

**From:** Caldwell, Jason  
**Sent:** Sun May 16 17:45:23 2010  
**To:** 'troy.trosclair@mms.gov'  
**Subject:** 16 May Science Meeting Slide Pack  
**Importance:** Normal  
**Attachments:** Science Mtg May 16 2010.pdf

Attached are the slides for this afternoon's meeting.

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**From:** Fleckman, Kim B.  
**Sent:** Sunday, May 16, 2010 11:57 AM  
**To:** Rediger, Tony; OConnor, Rod; hunsaker61@comcast.net  
**Cc:** Verchere, Christina C; Maguire, Niall J; Caldwell, Jason  
**Subject:** 16 May Science Meeting Slide Pack

All,

Attached please find the slide pack which will be used in today's Science meeting. Please distribute to those who will be dialing in. BP participants will have copies and will be in the room.

2pm EDT / 1pm CDT  
Dial-in Details:  
(877) 806-9184 / Conference ID# is 76271682

Kind regards,

Kim

**Kim Fleckman**  
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# Deepwater Horizon Review

Sunday May 16, 2010

## Recommendation



OPTION: Recommend a Dynamic/Momentum Kill with a blend of 16.4 lb and 14.2 lb water based mud

BASIS:

- Low Risk, High Reward
- Base of BOP pressure
- Does not pressure burst disks
- If unsuccessful no regrets
- Multiple attempts possible

## Governing Question



What is the shut in pressure that would be expected in the BOP & LMRP?

DATA: Reservoir pressure is 11,850 psi at 13,047' below the mud line, fluid density from samples

CALCULATE: We believe the pressure would be between 8400 and 8900 psi.

UNCERTAINTY: in calculation due to reservoir fluid composition and remote possibility of other sources

REVIEW: Three independent groups from Sandia, Los Alamos, and Livermore are verifying calculations.

## Governing Question



What are the implications of a 8900 psi shut in pressure?

DATA: Casing design steel strength, casing tests during drilling, rupture disk ratings

