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Exhibit No. -

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From: Tooms, Paul J

Sent: Mon May 17 11:09:41 2010

To: Thierens, Harry H

Subject: FW: Top Preventer Peer Assist Recommendations

Importance: Normal

Attachments: Top Preventer Peer Assist Recommendations Final.ppt

In case you don't have this already

From: Turnbull, Jon B

Sent: Saturday, May 15, 2010 12:00 PM

To: Wellings, James S; Patteson, Mark R; Holt, Charles A; Frazelle, Andrew E Cc: Wulf, Gary T; Tooms, Paul J; O'Bryan, Patrick L; MC252\_Email\_Retention

Subject: Top Preventer Peer Assist Recommendations

Jim et al.

Attached is the final feedback from the Peer Assist on Top Preventer. This covers both the BOP on BOP and the

Ram/Valve on Flex Joint.

Since the review was completed the Stack on Stack option has been accepted as the preferred option with the Ram on Flex Joint as a contingency option in the event the LMRP cannot be recovered in the event it is the choke point in the

well. The ball valve alternative should not be progressed further.

There is much to be done for the BOP on BOP to be implemented with confidence and the move to get additional resource into you team to assist is important to maximise the probability of this operation being successful.

The work done by your team in describing the procedures and the risks greatly helped the review team focus on the important issues, so thanks again for that.

