pumps are configured for kill operations. The first #,#00 bbls (volume of the relief well annulus and drill pipe) of fluid entering the blowout well will be the mud in use at the time of intercept – 14.2 ppg SOBM. This should completely displace the blowout well annulus 1 ½ times prior to entry of the first barrel of kill fluid.

As soon as the BHA is in position and the pumps are lined up, pumping will commence for well kill. This will involve closing the annular (upper/lower TBD) and pumping down both choke and kill lines. BHP will be monitored by observing the Drill Pipe Pressure (DPP) and adjustments will be made to the annulus pump rates to keep BHP between maximum pore pressure and minimum fracture pressure in the open hole. In this situation, there is very little margin between PP and FG; therefore, losses are anticipated.

Modeling indicates that a maximum rate of 30 bpm of 16.0 ppg SOBM may be required during the initial stages of the kill operations. This rate will reduce as kill mud is circulated up the blowout well and BHP increases.

A minimum of three (3) complete displacements of the blowout well should be done with the BHP between the parameters mentioned above. It is anticipated that this will require at least #,#00 bbls of 1#.# ppg SOBM. Circulation may not be possible due to the tight tolerances between PP and FG; however, enough mud will be available for this requirement should circulation be possible.

The cementing pump will be used throughout the kill procedure to establish and monitor bottom hole pressure. This will be done by pumping down the drill pipe at a slow, steady rate (i.e., 2 bpm) while kill pumping is underway down the annulus.

5.0 Preparations Prior to drilling out the 9-7/8" Shoe

5.1 General

- ☐ Review SIMOP plan with pertinent personnel.
- ☐ Station ROVs to monitor flow from the Macondo #1.
- ☐ Test all communications onboard rig and between rig & marine vessels.
- ☐ All personnel to be clear about assignments, duties and positions during kill

operations. All personnel shall be at their assigned stations and prepared to implement dynamic kill.

5.2 Mud Systems and Pumping

- ☐ All high & low-pressure pump equipment will be tested and ready.
- ☐ One mud pump lined up on top drive & other three pumps lined up on the annulus (choke & kill lines)
- ☐ Ensure that all mud and cement storage facilities (rig pits, bulk tanks & marine vessels) are at adequate levels. Mud transfer rates from marine vessels should be pre-determined. What is our minimum acceptable rate?
- ☐ Kill mud will be in the active pits conditioned and ready for kill as per pre-determined fluid management plan. Mud engineer to record the exact fluid levels in all pits. Mud Engineer to check and record all mud properties.
- ☐ Pre-treat the kill mud system with sized calcium carbonate and other granular lost circulation additives. Have 100 bbl LCM pills mixed and ready to pump. Follow standard GoM LCM practices. Considerations should be given to the BHA components in the BHA. Design the BHA to accommodate maximum LCM concentrations. Have LCM mixing material, personnel and equipment ready for high rate mixing operations.
- ☐ Ensure all equipment is onboard rig for kill & plugging operations so that vessels do not have to come alongside during kill (except those possibly required to transfer mud).

5.3 Pressures

- ☐ Record friction pressures through choke & kill lines using mud pumps. Use 20 spm increments up to 100 spm on each pump.
- ☐ Confirm pressure gauge showing cement unit pressure is available at Driller's console.
- ☐ Confirm pumping schedule.
  - Record SCR's at 30, 40 and 60 SPM for each tour change, each change in mud density, each new bit and each BHA change. Record the pressures on the IADC report. With BOP closed circulate through kill line only, choke line only, kill and choke lines. Check the pressures on the different panels (manifold and driller's panel) noting and recording any discrepancies.

6.0 Personnel Assignments

(do we need these spelled out or should we use DD2/3 roster and TOI roles and responsibilities?)

