

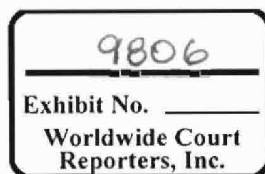
From: Smith, Trevor (GOM DWD)
Sent: Fri Jun 18 00:21:18 2010
To: Bond, Stan L
Cc: Devers, Kevin J
Subject: RE: Draft Agenda for 9 AM call June 18 - ACTION - Need answers for Secretary Chu's questions!
Importance: Normal
Attachments: 2010-06-17 Science Team.pdf

4. We have just learned that BP stopped production on the Flex Joint Overshot Tool, and we would liked to discuss BP's reasoning.

- Flex Joint Overshot (FJO) was one of three options being developed to enable attachment of a capping assembly to the Horizon BOP (others are Flange Spool and Latch Cap) ref Slide 2 of the attached presentation file "2010-06-17 Science Team.pdf" which was reviewed during a teleconference with Secretary Chu and the Science team today (11:00 CST),
- The FJO had the lowest expected pressure containment capability of the three options (4700 psia) and the highest installation risk
- The key FJO installation risk is that of accidentally engaging the slips gripping assembly during the installation process (e.g. by vessel heave). This risk is heightened by the necessity to install the FJO over the Flex Joint lower section which is inclined at 2 degrees from vertical. Accidental engagement of the slips could cause the FJO to be irretrievably locked on to the FJ in the incorrect position. This would either render the FJO incapable of holding significant pressure or of leaking from both top and bottom, further compromising the ability to contain oil flow from the well using a top hat collection system
- During development engineering, an alternative "clamp & grout" design of the FJO was investigated. This would have been be less vulnerable to installation showstoppers. However we were unable to identify a suitable grout/resing sealing system after a series of tests at Sandia National Laboratories and hence this option appeared to require an unforeseeably long qualification and test program to be deemed viable.
- The "slips and packers" FJO concept was accordingly selected as the option to build. The significance of the BOP inclination only became apparent when installation risks and failure modes were assessed, and led to decision to not proceed further with this option.

5. We have requested certain specs be added to the Muleshoe (hydrate preventer) where are we with that and other similar requests?

- The subject of hydrate prevention was discussed during the teleconference with Secretary Chu and the Science team today (11:00 CST),
- ref slide 15 of the attached presentation "2010-06-17 Science Team.pdf", the current plan is that Glycol for hydrate prevention will be delivered down the drillstring used to install the capping stack and will be injected into one of the side outlets of the capping stack
- Lower extremities of the Flanged spool assembly will be coated with a low friction grease to inhibit hydrates from accumulating on surfaces such as the underside of the flange.
- details of the installation procedure re hydrate prevention are still evolving



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XAK004-109687

TREX 009806.0001

7. What is BP considering in terms of putting something on the flex joint? We are concerned about mechanical loading and asked for design drawings to better understand it, but have yet to receive them.

- this was the subject of the 11:00 AM teleconference with Secretary Chu and the Science team today, and the Flange Connection Spool option was discussed in some detail, ref attached presentation "2010-06-17 Science Team.pdf"
- we agreed to forward a technical assurance review report which considered the loads to which the flexjoint would be subjected under well shut in conditions. The report file size is too large to email and will be transmitted via the Houston Science team, (Report: No 2200-T2-DO-RP-4003 Rev 0- Technical Assurance Report on Pressure Containing Capability of the Swing Valve Assembly). This was for an earlier capping assembly but contains relevant information on Flexjoint and Riser flange loads.

Trevor Smith

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✉ e-mail: Trevor.Smith@bp.com
📍 location: BP Exploration & Production Inc.
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Houston, TX 77079

From: Smith, Trevor (GOM DWD)
Sent: Thursday, June 17, 2010 5:27 PM
To: Bond, Stan L
Cc: Devers, Kevin J
Subject: RE: Draft Agenda for 9 AM call June 18 - ACTION - Need answers for Secretary Chu's questions!

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 - During development engineering, an alternative "clamp & grout" design of the FJO was investigated. This would have been less vulnerable to installation showstoppers. However we were unable to identify a suitable grout/resing sealing system after a series of tests at Sandia National Laboratories and hence this

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option appeared to require an unforeseeably long qualification and test program to be deemed viable.

- The "slips and packers" FJO concept was accordingly selected as the option to build. The significance of the BOP inclination only became apparent when installation risks and failure modes were assessed, and led to decision to not proceed further with this option.

Trevor Smith

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✉ e-mail: Trevor.Smith@bp.com

📍 location: BP Exploration & Production Inc.
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Houston, TX 77079

From: Bond, Stan L

Sent: Thursday, June 17, 2010 3:12 PM

To: Smith, Trevor (GOM DWD); Wellings, James S; Beynet, Pierre A; Devers, Kevin J; Stoltz, Dan

Subject: Fw: Draft Agenda for 9 AM call June 18 - ACTION - Need answers for Secretary Chu's questions!

Importance: High

Please start getting on this and will talk at 4 clock. Stan

From: Lynch, Richard

To: Clarkson, David; Al Monthiry, Wissam; Bond, Stan L; Stoltz, Dan; Holt, Charles A; Schilling, David A.

Cc: Thierens, Harry H

Sent: Thu Jun 17 19:51:22 2010

Subject: FW: Draft Agenda for 9 AM call June 18 - ACTION - Need answers for Secretary Chu's questions!

All,

I need your responses to these questions from Secretary Chu, this is a high priority request. Please engage the right folks in your team in creation of the response. I would like to have the responses by 6:00 am tomorrow morning.

Stan,

Please prepare answers to the questions that pertain to the Flange Cap, Flex Joint Overshot and the Latching Cap. I also want your thoughts on the "top hat stability".

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Dan / Charlie / Dave,

Could you prepare the answers that relate to the lightering schedule and top hat stability?

Best Regards,

Richard Lynch
Vice President - Drilling and Completions - CDO
501 Westlake Blvd - WL1 12.140
Houston, Texas USA 77079

Office Phone: +1-281-366-3566
Mobile Phone: +1-713-382-3907

From: Verchere, Christina C
Sent: Thursday, June 17, 2010 1:31 PM
To: Lynch, Richard
Cc: Looney, Bernard; Dupree, James H; Birrell, Gordon Y
Subject: FW: Draft Agenda for 9 AM call June 18

Richard,

Heads up that tomorrow's Chu/Salazar call will likely run longer and below are the questions the DoI and DoE would like to discuss on the call.