<<...>>

regards

Jon Turnbull

Drilling Engineering Manager, North Sea SPU, BP

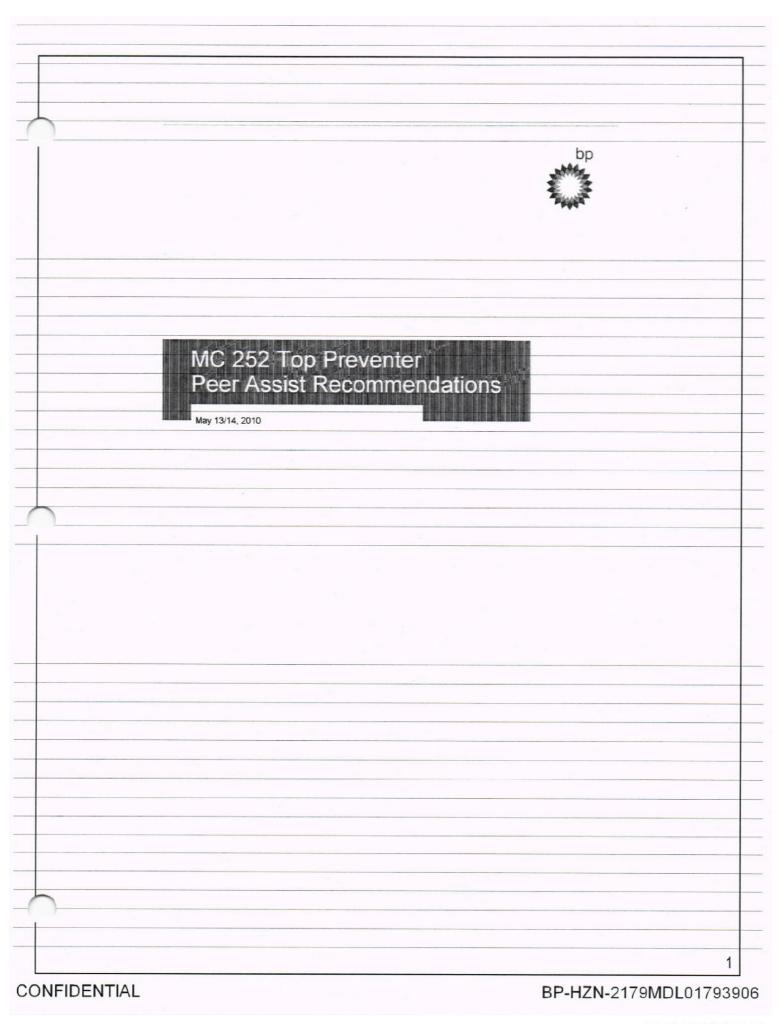
Direct (44) 01224-833251

Mobile 07766-603983

Secretary Carol Gibbon 01224-834586

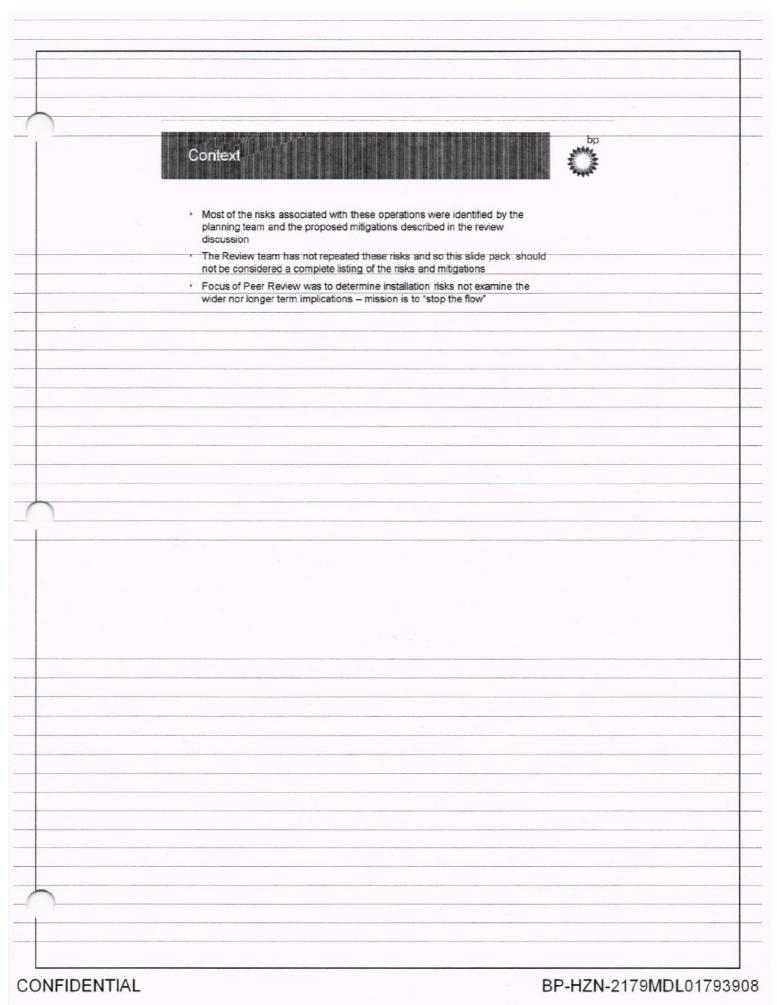
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## Purpose and Expectations The intent of this Peer Assist is to conduct a line item review of both: Removing the Horizon LMRP and running the DDII BOP on the Horizon Running the double Ram or Valve preventer/valve on top of Horizon Flex Joint. Specifically: 1. Assess the feasibility and risks associated with both operations and determine the significance of these risks. 2. Examine the contingencies and confirm that these are sufficient and effective 3. Identify any needed, pre-work, modeling, trials and tests for pressure, interference, compatibility etc. 4. Assess and summarize the relative merits of above options

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### Overall Feedback BOP on BOP and Ram/Valve on Flex Joint · Amazing amount of work been done - great job in short time Key risks had all been identified - no significant additional risks identified by review Review team believes that the BOP on BOP has a great probability of successful installation than the ram/valve on Flex joint · Review team believes that the BOP on BOP operation is feasible and can be managed safely The Ram is the recommended option over the ball valve for the Ram/Valve on flex joint (case of being unable to remove the LMRP for BOP on BOP option) Schedule pressures need to be given careful thought and stop points/decision points clearly understood Key operational risks Removal of LMRP (low probability, high consequence) - Dynamics (BOP placement, weather, timing etc.) - Subsea visibility and close control - Hydrate Management and Inhibition Working 3 options (BOP on BOP, Ram on Flex-joint and Valve on flex joint) is stretching-limited resource and could compromise the success of the selected option