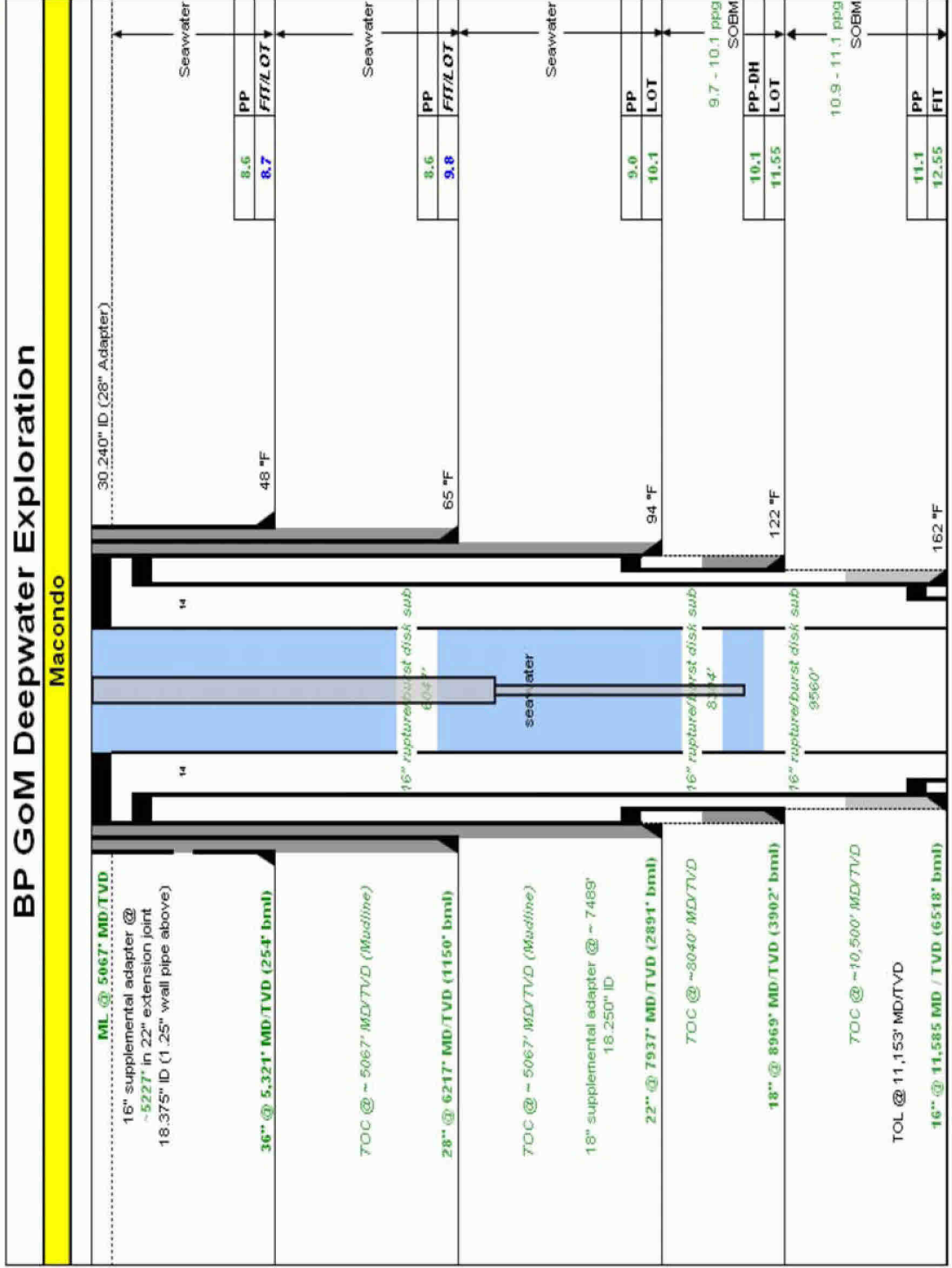
CALCULATE: 8900 psi shut in pressure is below the 16" burst disk rupture pressure by 1,000 psi +/-.

IMPLICATIONS: If rupture disks fail, broach of 18" shoe and potential hydrocarbons to sea floor