Please can you prepare responses to their questions and provide any material ahead of the call that may be appropriate.

Please don't hesitate to give me a call if you have any questions.

Cheers,

CV
mobile +1 713 470 8306

From: Owens, Missy [mailto:Missy.Owens@hq.doe.gov]
Sent: Thursday, June 17, 2010 6:41 PM
To: Verchere, Christina C
Subject: Draft Agenda for 9 AM call June 18

Christina – Andy, Secretary Chu and Secretary Salazar discussed this list on the 9 AM call this morning. This is what we would like to discuss on the extended 9 AM call tomorrow. Please let me know if you have any additional questions.

Missy

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1. Schedule of when the shuttle tankers will be available to the Q4000 to unload oil.
2. A general discussion of what the Science Team needs in order to get an accurate pressure reading – new gauges with tubes that go into the vents
3. What are the stability questions relating to the current top hat?
4. We have just learned that BP stopped production on the Flex Joint Overshot Tool, and we would like to discuss BP's reasoning.
5. We have requested certain specs be added to the Muleshoe (hydrate preventer) where are we with that and other similar requests?
6. Time-line for both the latch cap and the flange piece, including how long the BOP would be without a top hat.
7. What is BP considering in terms of putting something on the flex joint? We are concerned about mechanical loading and asked for design drawings to better understand it, but have yet to receive them.
8. The estimate of the total number of barrels in the well.

Missy

Missy Owens
Deputy Chief of Staff
Department of Energy
202.586.4251 work
202.744.7800 cell

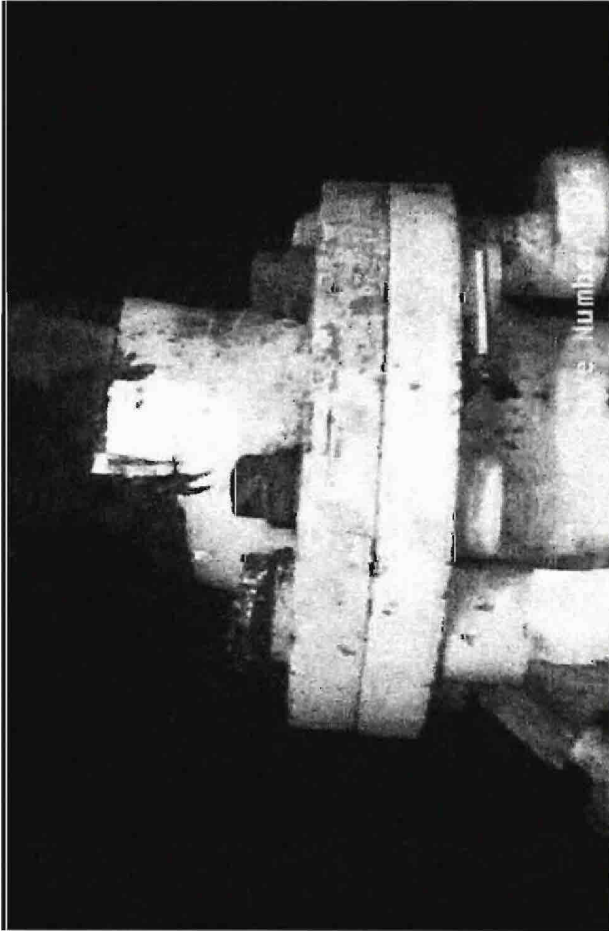
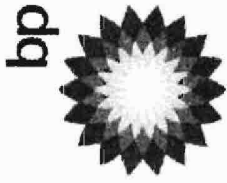
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Well Capping Workshop

Flange Connection Spool with Capping Stack

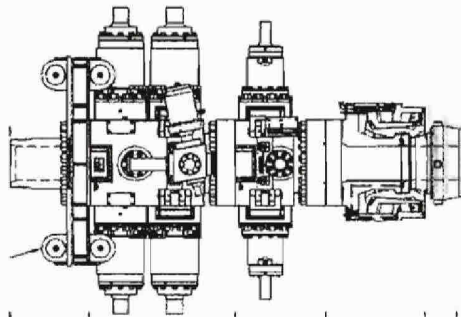
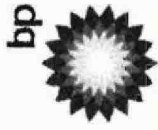
17 June 2010 Trevor Smith

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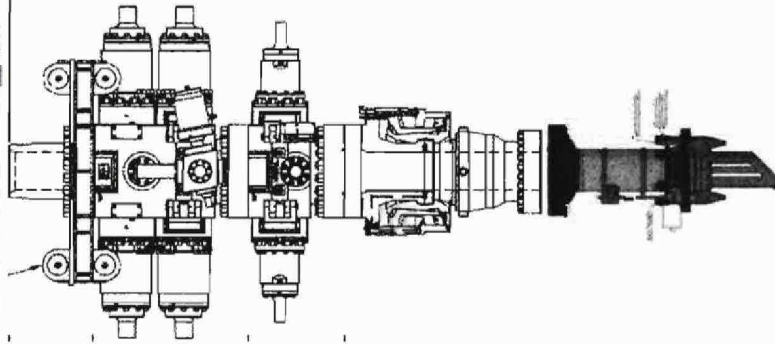
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Options

