bp

Deepwater Horizon Review

Sunday May 23, 2010

Exhibit No.
6124
Worldwide Court Reporters, Inc.

BP-HZN-2179MDL00993066

TREX-06124

Top Kill

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Diagnostics Program

Can we kill the well?

Pumping

1. Mud Momentum Kill
2. Partial Bridge & Continue Mud Momentum Kill
3. Seal & Continue Mud Momentum Kill

Prerequisites Before Starting:

- Model Confirms We Can Kill Well
- 18" Casing Set on Relief Well
- Casing Shears re-closed
- Dispersant Approval
- Kit for Riser Cut
- Containment Tool Kit on Bottom
- HC Connector on DDII Stack

Is the Well Dead?

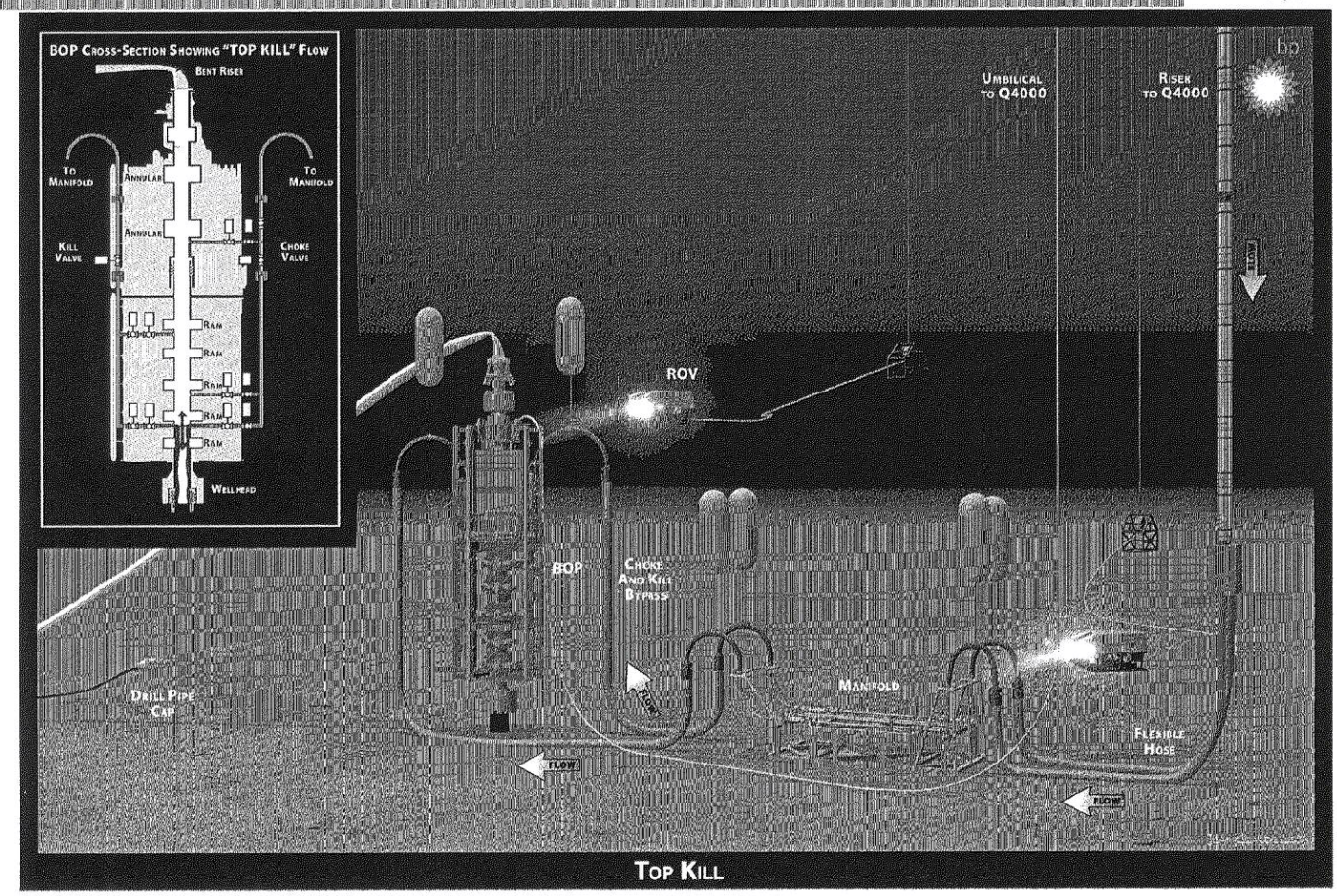
?Flow at Mudline 稀ot Dead

?Static 村 ead

?Suction 村 ead?

