



Generalized Temporary Abandonment Procedure for Pull of Subsea BOP for Repair

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1. Purpose

Every time the BOP (Blowout Preventer) has to be recovered for repairs in a deep-water-drilling well, the potential exists for considerable underbalance to be induced during any open-hole interval. If the open-hole interval contains hydrocarbons, a blowout could occur if suitable barriers are not put in place before the riser portion of the mud hydrostatic head is removed, replaced only with the hydrostatic head of seawater.

The purpose here is to outline a proposed minimum approach to establishing suitable barriers in wells with protective casing and a protective liner, as follows:

1. Circulate and condition from TD (total depth) to obtain 150% of bottoms up volume to be certain the well is safely under primary control with the full mud column.
2. POOH (Pull-Out-of-Hole) and install the lock down assembly on the hanger of the last full string of protective casing if not done previously to be certain that the seal assembly will stay in place during pressure reductions in the bore to follow.
3. POOH and pick up the Drillable or Retrievable Bridge Plug (BP or RBP) and cementing stinger.
4. GIH (Go-in-Hole) to the last casing/liner shoe. Set the BP 100 ft above the shoe to locate opposite primary cement outside of the liner.
5. If a Retrievable Bridge Plug is used, circulate a 50 ft sand plug on top of it to facilitate recovery later.
6. Place a 200 ft balanced cement plug on top of the BP (or sand top) and reverse the drill pipe clean.
7. Wait on cement (WOC) to cure for 1000 psi compressive strength.
8. Tag cement plug to check cure. Close the BOP on drill pipe and test with 50% of the weakest casing burst pressure or BP/RBP rating, whichever is less to insure casing and bridge plug/cement plug are pressure secure under positive pressure.
9. Open the kill line and displace the drill pipe with seawater to 500 ft below the mud line to later induce somewhat more negative pressure than will prevail with

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the BOP removed.

10. Close both the choke and kill lines at the stack to prevent them going on vacuum and feeding seawater or mud into the wellbore/stack during the test below-.
11. Keep the BOP closed on drill pipe to isolate mud hydrostatic head in riser. Calculate the expected bleed volumes to know what a good test result is.
12. Monitor the riser on the trip tank and monitor the drill pipe bleed back volumes on the cementing unit tanks.
13. Release the pressure on the drill pipe and monitor for one hour to provide an underbalanced test of the deep plugs (the first barrier between open hole and mud line).
14. Compare the bled volumes to those calculated.
15. Open the pipe rams and reverse circulate the seawater from the drill pipe.
16. Pull drill pipe shoe out of the hole to the shoe of last full casing string (or just above the liner hanger top if it contains a liner).
17. Set a 300 foot balanced cement plug from 100 ft above the shoe (or hanger top) and reverse out to clean the drill string. Plug to be opposite cement in annular space.
18. WOC to obtain 1000 psi compressive strength.
19. Tag top of plug to confirm cure.
20. Close the BOP on drill pipe and repeat Steps 9 through 15 to underbalance test the shallow plug (the second barrier between open hole and mud line).
21. Reverse seawater from drill pipe until seawater is just to the mud line.
22. Shut in the drill pipe and monitor pressure on it for the steps below; keep the drill pipe deep in the well should it be needed for a kill operation.
23. Open the BOP and displace weighted mud from riser using the riser boost and kill line while monitoring volumes on pit totalizers and comparing the flow in and out. This will leave the wellbore below mud line full of drilling fluid.
24. With the displacement complete, monitor the static well on the trip tank for one hour to provide a final physical check that barriers are holding.
25. Pull the drill pipe from the well and riser.

26. Release the wellhead connector on the BOP and pull the BOP for repair and re-run.

2. Dictionary and Acronyms

Table 2.1 – Acronyms and Terms Definitions.

Acronym or Term	Definition
BOP	Blowout Preventer, usually an assembly of actionable sealing elements, valves, and connectors intended for secondary control of a drilling well.
BP	Bridge Plug: insertion device to block a cased wellbore at a selected point.
GIH	Go In Hole.
POOH	Pull Out Of Hole
RBP	Bridge Plug that may be retrieved after serving its purpose.
TD	Total Depth, usually of a drilled well bore.
Totalizer	Electronic or mechanical device to sum the output of several subordinate measuring devices, usually of fluid levels in drilling fluid storage pits.
Underbalance	The amount by which drilling or completion fluid pressure at a point is less than the prevailing pore fluid pressure in the local rock formations.
WOC	Wait on Cement (to cure from a slurry to a solid state)