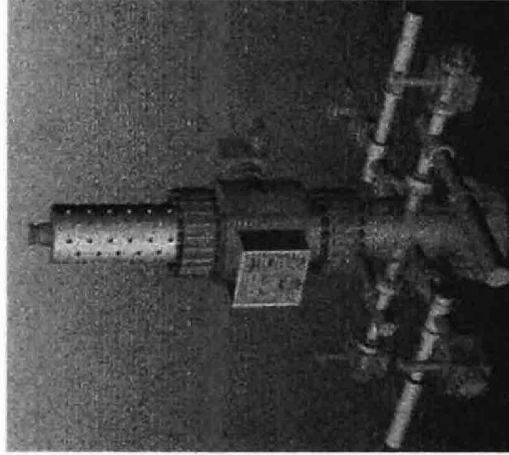


On Hold

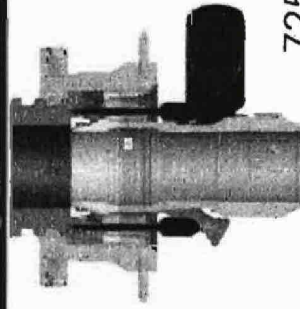
4700 psia



9000 psia



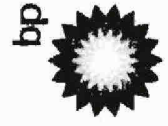
7250 psia



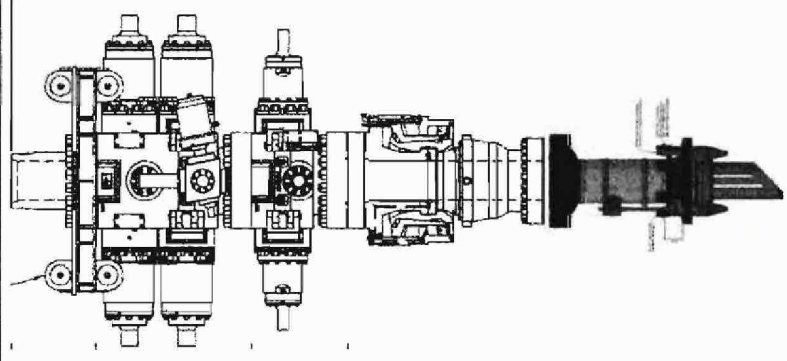
Flex Joint Overshot

Flange Connection Spool

Latch Cap



Focus of this review



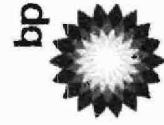
9000 psia

Flange Connection Spool

Options Summary



	Installation 'Do-ability'	Open Flow Exposure	Target Pressure	Expected Availability
Flex Joint Overshot	High Risk	Medium to Extreme Duration	4700 psia	Early July
Flange Connection Spool	Medium Risk	High Duration	9000 psia	End of June
Latch Cap	Low Risk	Low Duration	7250 psia	Mid July



Flange Connection Spool (FCS)

Overview

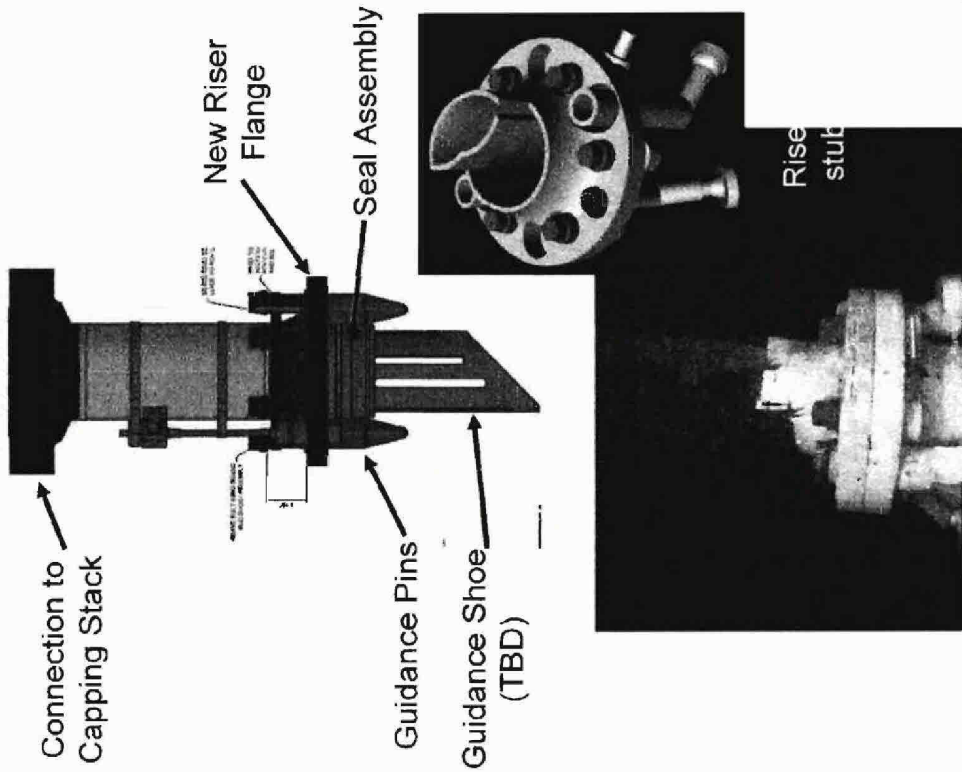
- spool with new riser flange and seal assembly is connected to mating flange on Horizon LMRP Flex Joint after removal of existing flange and riser piece
- Design pressure target is 9000 psia; subject to flex joint pressure limit with inclination

Challenges

- unbolting and removal of flange with riser stub
- landing spool over 2 projecting drill pipe sections (exposed once stub is removed), without damaging seal assembly
- making up 6 bolts with flange spool and capping stack held on drill string
- The work above could have lengthy exposure to open flow (no Top Hat during installation)

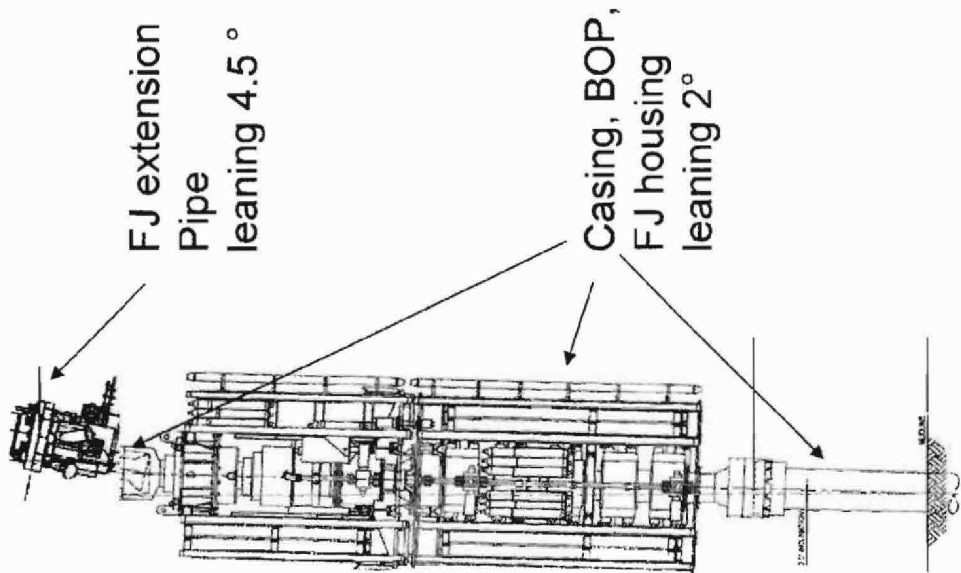
Status

- spool is built; installation tooling in development
- guidance systems being trialed this week to select best option
- In place analysis ongoing