UNCERTAINTY: External pressure load

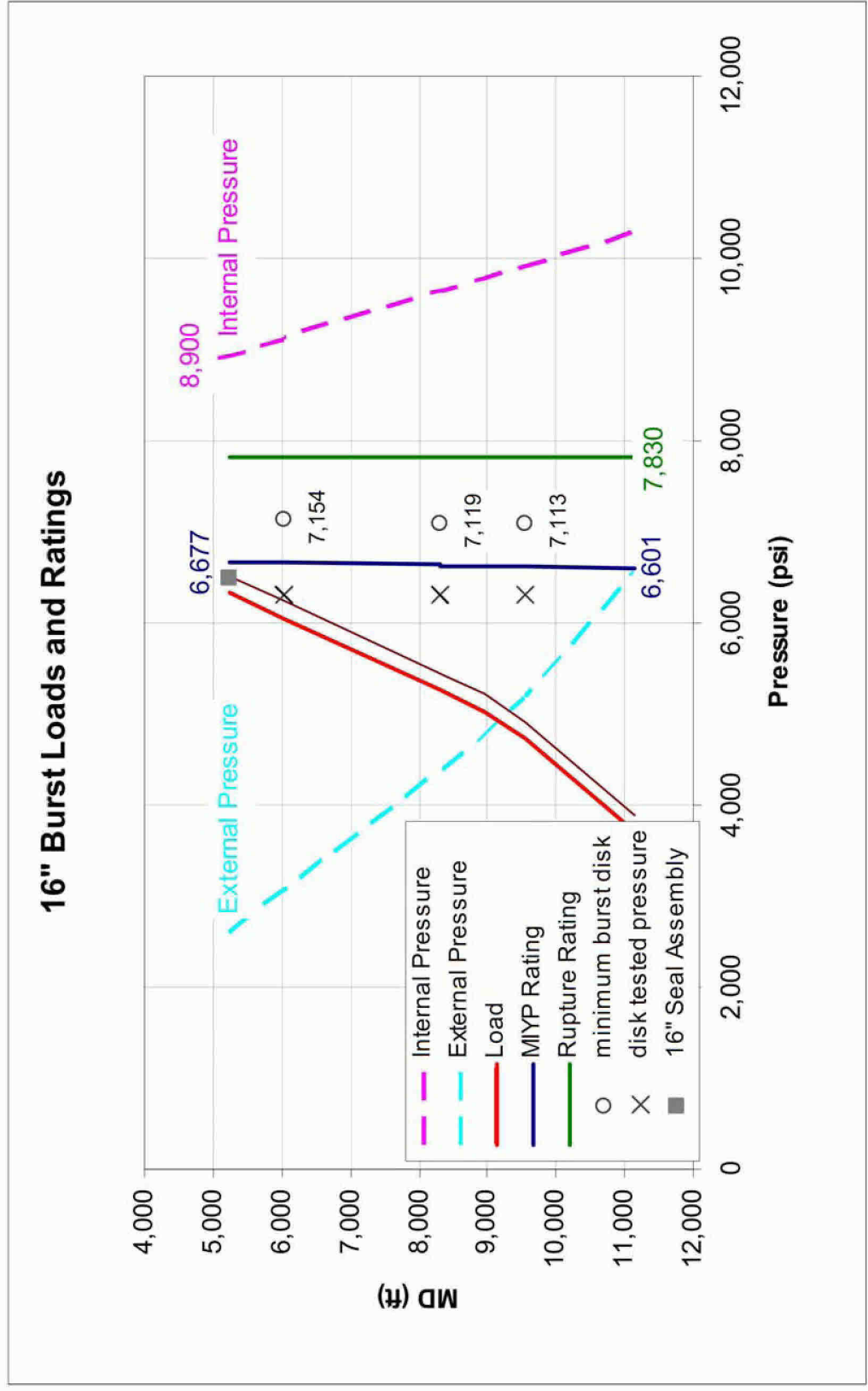
REVIEW: National Lab is reviewing likely external pressure on 16" casing under static conditions.