6.1 Pre-Intercept Duties:

Driller:	The Driller will be responsible for initiating kill operations. Remain on the rig floor during the kill procedure.
Derrickman:	The Derrickman will be responsible for monitoring pit levels during the kill procedure. He will remain in the pit area and report back to the Driller.
Motorman:	Assist Derrickman with monitoring of pit levels and mud transfer if required. Remain in pit area and report to Derrickman.
Mud Engineer:	Responsible to assist with preparations to pump heavy mud. Coordinate fluid transfer from standby vessels if required. Report to Well Site Leader as appropriate.
RIG SUPT:	Responsible for supervision of Saipem personnel during kill procedure. Remain on rig floor and report to WWCI.
BP DSV:	Responsible for overall monitoring and supervision of kill procedure. Remain on rig floor and consult with RIG SUPT & WWCI as required.
Asst. Driller:	As directed by Driller or RIG SUPT.
Roughnecks:	As directed by Driller or RIG SUPT.
Roustabouts:	As directed by Driller or RIG SUPT.
WWCI (2):	One on rig floor throughout kill procedure. Other as required to monitor, consult and facilitate kill operations.
Cementer:	The Cementer will be assigned to the cementing pump and should remain there throughout the kill procedure unless otherwise directed by the DSV, RIG SUPT or WWCI.

6.2 Intercept Duties:

Driller:	Maintain drilling pump rate, raise top drive in order to place bit above casing shoe (*Note: may be differentially stuck if fluid losses are high – if so, continue trying to free drill string since it might move once fluid levels equalize*).
Driller:	*Prepare* to close Hydril (Do not close Hydril until advised to do so).
Driller:	Initiate kill pumping (keep hole full) down annulus with three dedicated mud pumps. Maintain circulation / returns through bell nipple flow line. Shut down drilling mud pump. Instruct designated persons to line up cement unit to pump down DP. Advise Cementer when ready to start pumping.
Cementer:	Initiate pumping down drill pipe at 2 bpm once notified. Maintain *constant rate*. Continue pumping until advised to stop. Maintain contact with Driller.
Driller:	Close Hydril and initiate pressure pumping (rig pumps). Continue pumping at a minimum rate of 10 bpm until a total of 3,500 bbls has been pumped into the blowout well (unless advised to stop earlier).

Limits are maximum SPM (both pumps) or 16.0 ppg EMW BHP as determined by monitoring cementing unit pump pressure.

WWCI: Monitor kill procedures at rig floor. Adjust procedures as required. All changes will be discussed with BP DSV and RIG SUPT.

BP DSV: Standby on rig floor or as required to monitor & facilitate kill operations

RIG SUPT: Standby on rig floor or as required to monitor & facilitate kill operations

6.3 Post Kill Duties:

Driller: Be prepared to open Hydril when advised to monitor annulus fluid level

Driller: Be prepared to re-close Hydril and re-initiate kill procedures if required.

Will be advised by WWCI if further kill operations are required.

Mud Engineer: Build mud volume and/or transfer mud from vessel ASAP to replenish pits

WWCI: Monitor relief well and blowout wellhead via Observation Team

Cementer: Standby cement pumps until released by BP DSV or RIG SUPT

7.0 Procedure

Current Well Status: 9-7/8" casing has been set. Well is full of 14.2 ppg SOBM. Well has been pressure tested to #,### psi. Test BOP's as per MMS regulations.

- Test 9 7/8" casing to ##,000 psi to ensure casing & wellhead seal competency for possible dynamic killing
- Drill out cement equipment and 10' of new formation with MWD, motor and mill tooth bit.
  a. Each MWD survey will be fully analyzed and processed.
- Perform Leak Off Test (LOT) to ensure adequate shoe strength (between shoe & contact point) for planned operations. Do not exceed pressure rating of casing. POOH.
- Run wireline log VMI 4.5" OD RGR tool in open hole for proximity log run to determine relative position between relief well and target well.
- PU BHA and RIH. Drill directionally to align relief well to target well.
  a. POOH and perform proximity logs in open hole as required to confirm intercept point.
  b. Short sections (some as short as 10') will have to be drilled followed by POOH to run open hole proximity logs – this is required in order to maintain converging well paths with proper alignment.

c. Precise control of directional parameters will be required to bring wells into contact with proper alignment. Gyro runs may be required.

d.

- If the blow out is encountered prior to intercepting the casing, implement dynamic kill operations. If not, mill into 7" casing and implement dynamic kill operations.
- Monitor well and pressures to confirm the well is dead.
- If well is static, consider TOOH for an EZSV.

a. This operation carries significant risk.