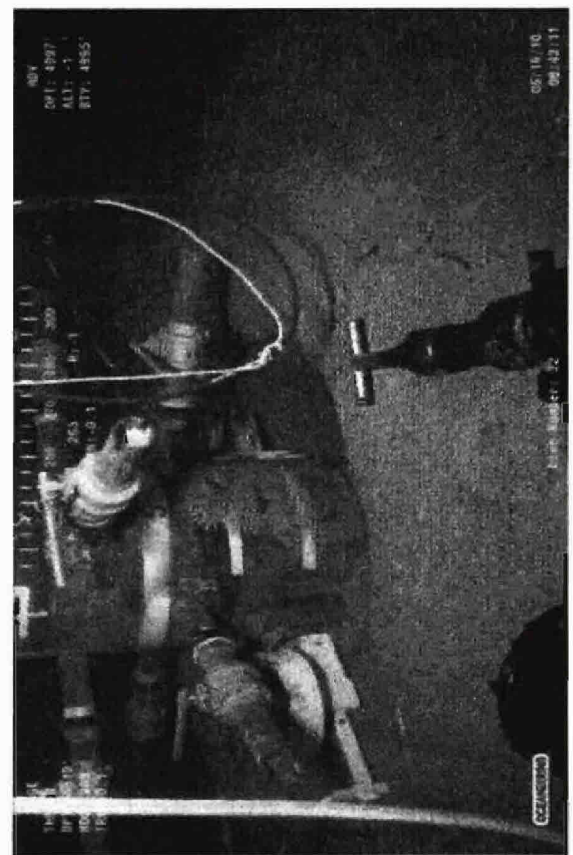




Horizon BOP Stack Inclination



- Stack leaning towards 310°
- Based on Roll/Pitch sensor readings and correlates with bulls eyes
- Reading Accuracy +/- 0.5°

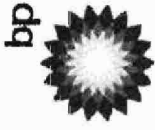


Flange Connection Spool – Key Risks

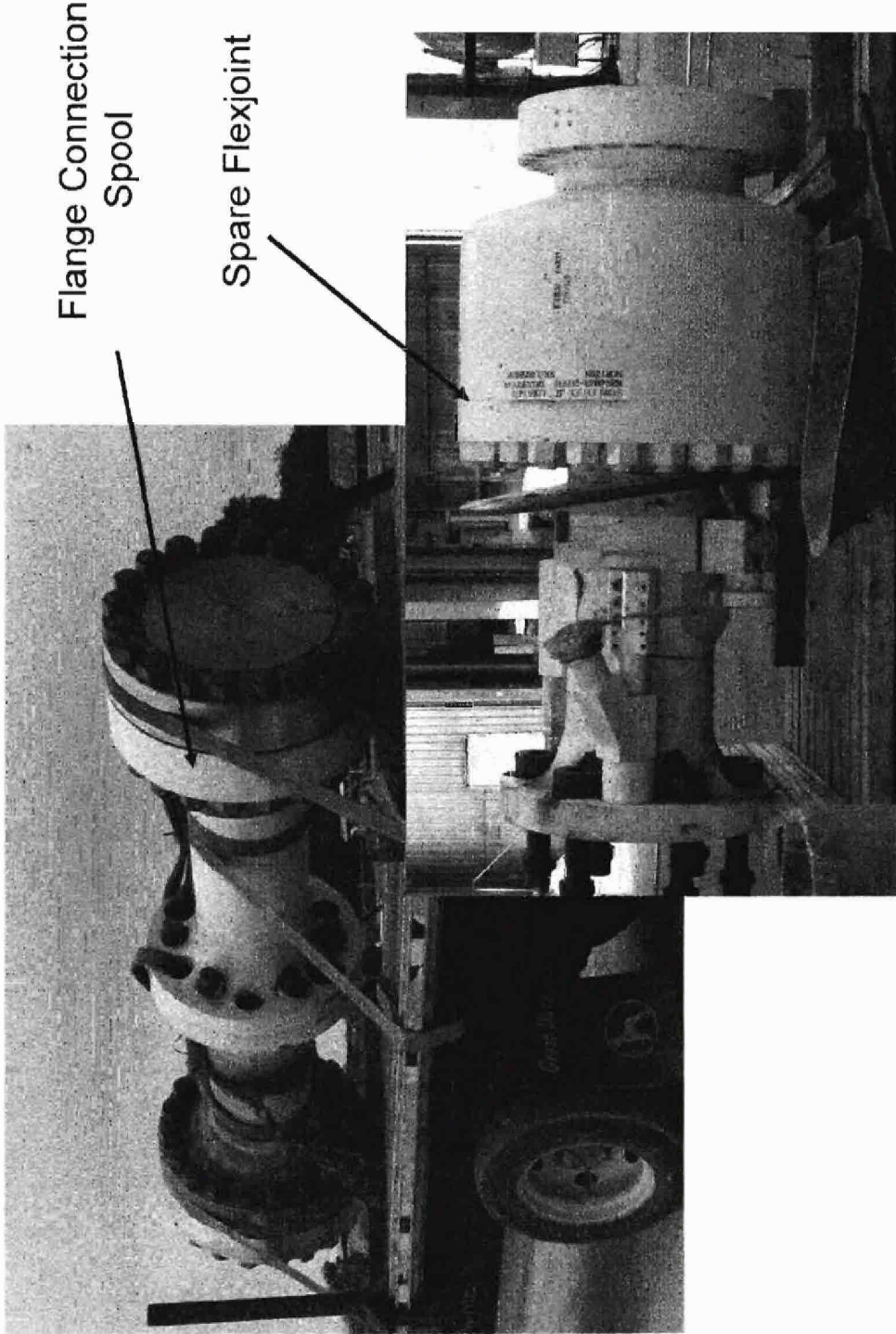
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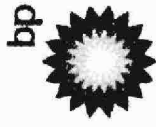
ID	Risk	Mitigation
1	Flexjoint angle	<ul style="list-style-type: none"> • surveyed BOP to measure angles • onshore trials tested at up to 5 degrees inclination
2	Unable to undo flange bolts	<ul style="list-style-type: none"> • subsea unbolting trial confirmed feasibility (trial was on a flange on Horizon riser)
3	Unable to easily remove flange (jammed)	<ul style="list-style-type: none"> • building tools to split flange • pump off flange using C&K pipe stubs
4	Landing spool over 2 drill pipe stubs	<ul style="list-style-type: none"> • trialed guidance systems to select best option • check/modify pipe orientation prior to installation
5	Flange Spool seal damage during installation	<ul style="list-style-type: none"> • dual elastomeric seals - reduce risk • no damage seen in onshore guidance trials • if damage occurs, accept less than full containment
6	Flexjoint Integrity under 9000 psia (rated to 5000 psig)	<ul style="list-style-type: none"> • analysis shows low risk of FJ rupture, risk of o-ring leakage at 9000 psia • Avoid fluctuating or impulse pressure loads • limit pressure to lower level e.g. 4700 psia