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## Comparison of Ram vs Valve on Flex Joint Ram/valve on Flex Joint · Ram's control system more complex than valve but gives more options · Valve closure a simpler operation (ROV) but re-opening valve may be difficult - need to assess likelihood of being unable to re-open valve and implications. Ball valve could hydrate after closure preventing opening Approval of ball valve by MMS as pressure containment/BOP system is likely to be a challenge · The Ram is the recommended choice over the ball valve

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#### BOP on BOP vs Valve on Flex Joint BOP on BOP and Ram on Flex Joint BOP on BOP Valve/Ram on Flex joint · Uses equipment in function for which it · Offers alternative if pressure restriction was advised is in LMRP or LMRP cannot be removed · BOP on riser is stiffer than Valve on Approval of Pressure Control system by Drill-pipe MMS will be challenging Hydrate inhibitor can be circulated to H4 Removal of Flex joint bolts and making connector up valve assembly is a unique operation sub-sea No hydration inhibition circulation system Mule shoe means that flange has to be held higher above connector than BOP and so more prone to hydrates "O" rings could be pulled out by venturi forces as system is landed

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### General Recommendations BOP on BOP · Focus on Hydrate Risks and Mitigations: Educate operations team on general Hydrate risks and issues (Proximity, timing, chemistry, pressure, temperature effects) - Decide on which new ideas we need to pursue and which should be dropped? (e.g. shroud around base of BOP) - What lessons from cofferdam would help on ROVs, hydrates, SIMOPS etc.? - Quantify and model the glycol flowrate, volumes, duration needed for effective placement and inhibition Adjust organizational structure and establish boundaries: - Consider separate teams for critical work fronts that need to be progressed, e.g. hydrate inhibition - Develop resource plan defining essential personnel on rig etc. - Develop a decision flow chart that shows who makes decisions and anticipates what ifs - considering rehearsing these Establish the boundary conditions (e.g. regulatory) and determine if we have best tools, and chemicals for the job. - Engage ROV contractor in training, trialling etc. - Conduct critical operations during daylight hours