- If losing circulation, RU and pump cement down the kill line.

a. The Well Kill Team recommends cementing immediately after pumping KWF.

b. All cementing operation plans should include the need to prevent blocking of the intercept window in the event another cement job is required. (over-displacement, ability to circulate out in case of plugging, etc.)

c.

Operations OUTLINE

- RIH with drill out BHA consisting of the following:
  - 8 ½" Insert Bit (without tungsten gauge protection on the shanks)

    NB: Use Varel 8 ½" CH24MRS (IADC 517 See Special Operations Supplement - Appendix A)
  - 6 ¾" OD Conventional Length Bent Housing Motor (slick, no NB stabilizer, 1.50° to 1.83° bend setting)

    NB: Use Sperry 6 ¾" 2:3 Lobe Configuration 7.0 Stage PDM – slick BHM, no NB sleeve (See - Appendix A)
  - Float Sub w/ Float Valve
  - 1 x 6 ¾" Short NMDC
  - 6 ¾" MWD Tool
  - 1 x 6 ¾" NMDC
  - 6 ½" PBL Sub
  - 3 x 6 ¾" DCs
  - 3 x 5" HWDP
  - Drilling Jar
  - 5 x 5" HWDP
  - Dart Sub
  - 3 x 5" HWDP
- Tag cement, C&C mud
- Test 9 7/8" casing 250 psi low / 5,000 psi high for 5 – 10 minutes stabilized pressure (increase pressure from 250 psi to 5,000 psi by increments of 500 psi – 1 minute)
- Drill out casing equipment & clean rat hole with reduced parameters, to 17,737' MD. Circulate hole clean (with 8 ½" bit below 9 7/8" casing shoe) until no more cement cuttings seen at shakers
- Perform FIT to 16.0 Equivalent Mud Weight (EMW)
- POOH
- Perform calibration ranging run
- RIH with BHA & drill ahead to contact point using the toolface derived from the previous VMI run. The motor should start trying to stall (torque, vibration & erratic pump pressure and TF) as the rock bit hits the casing (no cement is expected in the intercept interval). Verify the casing contact by raising and lowering the BHA several times. Monitor for cement and/or metal shavings in fluid returns (check magnets in shaker header box regularly)

NB: Initial drilling below the 9 7/8" casing shoe to be done under daylight conditions only. Simultaneous operations plan to be implemented during all drilling below 9-7/8" casing shoe. Use low range motor flow to ease PDM stalling.

- Circulate hole clean. Pump out of hole for several feet from bottom – avoid cavings at contact depth
- POOH
- R/U Electric Wire Line (EWL) & RIH with 4 ½" VMI gradient tool.

  NB: At this point, the hole could have easily moved to one side or the other of the target well casing, significantly changing the required toolface for milling. Do not eliminate this last VMI log in the interest of "efficiency".

- MU 8 ½" milling BHA:
  - 8 ½" Concave Mill
  - 8 ½" Smooth OD Watermelon Mill
  - 6 ¾" OD Conventional Length Bent Housing Motor (setting TBD)

    NB: Use Sperry 6 ¾" 2:3 Lobe Configuration 7.0 Stage PDM – slick BHM, no NB sleeve (See - Appendix A)

  - Float Sub w/ Float Valve
  - 1 x 6 ¾" Short NMDC
  - 6 ¾" MWD Tool
  - 1 x Non-Magnetic DC
  - 6 ½" PBL Sub (check activation ball will pass thru UBHO)
  - Universal Bottom Hole Orientation (UBHO) sub
  - 3 x 6 ¾" DCs
  - 3 x HWDP
  - Drilling Jar
  - 5 x 5" HWDP
  - Dart Sub
  - 3 x 5" HWDP
- RIH, wash down to previous depth and tag target well casing with mill
- POOH above shoe, circulate BU – keep concave mill & lower watermelon mill below shoe while circulating to avoid casing damage
- Keep the riser full through the boost line while raising the bit above the casing shoe then close annular and go forward with the kill
- RIH & tag casing with mill – orient mill so that dog leg is oriented along the same

build up profile as the target well using MWD. Reciprocate pipe until MWD TF is stable.