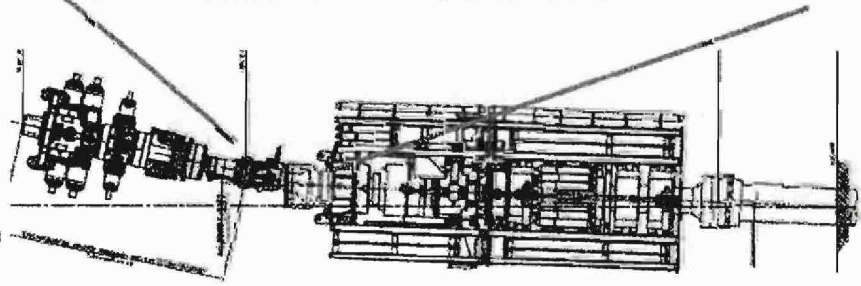
Flange Connection Spool & Flex Joint



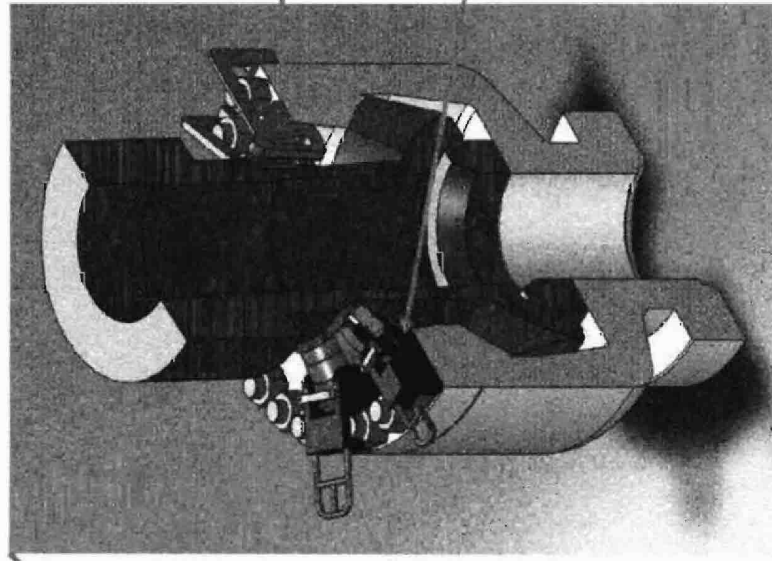
Flex Joint Restraint



Unrestrained Scenario:
12 Degree FJ Inclination

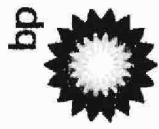


Flex Joint Alignment & Restraint Tooling

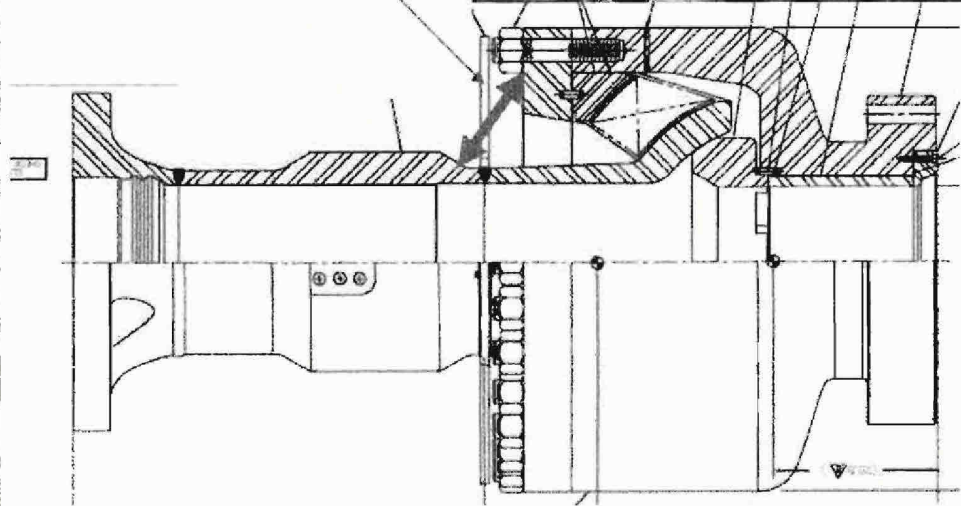


passive restraint stops to hold in place

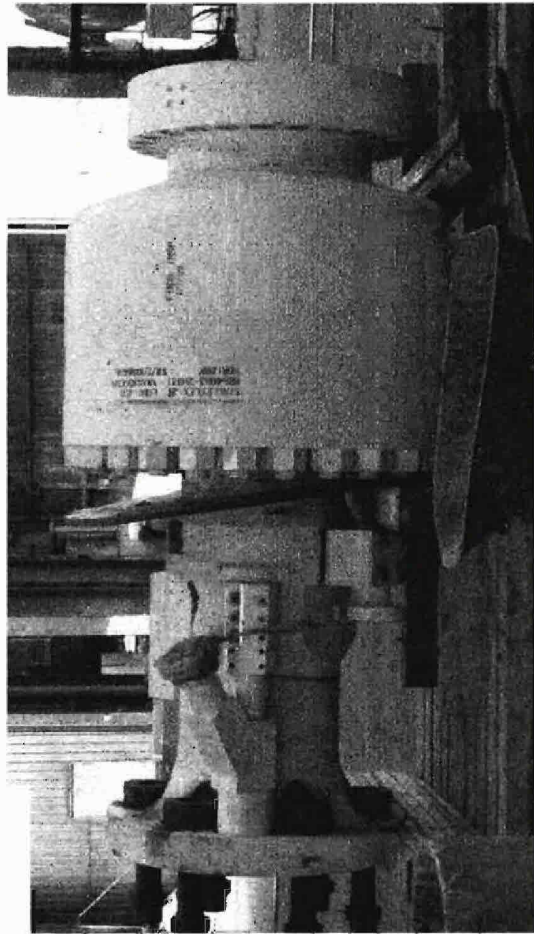
hydraulic jacks (50 ton) to create alignment