Pump Cement

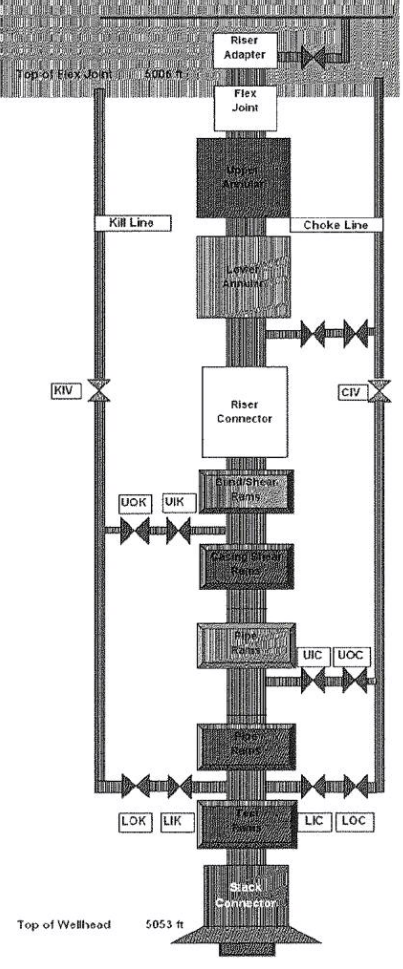
Top Kill Sub-Sea Layout



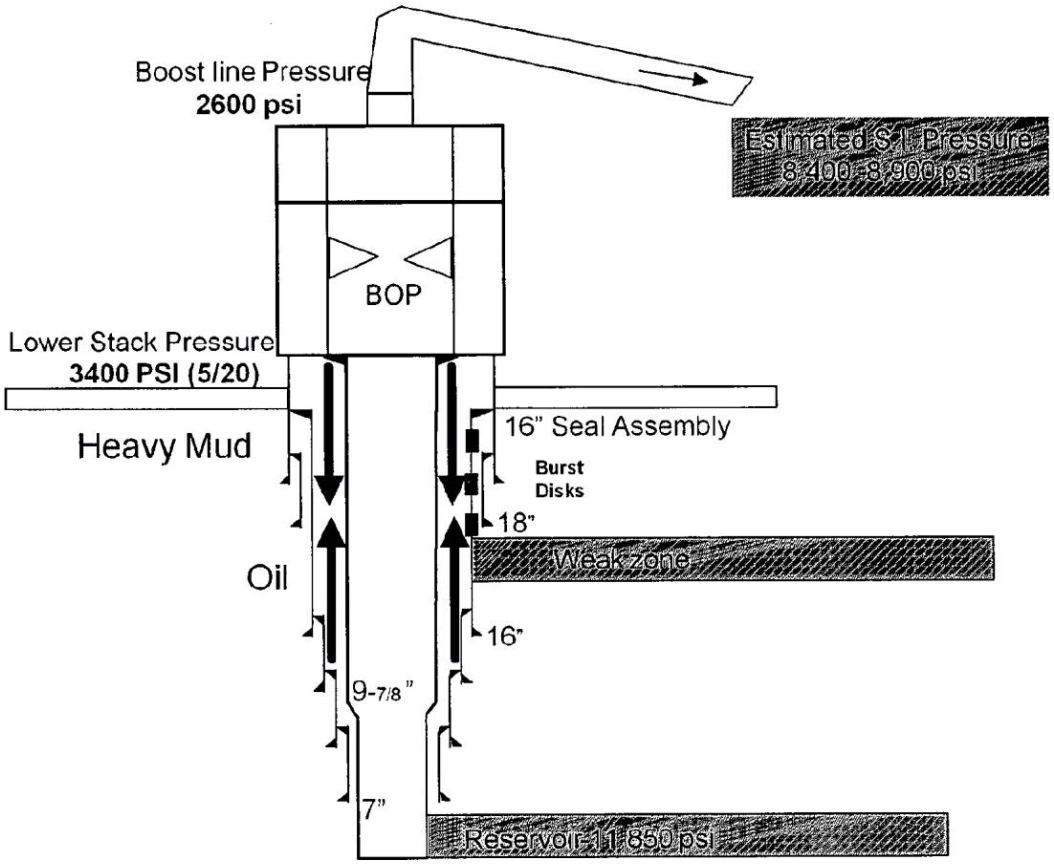
Top Kill

Diagnostic Objectives

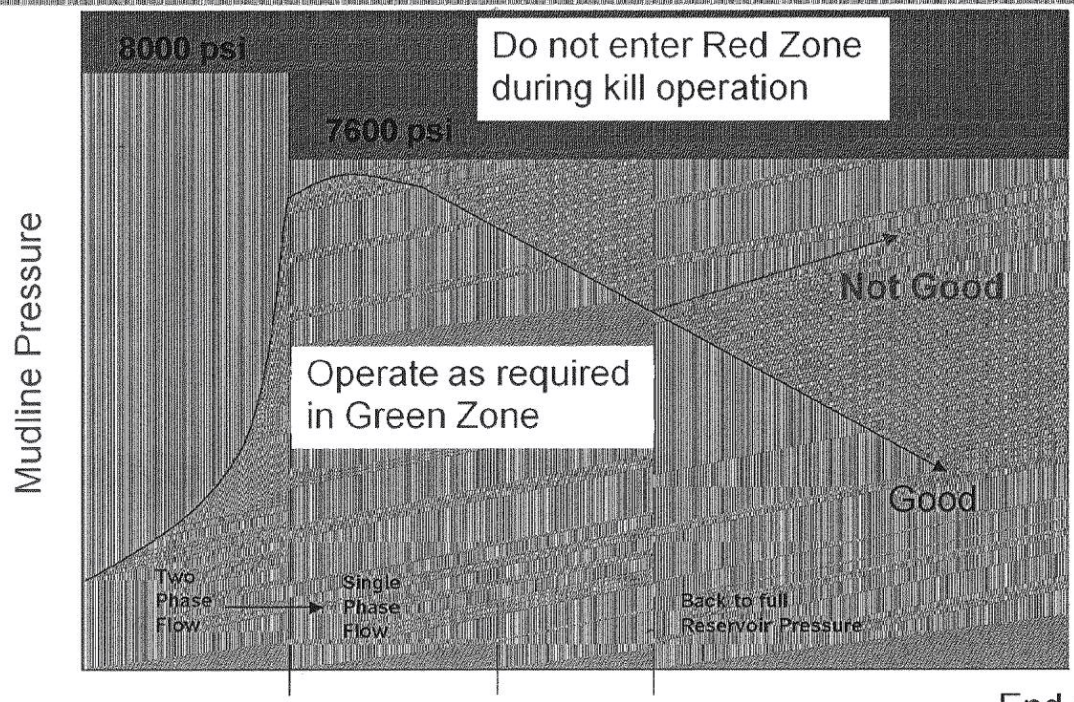
- **Ability to Kill Well**
  - Functionality of valves
  - Blockages in system
  - Number of access points
- **Identify ?P**
  - BOP and LMRP
  - Confidence to kill well
  - Preferred route to pump
- **Identification of Closed Chambers**
  - Drill pipe or not
  - Ram seals or not
- **Restrictions or Limitations to Pump Kill**
  - Alternatives or backups to path
  - Verify installed equipment pressure drops



System Pressure Limitations



Top Kill Pump Schedule Boundaries



	Disk 1	Disk 2	Disk 3		End of Job
Barrels Pumped		300	600	750	8300
Minutes (App)		6	15	20	210

