



MC 252 Junk Shot Peer Assist – 6 May 2010
Report of Findings

07 May 2010

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BP-HZN-2179MDL02679881

TREX 011744.0001

Executive Summary



- Assess potential regrets with the Junk Shot or kill operation.
 - Blow riser top – remove restriction/increase flow
 - Lose containment through casing
 - Under ground flow - compromise relief well
- More diagnostic work is needed
 - Oil Flow path - Pump Styrofoam, dye
 - Choke points - pressures in the stack/riser
- Consider methods to optimize junk shot
 - Better, More and Faster (subsea reloading, more barrels, targeted shot)



Top Ten Findings

- These Key findings are nearly unanimous messages delivered from the three groups of the Peer Assist Team.
- The findings are illustrated by the sub bullets from examples in the breakout reports.

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Top Ten Findings

1. While no technical "show stoppers" were identified, significant risk is present and more diagnostic work and consequence assessment is needed before pulling the trigger on the junk shot option.
 - Need to understand the restrictions and flow paths (is casing across rams?)
 - Pressure measurements (injectivity test, hot tap etc.)
 - Dye/Styrofoam and speed of visibility
 - Open/close bottom rams and check operating pressure (may indicate well pressure)
2. Develop a comprehensive understanding of the knock on risk of successfully plugging the well (engineering analysis required)
 - potential branch – burst disks, shallow sand, shoe integrity etc.
 - loss of riser integrity
3. Junk shots are often not successful (need more than 2 shots)
 - Devise a method for subsea reloading
 - Add more barrels in the existing manifold
 - Consider onshore testing of "junk shot light" (pump from Q4000 and use it successful plug starts to give way while killing)
 - Consider optimal junk shot material (reactive pills that meet in ECP, pressure and temperature considerations, shelf life, encapsulating method, Cameron Seal packing etc.)
4. Consider how to best utilize C&K lines
 - Sequential vs simultaneous injection
5. Consider what to do if junk shot is successful, but also plugs off seal assembly while killing the well
 - Need plan to address this non well kill scenario
6. Consider pumping fluid specifications
 - Hydrate inhibition
 - Erosion risk
 - Compatibility issues with oil
7. Develop a decision tree for a number of approaches and outcomes for the junk shot
 - Hydrate plug, junk shot plugs pipe etc.
8. Consider advantages of dual conduit approach for access to ECP
 - Coiled Tubing
9. Flow back through Choke and Kill lines
 - Coffer dam or surface facility
10. Participants believe they can provide additional support, but are looking for more data for engineering analysis.

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These Findings are summarized by categories of inquiry developed by the three working groups of the Peer Assist Team and as reported by these groups at the conclusion of the working sessions

1. What is missing from the plan? Identify gaps.
2. Identify risks and potential mitigations.
3. Identify opportunities and potential alternatives.
4. What other suggestions does the group have?
5. Identify recommendations for discipline experts

1.) What is missing from the plan? Identify Gaps



- Need more information about current status of well
 - BOP stack (ram positions), pressures at wellhead & riser to identify restrictions, status of choke & kill lines, was drill pipe sheared, has casing moved up

2.) Identify Risks and Potential Mitigations



- Junk shot bridges at undesired location (injection point, riser kink)
- Limited amount of junk shot available in manifold
- Shelf life of junk shot
- Injection fluid issues
 - Hydrates, emulsion, erosion
- Undesired result during bullhead
 - Blow riser top, lose containment (and recovery), blow casing rupture disks, compromise relief well
- Junk shot is irreversible

3.) Identify opportunities and potential alternatives.



- Develop a spool manifold
- Pump discharge plan
- Develop encapsulating method to contain the junk shot material – facilitate
- Dual conduit – strap coiled tubing to the 6-5/8" riser to pump some type of reactive material into BOP stack or give another route to pump in
- Specially designed epoxy
- Use choke & kill lines as a flow path – flow to facilities? If both lines are used for JS and no route for pressure relief, there could be an issue.
- May want to modify the manifold to incorporate more junk shot (4 loads rather than 2)
- Add extra valve on C&K lines
- Relief on injection lines – do we need a relief valve
- How to use existing choke & kill lines
- Pump junk shot right before relief well

4.) What other suggestions does the group have?



- Prepare surface intervention options, but stand by for relief well
- Clear fluid for conveying junk shot & bullhead to reduce erosion concerns
- Attempt to function rams (open and close) to determine pressures
- Use choke & kill lines separately to pump reactive pills
- Pumping additional junk shot from surface
- Continued involvement from peer group for additional feedback
- Explore all hydraulic models

5.) Recommendations for discipline experts



1. Brad Brister – ROV Oceaneering