# MC 252#1 Wellbore Schematic





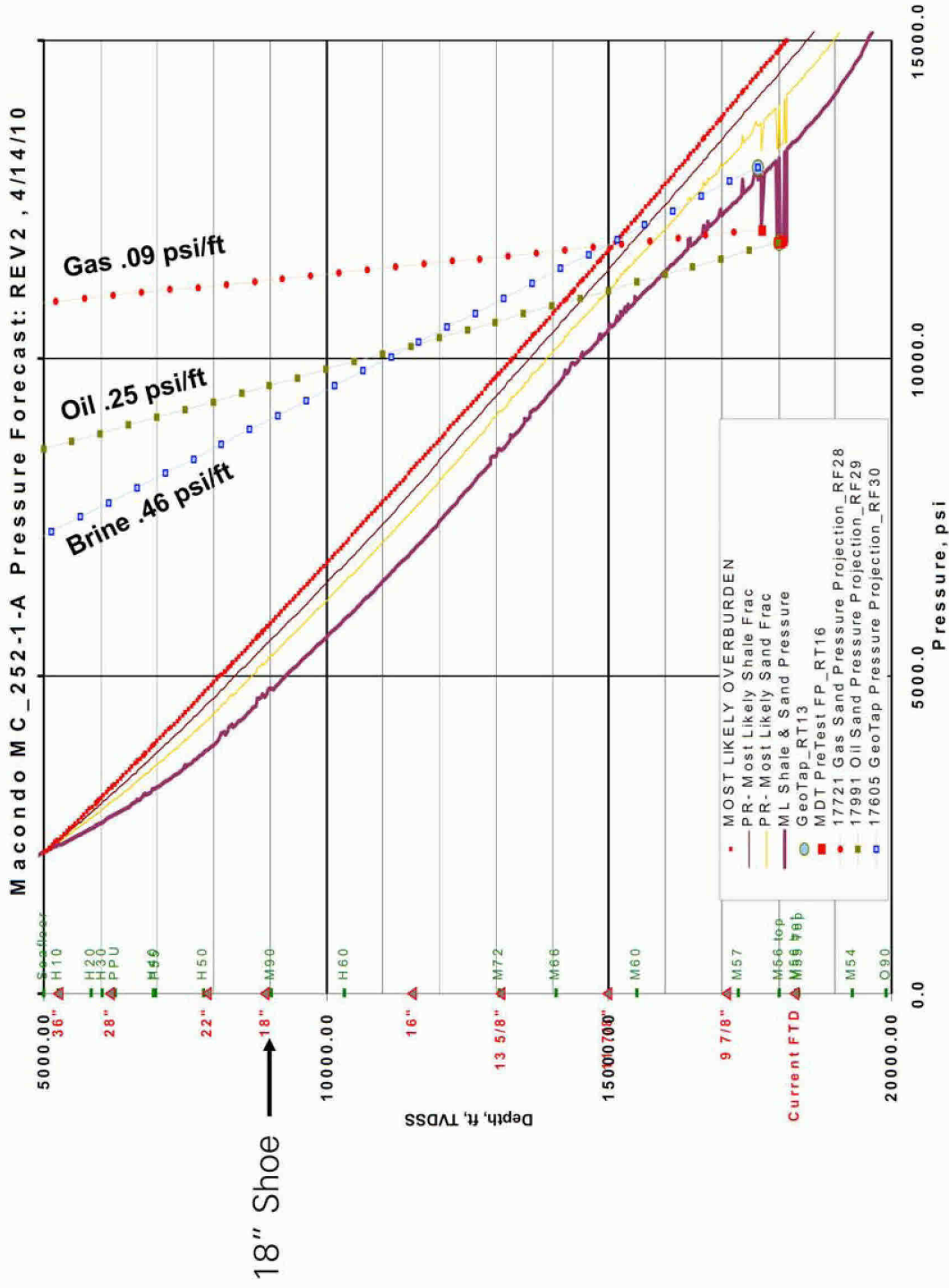
# 16" casing implications of SI well head pressure