Flex Joint Assembly



Jacking Force applied here



Flange Unbolting

bp



damaged bolt head – to be deburred



Torque Tool

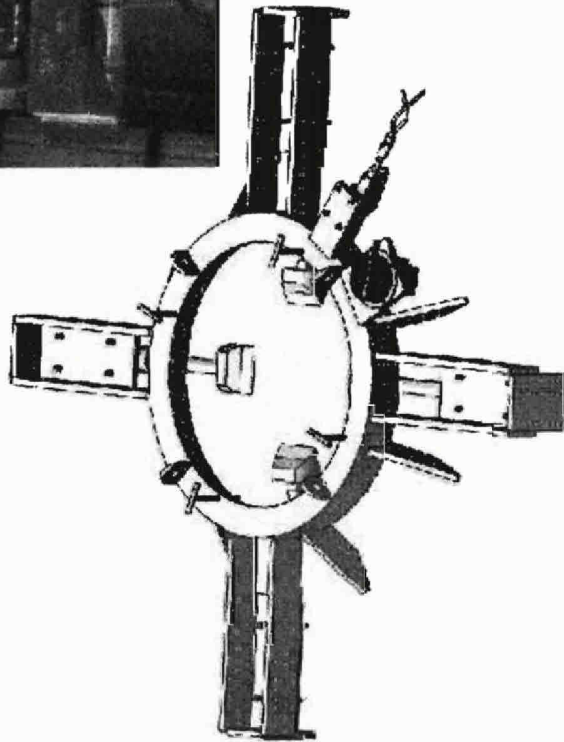
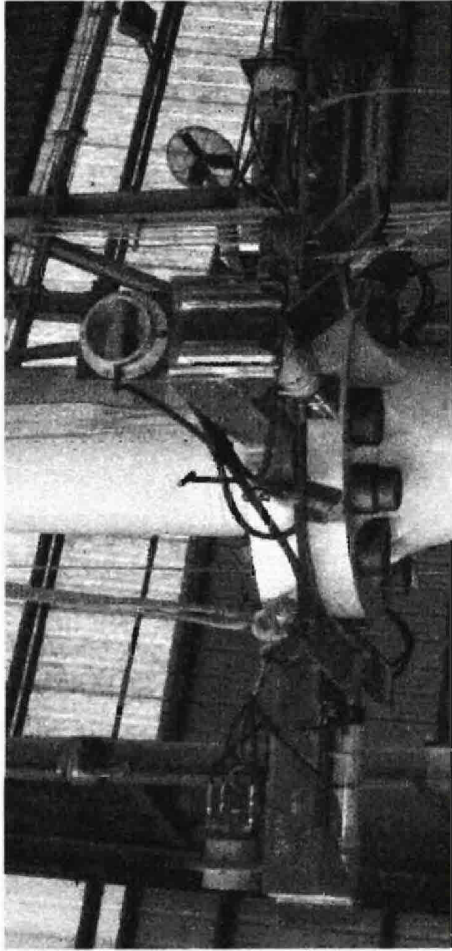


Impact Wrench

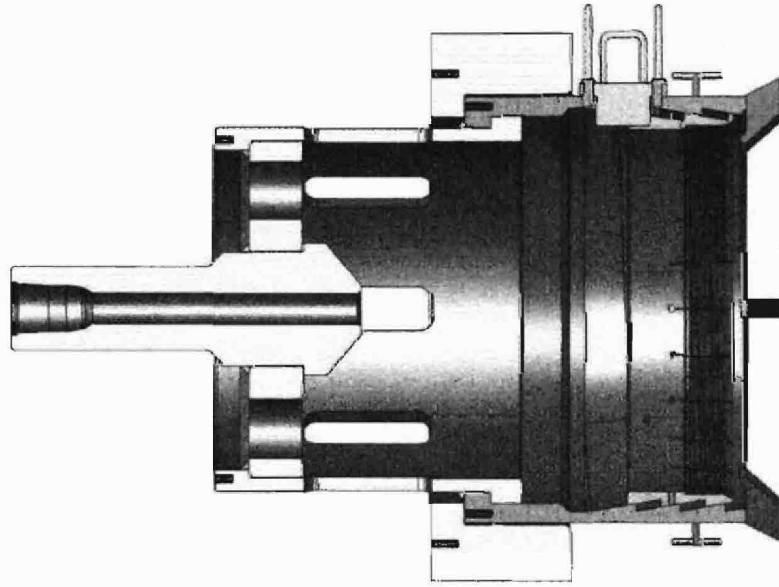
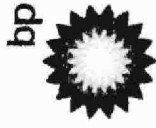
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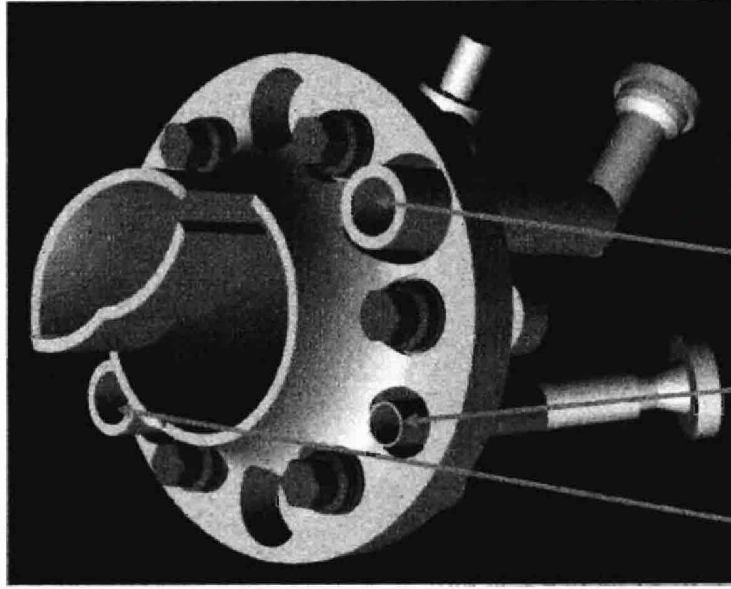
Flange Splitting & Removal