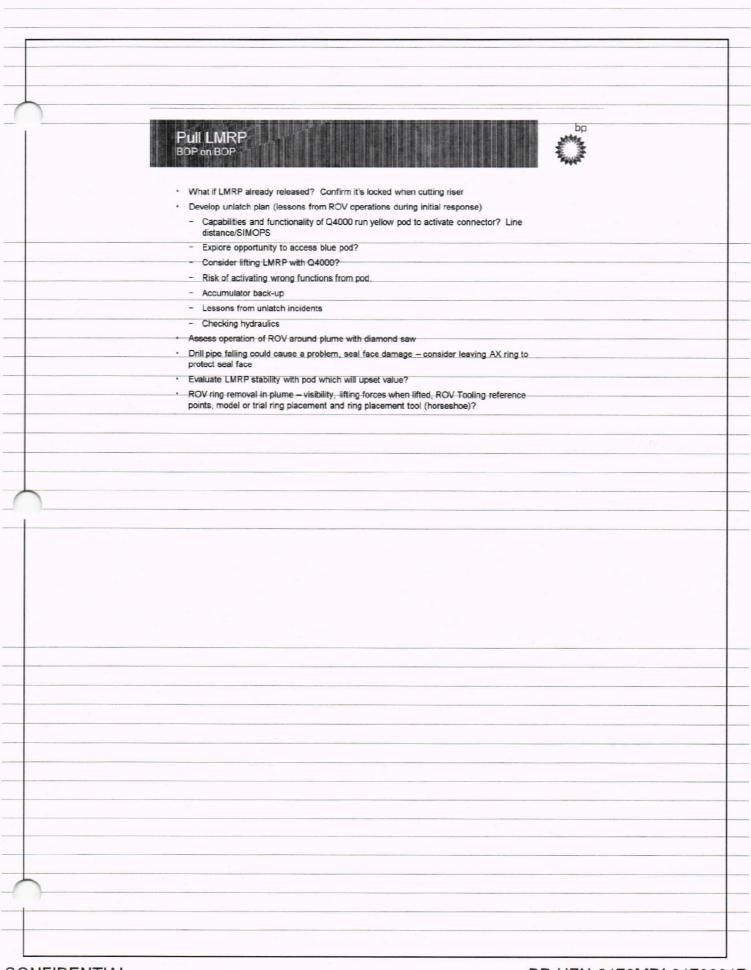
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	Preparation BOP on BOP
	Document requested on Status of Horizon BOP
	DP system - need TO analysis and report
	Assess Watch circle tightness
	Wellhead stress weight and bending calculations required
	<ul> <li>Loop current study for leaving stack on stack – to be modelled</li> <li>BOP Test requirements/certification – to be defined (timing issue)</li> </ul>
	Evaluate use of anchor winch 7 to pull off location to avoid clash issues
	To manage Gas around vessels consider Water spraying moonpool area
	etc.
	Review inhibition system to confirm adequacy and build in additions if needed
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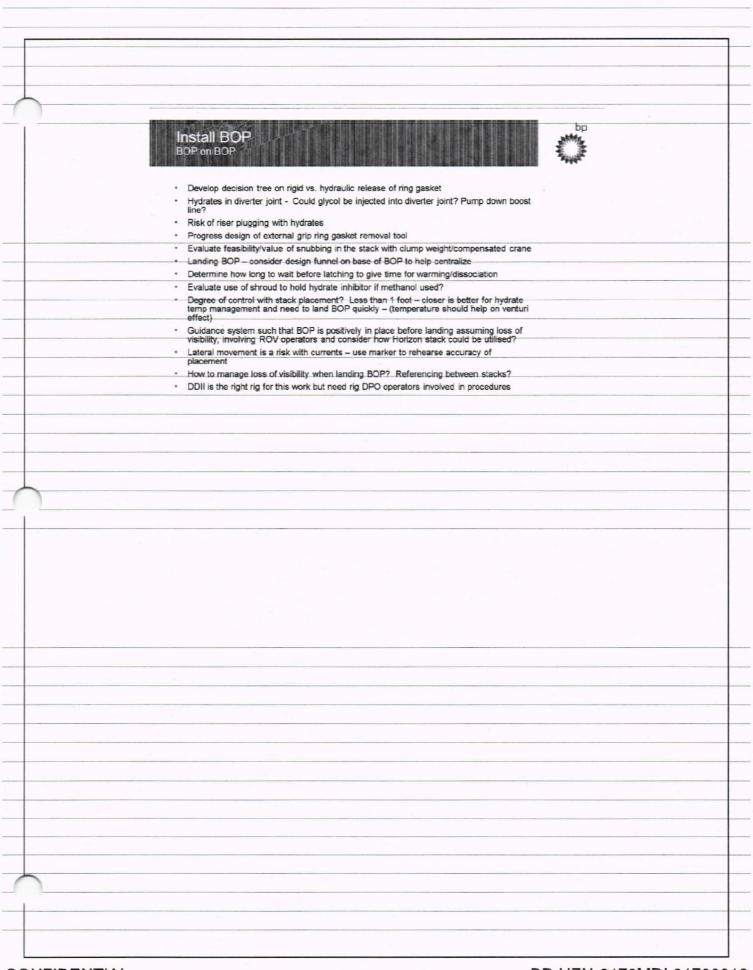
## Deploy BOP Stack BOP on BOP · Manage potential leak path of Riser Fill up valve · Decide whether Glycol or methanol will be used for Hydrate inhibition Confirm whether hot water could be used – ref. Enterprise study · Identify critical parts that could be hydrated and could cause a problem if hydrates expands or preventing locking/unlocking of connector Hydrate inhibition – Assess adequacy/opportunity for backup Determine how long can we can operate in the plume area while waiting for hydrates to disassociate Evaluate opportunity for gas diverter on base on of BOP – flat plate with funnel guide Check interference with lines CONFIDENTIAL BP-HZN-2179MDL01793914