5/21/10

Pump Schedule Potential Outcomes

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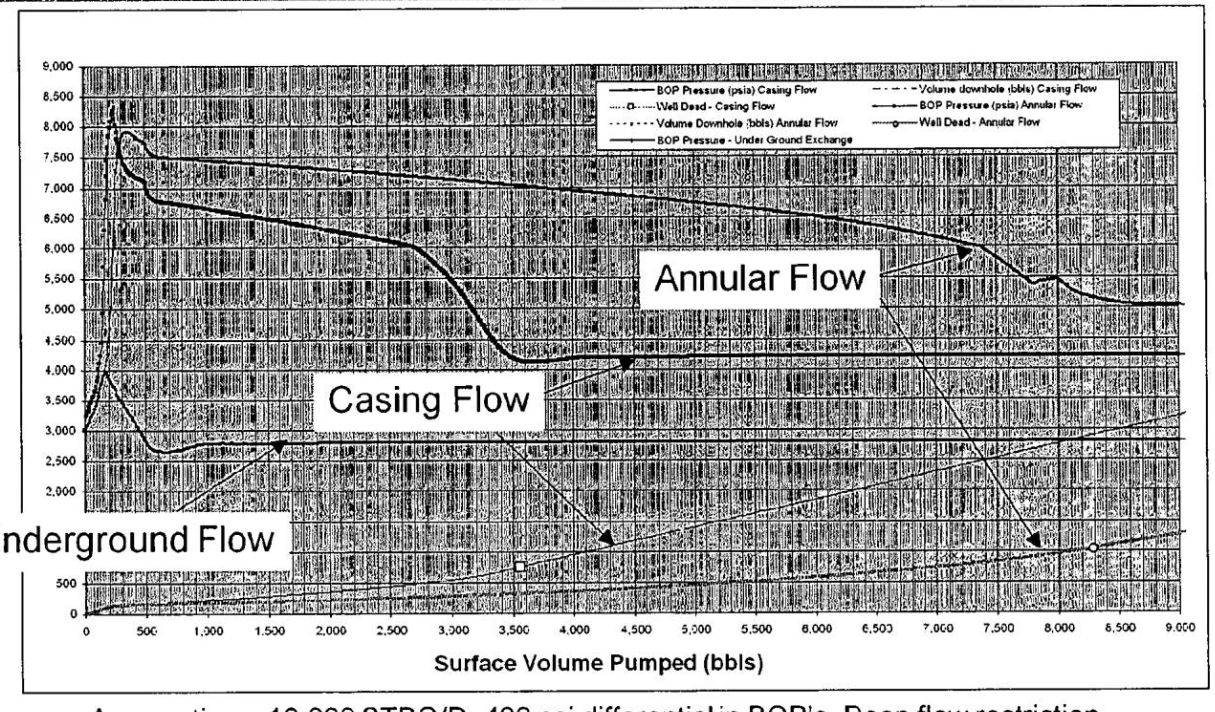
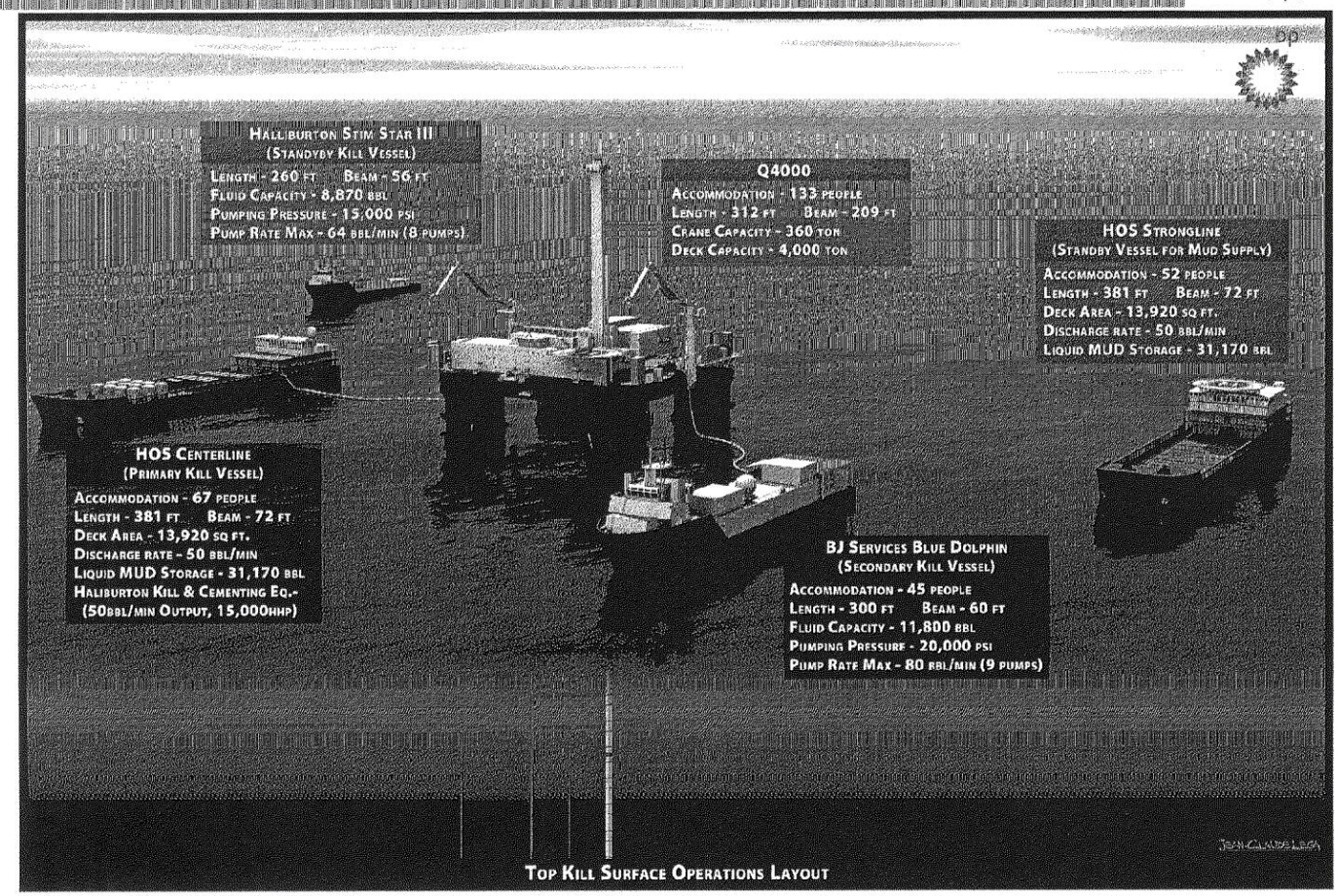


Assumptions: 10,000 STBO/D, 400 psi differential in BOP's, Deep flow restriction
50 BPM for 6 minutes then 40 BPM until finished pumping