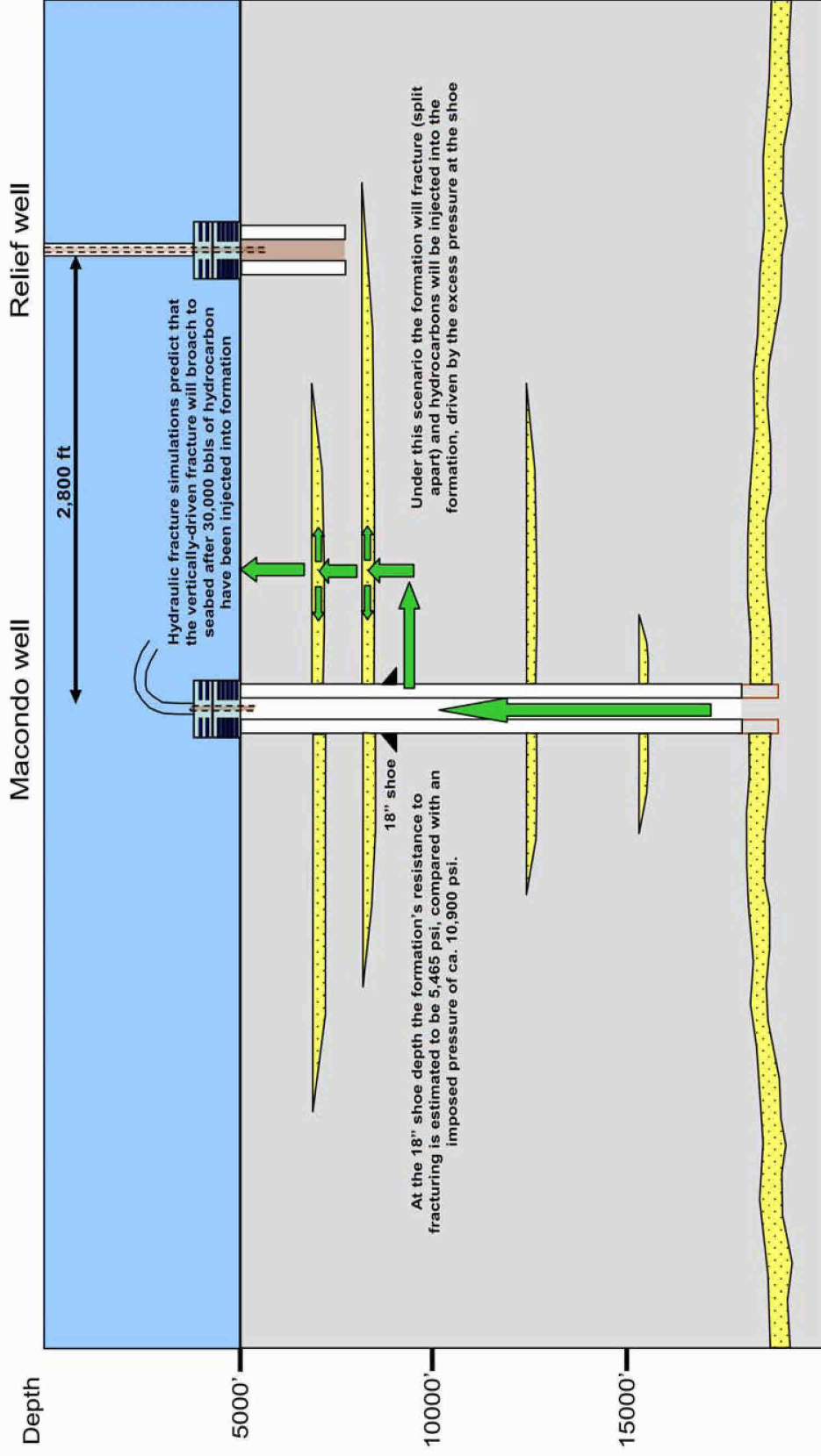




# 18" shoe implications – pressure profiles



# 18" shoe implications – fracturing pathways to sea floor



## Governing Question



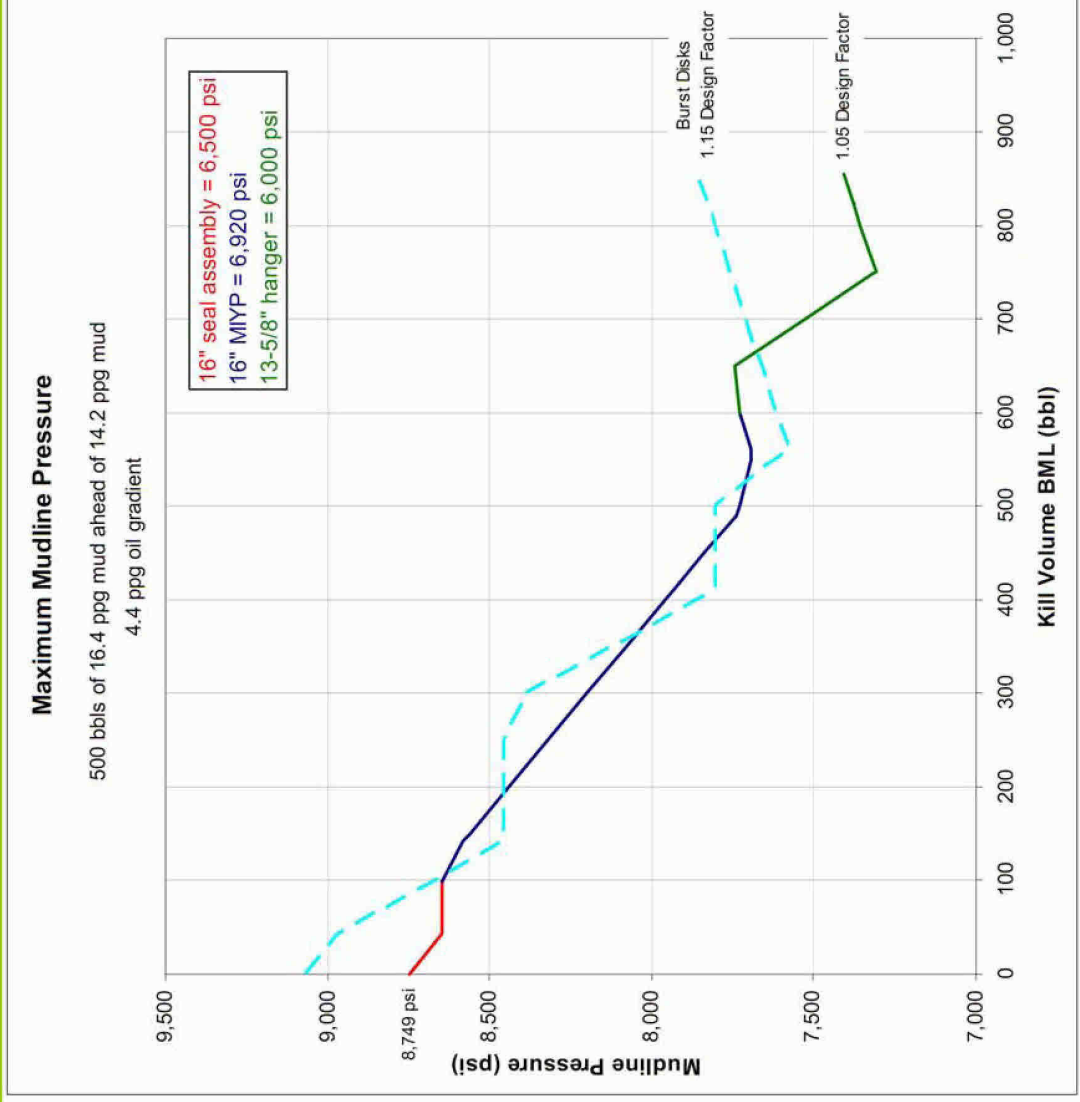
What are the implications of the latest pressure data at the top of the LMRP and base of the BOP?

DATA: 2650 psi at the top of LMRP, 3100 psi at base of BOP (decrease of 700 psi in one week)

CALCULATE: The likelihood of a successful dynamic or momentum kill increased significantly.

REVIEW: National Lab (Red Team) expected to conduct a dynamic kill pumping schedule review as early as Monday.

# Maximum Allowable Pressure



# Option Summary



Option	Execution Issues	Risk
Dynamic/Momentum Kill	<ul style="list-style-type: none"> <li>● Yellow pod function</li> <li>● Subsea system integrity</li> </ul>	Limited downside if pump pressure managed
BOP on BOP	<ul style="list-style-type: none"> <li>● Removal of LMRP</li> <li>● Hydrate formation</li> <li>● Drill pipe presence?</li> </ul>	Breach of 18"
Junk Shot then Kill	<ul style="list-style-type: none"> <li>● Yellow pod function</li> <li>● Subsea system integrity</li> <li>● Choke and kill line configuration</li> </ul>	Pressure increase in BOP before kill
Valve on top of LMRP	<ul style="list-style-type: none"> <li>● More complicated than BOP on BOP</li> <li>● ROV operations</li> <li>● Hydrate formation</li> <li>● Drill pipe presence?</li> </ul>	Breach of 18"