- Initiate time milling - mark the pipe in inches, attempt to mill with minimum weight on bit using pump pressure to monitor the motor torque & TF. Maintain constant tool face. Monitor fluid returns and look for metal shavings on ditch magnets. Remove cuttings every 15 minutes – fill containers (Styrofoam cups, water bottles or small buckets work well) with cuttings. Label samples with date & time. Monitoring the cuttings will provide an indication that we are consistently cutting metal – this is an extra indication that we have not glanced off the casing.

  NB: Additional indications of milling include instantaneous and consistent reactive torque. Indications of 7" casing penetration include fluid losses. Diligent monitoring of all parameters is critical.

  - Pump HV gel sweeps (YP 30) periodically during milling and monitor amount of cuttings brought up with the HV gel pill.
  - Consider pumping through choke/kill lines to boost riser fluid velocity & enhance cuttings carrying capability (three rig pumps should be lined up on choke/kill lines already)
  - Mill with minimum WOB until mill is spent or communication is established.

7.0 Simultaneous Operations (SIMOPS)

SIMOPS in the context of the MACONDO 252 #1 relief well project refers to operations near or onboard the DD-3 while the intercept phase of the relief well is being drilled.

Intercept Phase Restrictions

A substantial amount of work has been taking place on MACONDO 252 #1 during the relief well drilling operation. This work primarily consists of monitoring, maintenance & preparations for upcoming MACONDO 252 #1 surface intervention.

BP company man and WWC representative on-site will use the standby period onboard DD-3 to perform training and drills in the control room to remotely operate the_____ fill up system and mud tank fill up arrangement. These drills are to be reported on the DDR.

During this particular period of operations do not hesitate to communicate with the IMT in Houston in case of any doubt before sending the personnel onboard DD-3.

Observation Team

Uncontrolled flow at MACONDO 252 #1 and other circumstances will require close up observation so that information can be obtained that might impact dynamic kill operations or subsequent re-entry activities. An Observation Team will be designated to handle the observation, recording and real time reporting actions. This team will consist of the personnel listed below and will be supplemented as required according to specific circumstances:

- WWCI Team Leader
- WWCI Well Control Specialist
- WWCI Safety Specialist
- BP Company Representative (Senior / Responsible)
- Total Safety Technician

Intercept Phase Tasks

It is possible that the operations performed by the relief well might disrupt the MACONDO 252 #1 well resulting in uncontrolled flow. If such an event occurs it is expected that the flow will be of limited duration since a dynamic kill will be initiated immediately document).

In case of uncontrolled flow at MACONDO 252 #1, the Observation Team is to provide feedback to the BJ_____ on the effectiveness of the kill pumping operations. Once it appears that the MACONDO 252 #1 well has been controlled, the Observation Team will monitor the wellhead area for signs of flow. The BJ_____ will standby to resume kill operations immediately upon notification from the Observation Team.

From the time the relief well is below 8,300' MD, during the intercept and during subsequent relief well operations until notified otherwise, the Observation Team should be prepared to implement the following tasks:

- Ensure that reliable communications are in place between BJ_____, HES_____ & associated marine vessels – check communications as often as required to ensure uninterrupted coverage
- Remain prepared to deploy to upwind side of MACONDO 252 #1 via 'surfer' to observe the surface reaction to kill pumping operations at the wellhead area & report back to BJ_____. Deployment to be done within 15 minutes of notification during daylight hours. Deployment of the Observation Team during night time hours will only be done if specific circumstances allow it to be done safely (calm seas, good moonlight, steady & favorable wind, etc.) and if observation is absolutely essential.
- Record video footage of MACONDO 252 #1 if deployed to assess leak/blowout

During the same period, designated personnel onboard DD-3 will continuously monitor conditions onboard MACONDO 252 #1 (cameras and other remote sensors) and remain prepared as per the list below:

- Monitoring & remote functions validated every two hours
- Report all anomalies to MACONDO 252 #1 immediately
- MACONDO 252 #1 pits maintained at 90% full – replenish as required with MACONDO 252 #1 fire pumps
- Communication between supply vessels & DD-3 tested every two hours
- Keep helicopter on standby during milling operations
- Suspend all crew changes on day of milling operations