Work by: Dr. Ole Rygg, Thomas Selbekk, Kirt Mix, Mike Mullen

The Fleet for the Top Kill



Top Kill Surface Operations Layout

Communications & Command

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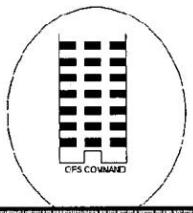
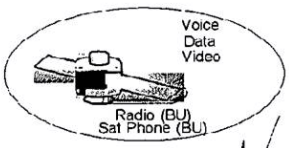


Day	Night
Harry Thierens	Mark Patteson
Charlie Holt	Oliver Tomlins



Q4000

Controls

- ROV
- LDIS
- POD
- Manifold
- SIMOPS
- CMT (BU)
- Logistics

Day	Night
Maniram Sankar	Ricky Trichell

Pumping/Mud Contingency

[redacted]

Blue Dolphin

Day	Night
Pat Wildt	Darrel Loya

Pumping Command

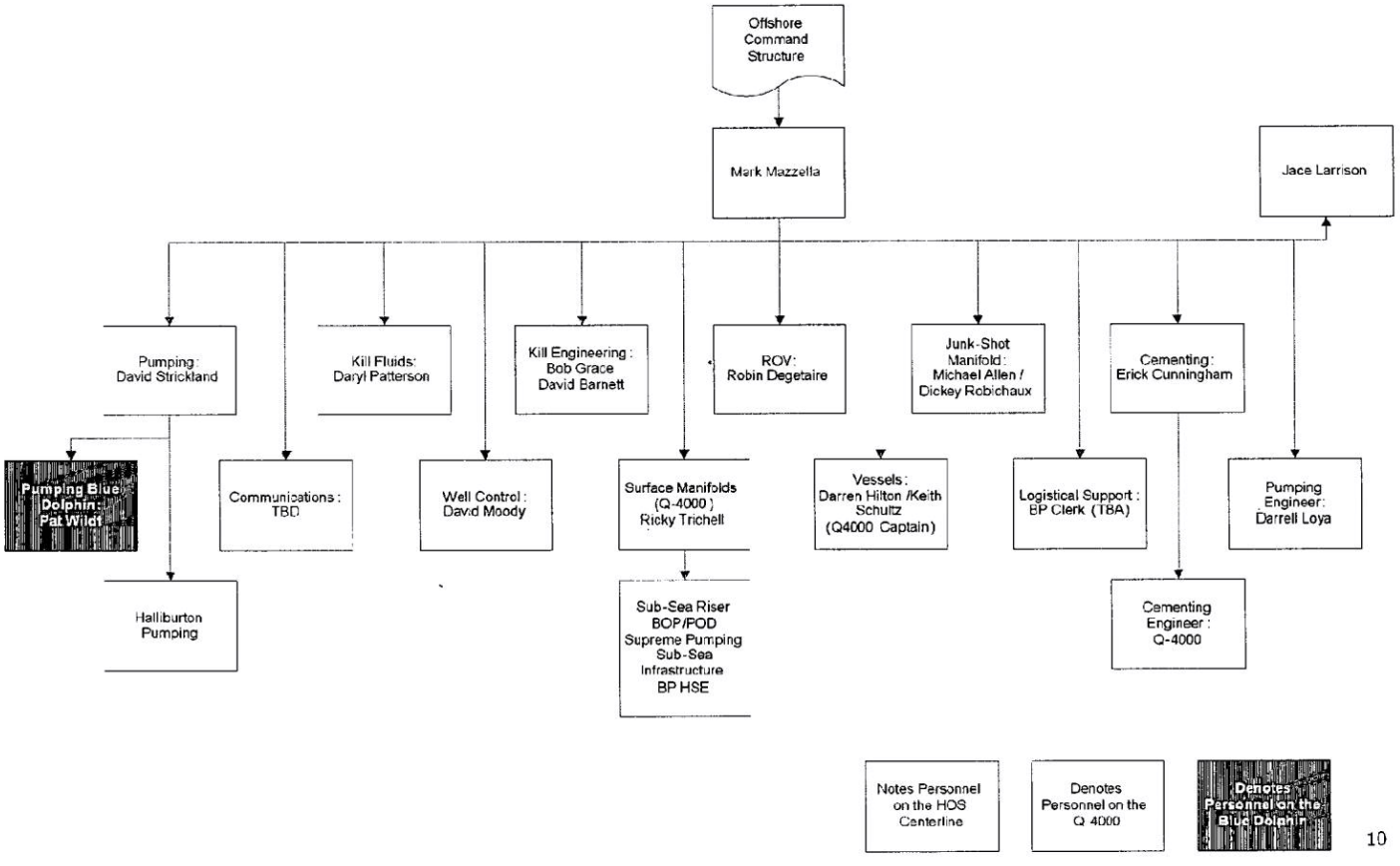
Mud / CMT

[redacted]