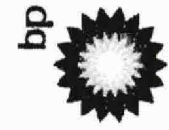
Flange Splitting & Removal



Overshot Flange Puller

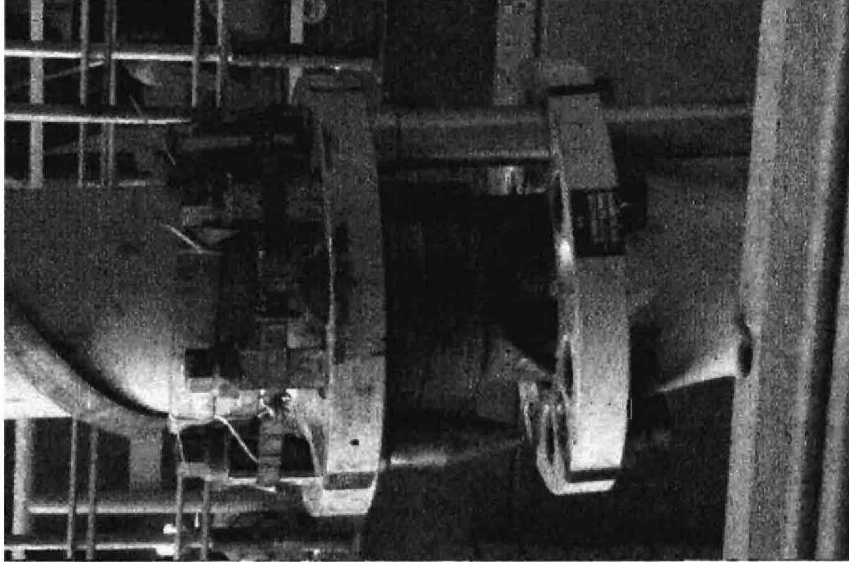
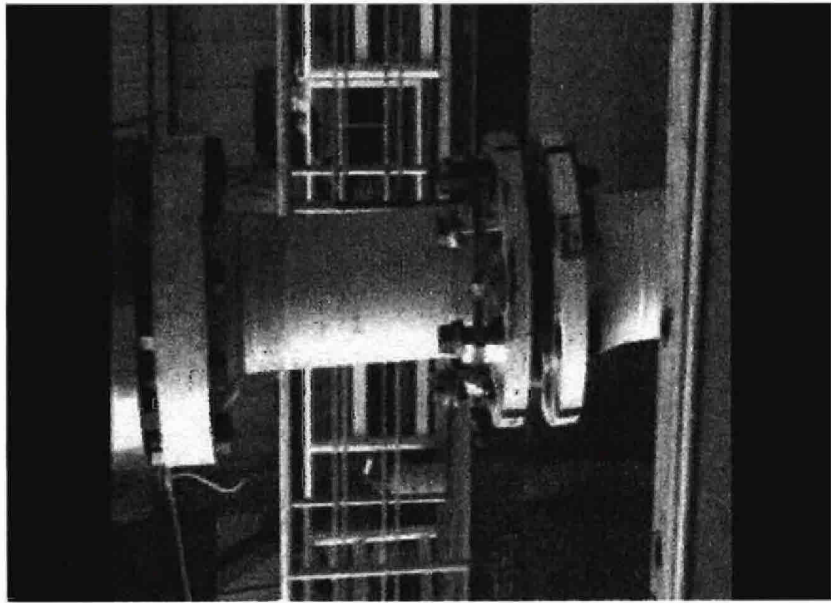