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Navigate to Location  BOP on BOP  Enterprise interference – confirm stand Approach path to be evaluated (current	
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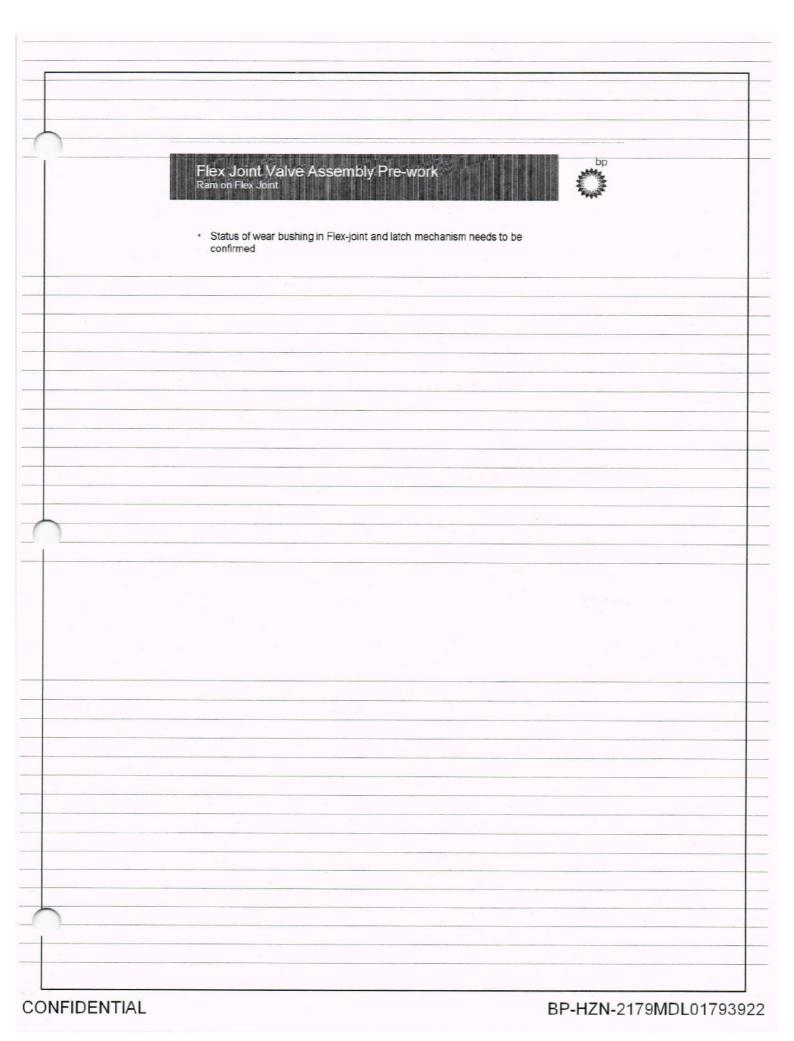
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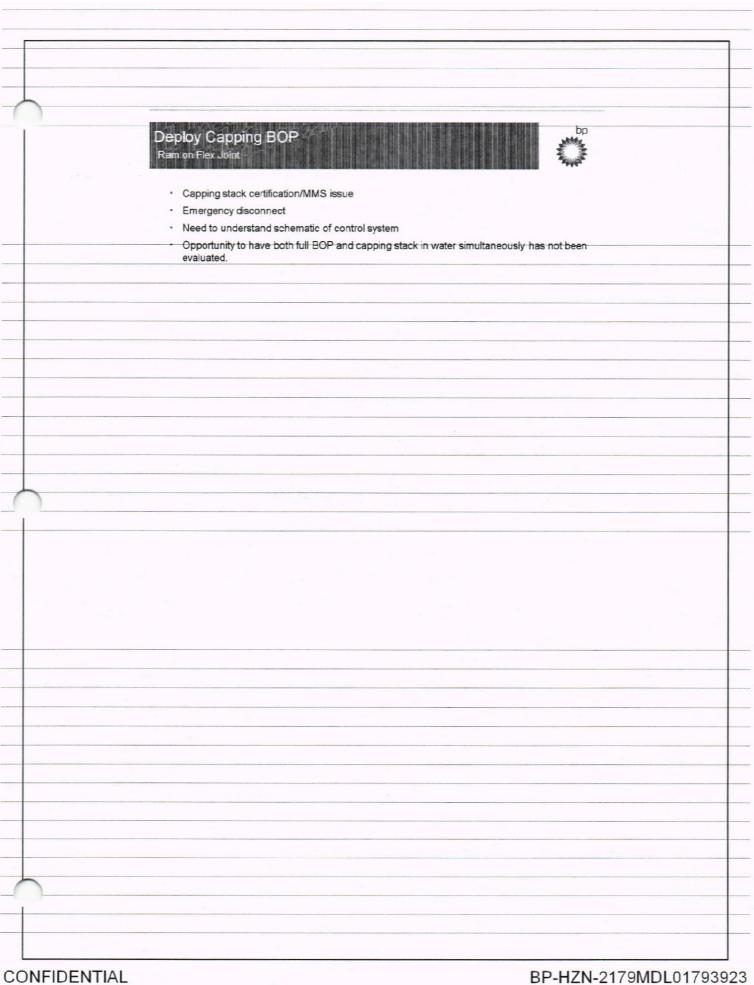
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	Shut-in Well BOP on BOP  Hydrate potential if there is a small leak at the connector? Methanol  Pressure Build up when well shut-in – how to manage bleed of pressure, risks to rig,	12
	Develop an Exit strategy if things go awry	
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## General Observations Ram on Flex Joint · Operation is different - using much equipment with which crews are unfamiliar Hydrates more of a problem than for BOP on BOP – landed higher, less inhibitor "O" ring seals could be a problem. Record of such issues not good – venturi forces · Stabbing over obstruction once cut off horizontally is a risk · Risk of drillpipe stub having lateral force that prevents centering of flange Bolt loosening and shearing is a risk as is number of tools Time frame and resources to carry three options Significantly lower probably of success than BOP on BOP Looks to be doable but not recommended as first choice Involves holding pressure in system not normally used for this (flex-joint and riser connect below ram/valve) - ok as diverter system but more risk as capping system