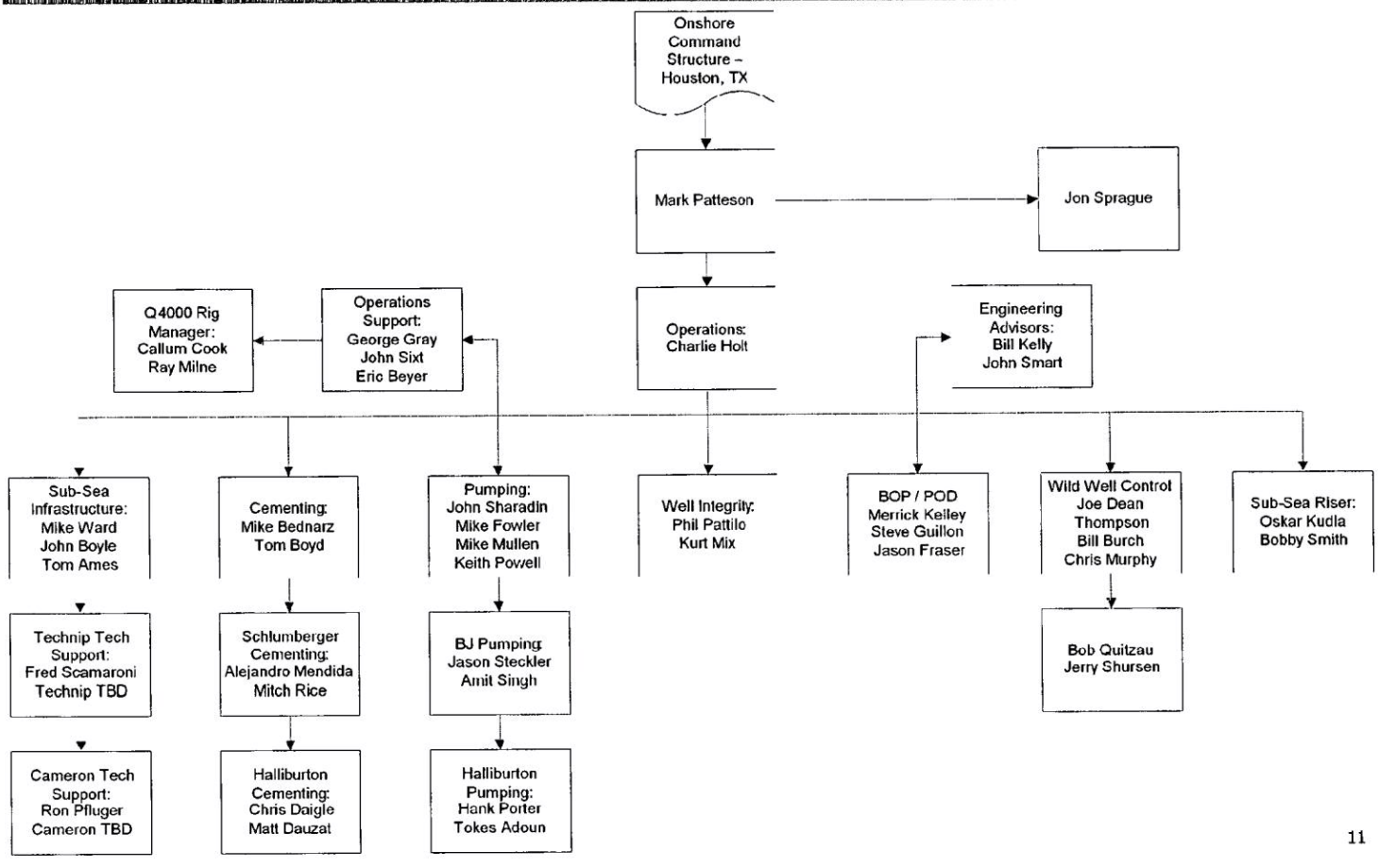
HOS

Day	Night
Mark Mazella	Jace Larrizon

Offshore Organizational Chart



Onshore Organizational Chart



Key Decisions

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- ? Go/No Go
- ? Can we kill the well?
- ? Is the well dead?
- ? Bridging & Sealing BOP
- ? Cementing
- ? BOP on BOP
- ? Cut Riser
- ? Weather Impacts
- ? Changing to BU boat
- ? Riser kink failure
- ? Working the hours of darkness