Use pipe stubs to separate flanges



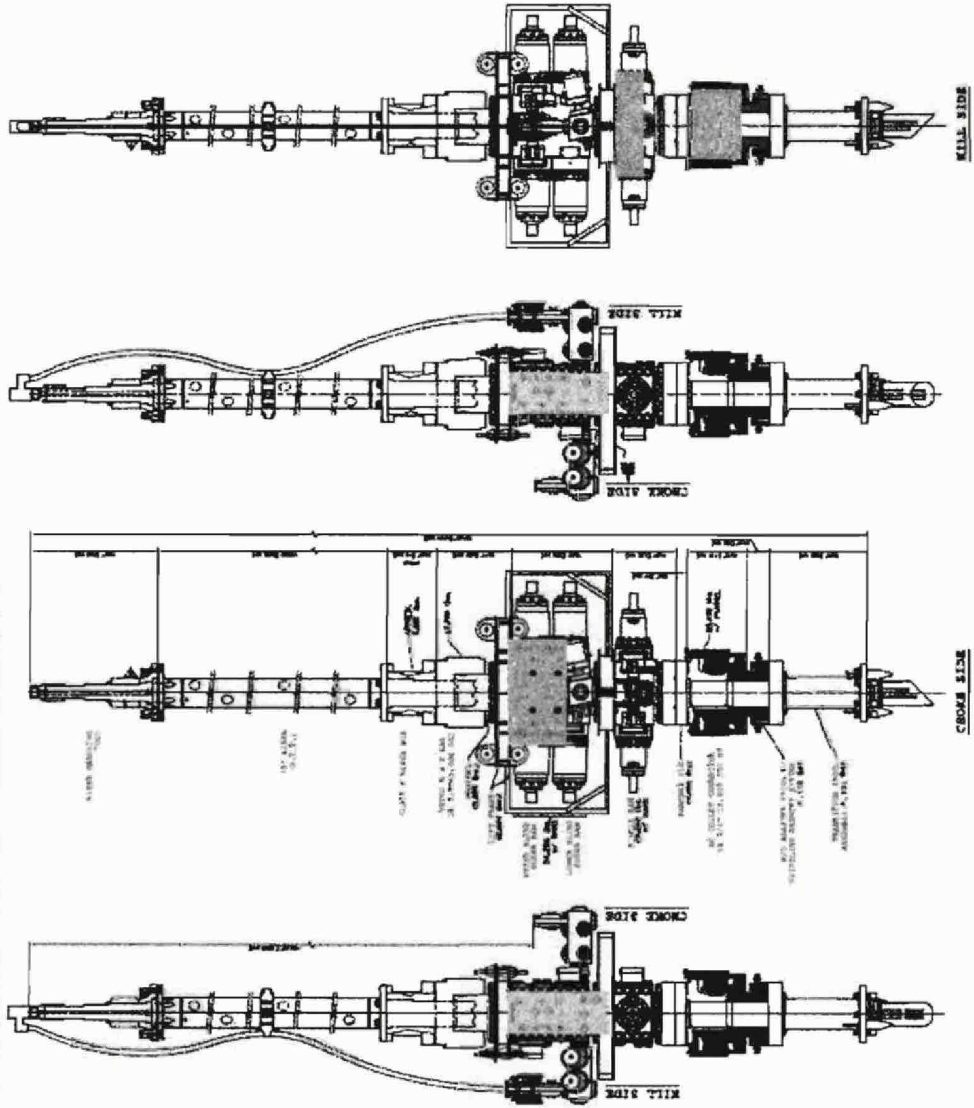
Flange Alignment & Landing

1 x Rounded + 1 x Flattened; Vertical Against Near Wall; 24" Above Flange

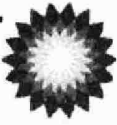




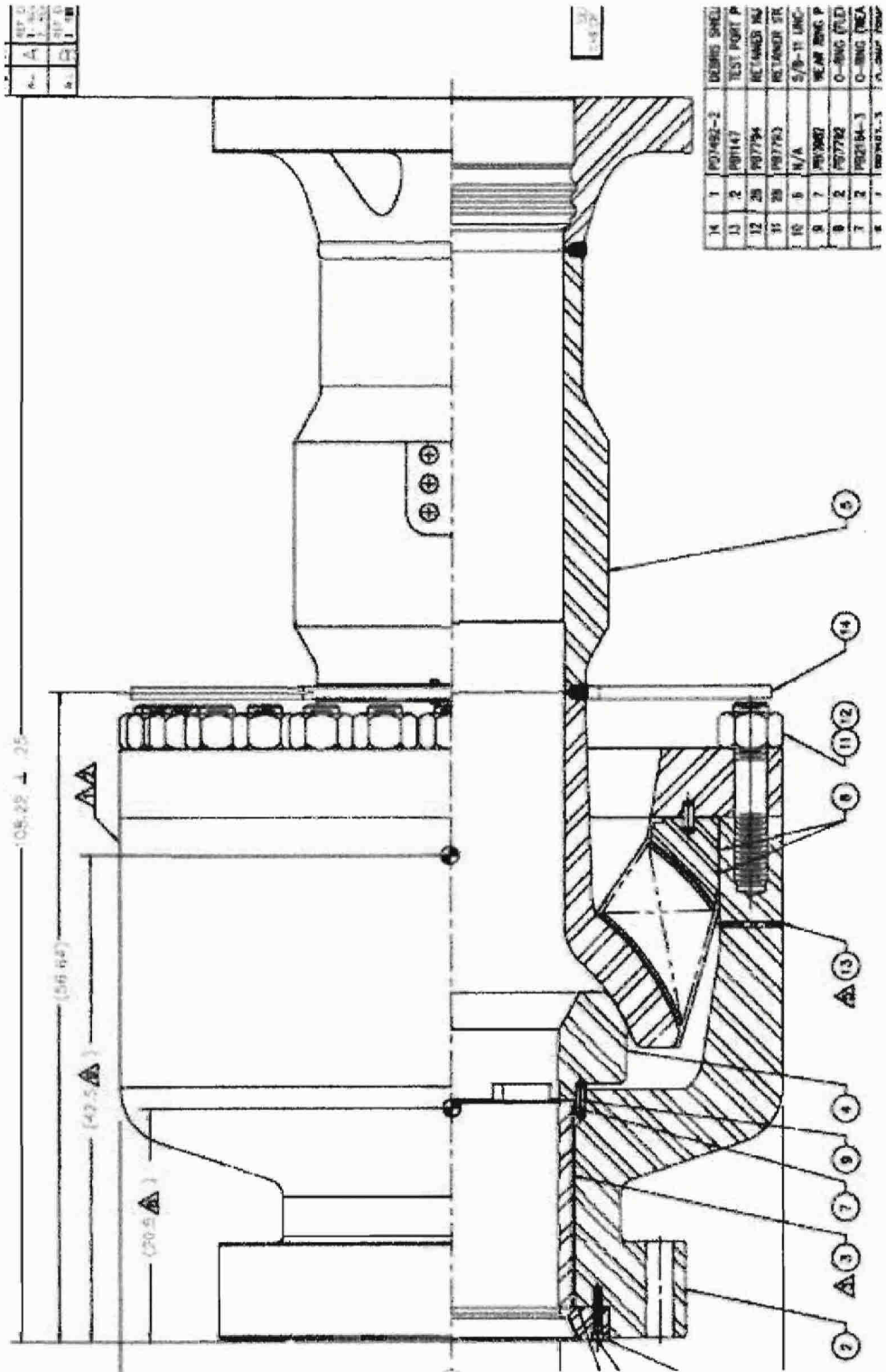
Capping Stack Assembly with Flange Spool



bp



Flex Joint Assembly



Flange Connection Spool – Key Risks

bp



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