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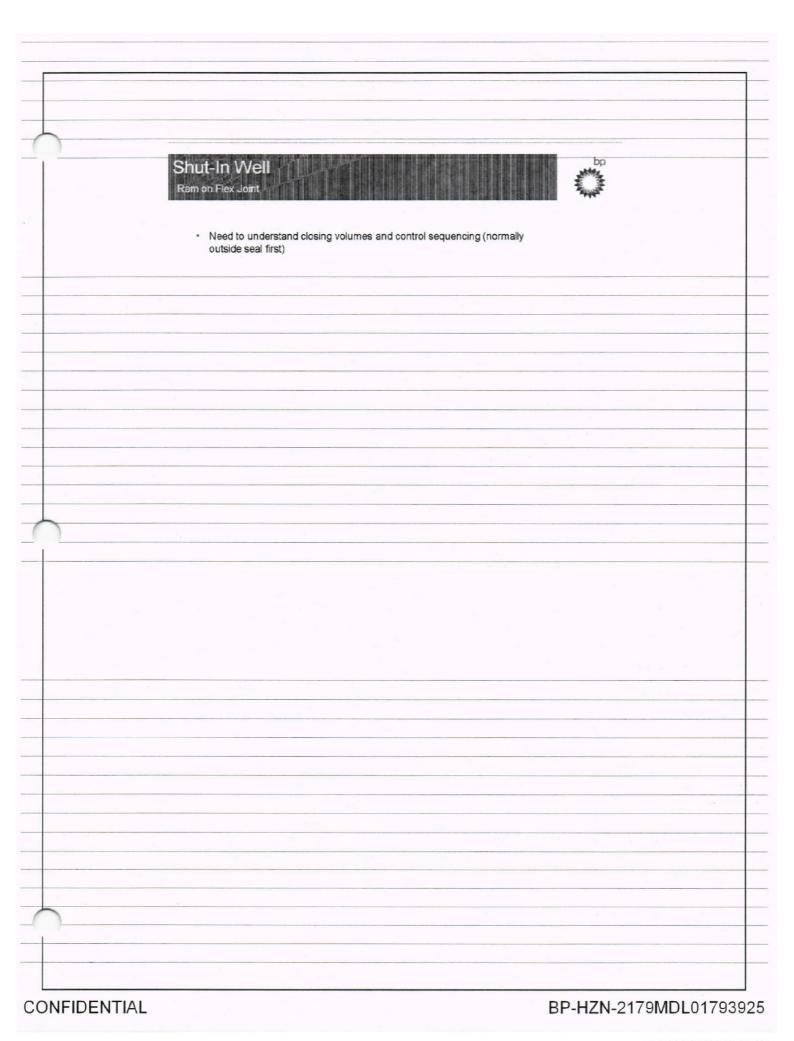
# Remove Riser Bolts Ram on Flex Joint · Failure to remove all bolts - what are load implications if not all the bolts are replaced because of stud blocking hole · Operation of breaking out and making up flange bolts subsea has not been done before - (normally a surface operation). New tools and procedure and only two tools available. CONFIDENTIAL