痛on扶 Make It Worse Top Risks

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?Broach at the Seabed

- ➢15% SF on Burst Disk
- ➢Pump Schedule

?Do Not Kill Well, More Oil Flowing

- ➢Erosion/Kink

?People, Pressure, SIMOPS

- ➢Operational Control
- ➢Organization
- ➢Communications

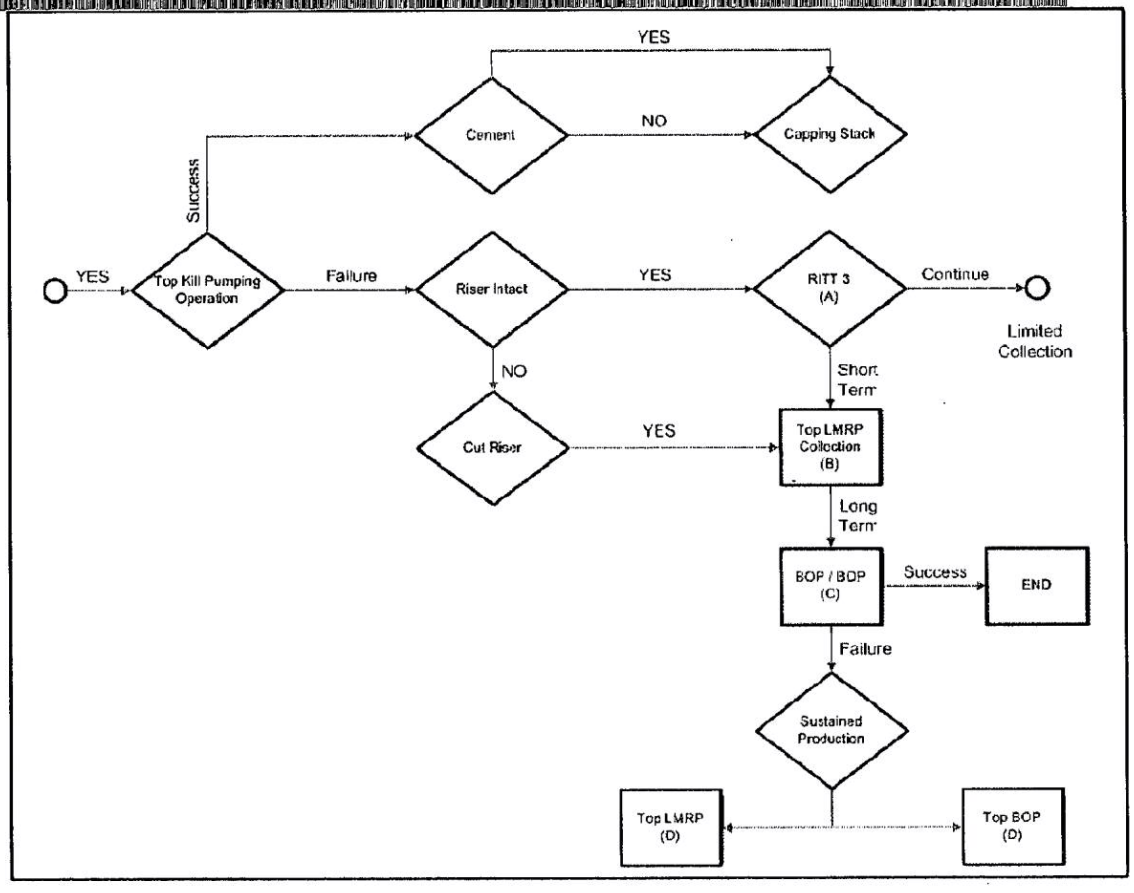
?Pressure Data Reliability

- ➢5 Sources SS
- ➢Surface to SS Pressure Relationship Finger Printing

?Impact Relief Well Success

?Public Perception of Failure

Decision Tree



Subsea Containment

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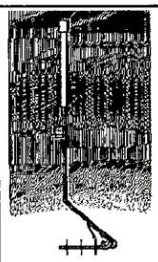
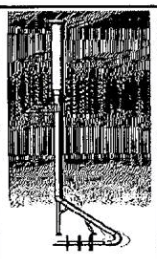
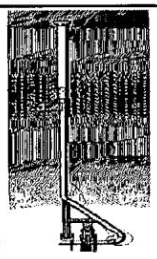
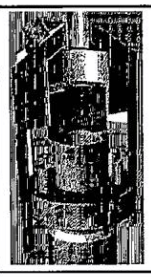
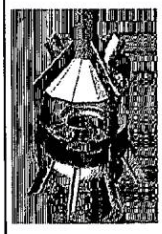
Option	RITT 1	RITT 2	(A) RITT 3	Hot Tap	Top Hat End of Riser	(B) LMRP Cap	BOP Cap
Location	Operational	Seafloor	Construction	Construction	Seafloor	Construction	Construction
							
Execution Issues	?Collection is not 100%	?Collection is not 100%	?Collection is not 100%	?Drill and seal tap ?Crimp Riser ?Seals	?Collection is not 100% ?Potential for hydrate formation ?Pipe in Trench	?Hydrate	?Hydrate ?LMRP Removal
Risk	?Low Risk - Proven	?Low Risk - Proven	?Low Risk - Proven	?Moderate	?Tool lift off	?Tool lift off	?Tool lift off