## Install Capping Stack Steps Ram on Flex Joint System not set up to provide glycol inhibition – ROV hot stab/choke and kill injection Potential for mule shoe to damage sealing face · Evaluate engineering an external funnel/guide for assisting alignment · Develop contingency plan for cutting mule shoe without creating a seal area · Level of confidence of ROV probing on potential stick up objects

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	Ball Valve Ball Valve on Flex Joint	
	<ul> <li>Pressure lock of ball valve as it is partially closed? Torque tests been conducted indicating OK to close under flow</li> </ul>	
	<ul> <li>Hydrate could collect above ball valve in the valve cavity, which will make opening of valve very difficult – water ingress?</li> </ul>	
	MMS acceptance of ball valve likely to be a challenge	
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#### Risks — Individual's risks raised at start of meeting BOP on BOP and Ram or Valve on Flex Joint Station Keeping · Failure to understand downsides Making up Flange Reconnecting Stack Hydrates on BOP/Seals Seal Damage · Disturbance of something in stack Flex-joint connection Stabbing/Pressure integrity · What we don't know · What's in LMRP ROV Camera Visibility What happens on LMRP Release Plume Connector Damage Safety of 176 People on Rig · Latching & Bending moments Equipment Making it work Unable to Re-connect BP-HZN-2179MDL01793928 CONFIDENTIAL

#### Peer Assist Participants Review Team for BOP on BOP Review Team for Ram/Valve on Flexjoint 1. Jon Turnbull - BP 1. Mario Lugo (Exxon Mobil) Gary Wulf - BP Karl Leblanc (Oceaneering) 3. Andy Frazelle - BP 3. Larry Talley (Exxon Mobil) 4. Joe Dean Thompson - WWC 4. Joe Dean Thompson (Wild Well Control) 5 Larry Talley - ExxonMobil 5 Gary Wulf (BP) 6. Andy Frazelle (BP) 6. Mario Lugo – ExxonMobil Bobby Mohan – ExxonMobil 7. Jon Turnbull (BP) Mark Mazella - BP 9. William Stringfellow - TO 10. Mike Blue - TO 11. Jess Richards - TO 12. Steven Walker - TO 13. Larry Williamson - MMS 14. Karl Leblanc - Oceaneering 15. Gavin Kidd - BP 16. Charlie Holt - BP 17. Steve Walker - CIW 18. Cody Eahart - CIW 19. Johnnie Kotria - CIW 20. Charles Curtis - CIW BP-HZN-2179MDL01793929 CONFIDENTIAL