Valve Stack

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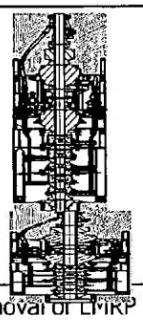
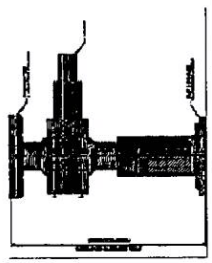
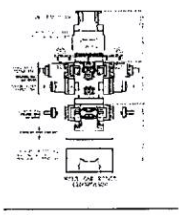
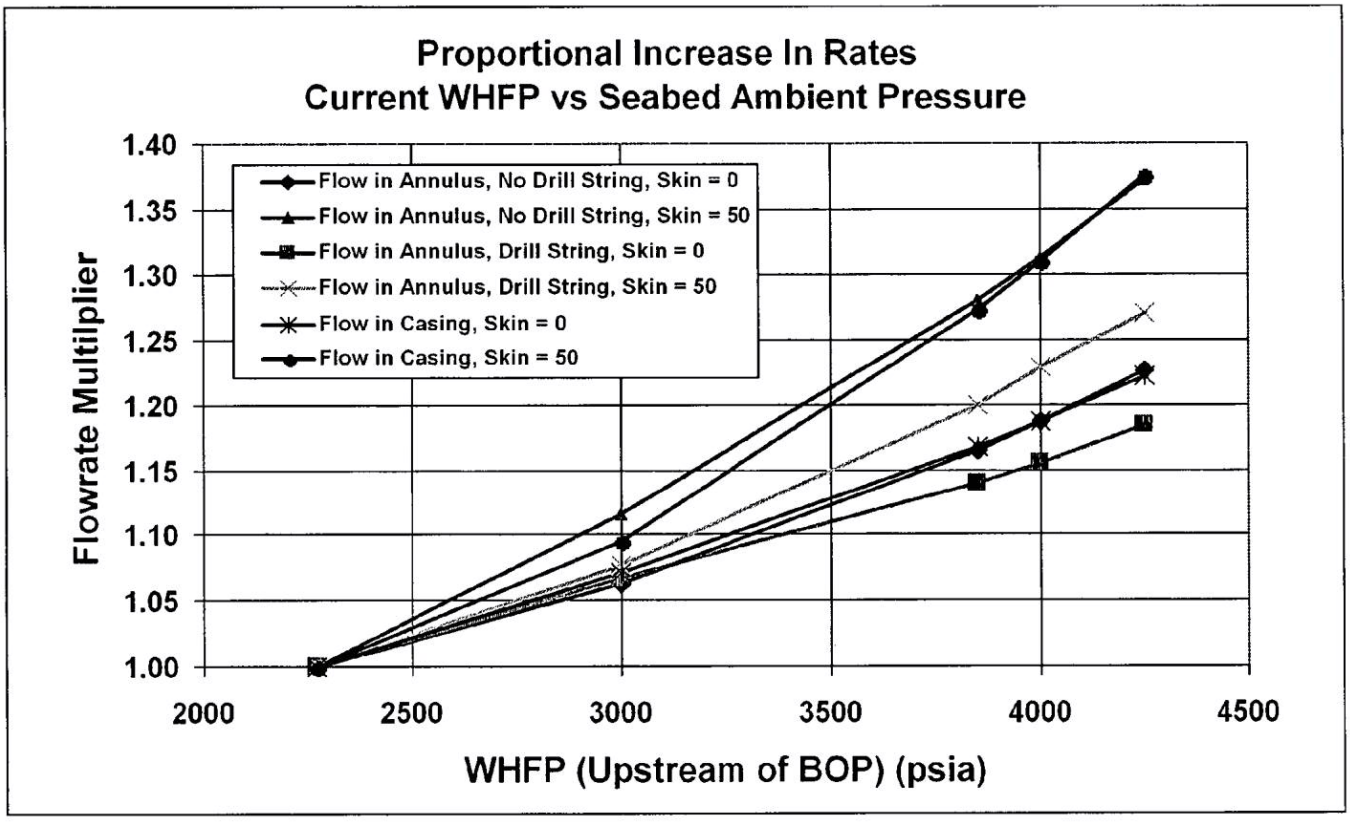
Option	(C) BOP on BOP	(D) Flex Joint or BOP Overshot	Swing Valve on LMRP	Cap Stack on LMRP
				
Execution Issues	?Removal of LMRP ?Hydrate formation ?Drill pipe presence? ?Bleed Pressure	?Hydrate formation ?Seals	?More complicated than BOP on BOP ?ROV operations ?Hydrate formation ?Drill pipe presence?	?More complicated than BOP on BOP ?ROV operations ?Hydrate formation ?Drill pipe presence?
Risk	Breach of 18	Breach of 18	Breach of 18	Breach of 18

Potential Flowrate Multiplier



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