From: Fleckman, Kim B.
Sent: Sun May 16 15:39:31 2010
To: hunsaker61@comcast.net
Cc: Caldwell, Jason
Subject: RE: Slides for May 16 Science Meeting
Importance: Normal
Attachments: Science Mtg May 16 2010.pdf

<<...>>

From: Fleckman, Kim B.
Sent: Sunday, May 16, 2010 10:14 AM
To: 'tohunte@sandia.gov'
Cc: Caldwell, Jason
Subject: Slides for May 16 Science Meeting

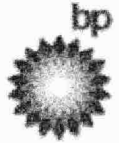
<< File: Science Mtg May 16 2010.pdf >>
Tom,
Attached are the slides James Dupree will review with you at 10:30am CST.
Kind regards,
Kim

Kim Fleckman
E&P Executive Office
BP ~ 501 WestLake Park Blvd. ~ Houston, TX 77079
WestLake I ~ Room 15.179
Tel: 281-366-3062 ~ Email: kim.fleckman@bp.com

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

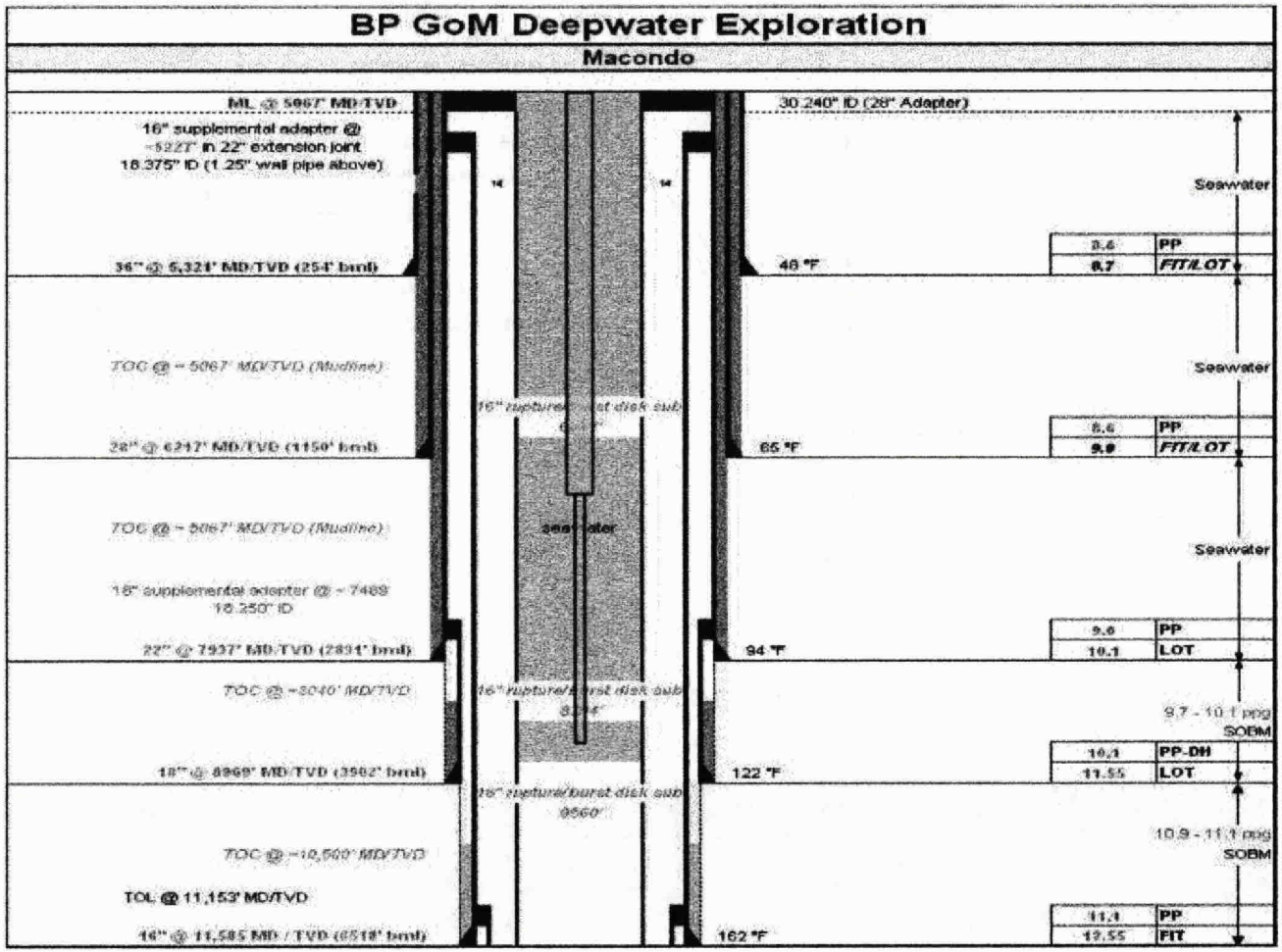
CALCULATE: 8900 psi shut in pressure is below the 16" burst disk rupture pressure by 1,000 psi +/-.

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

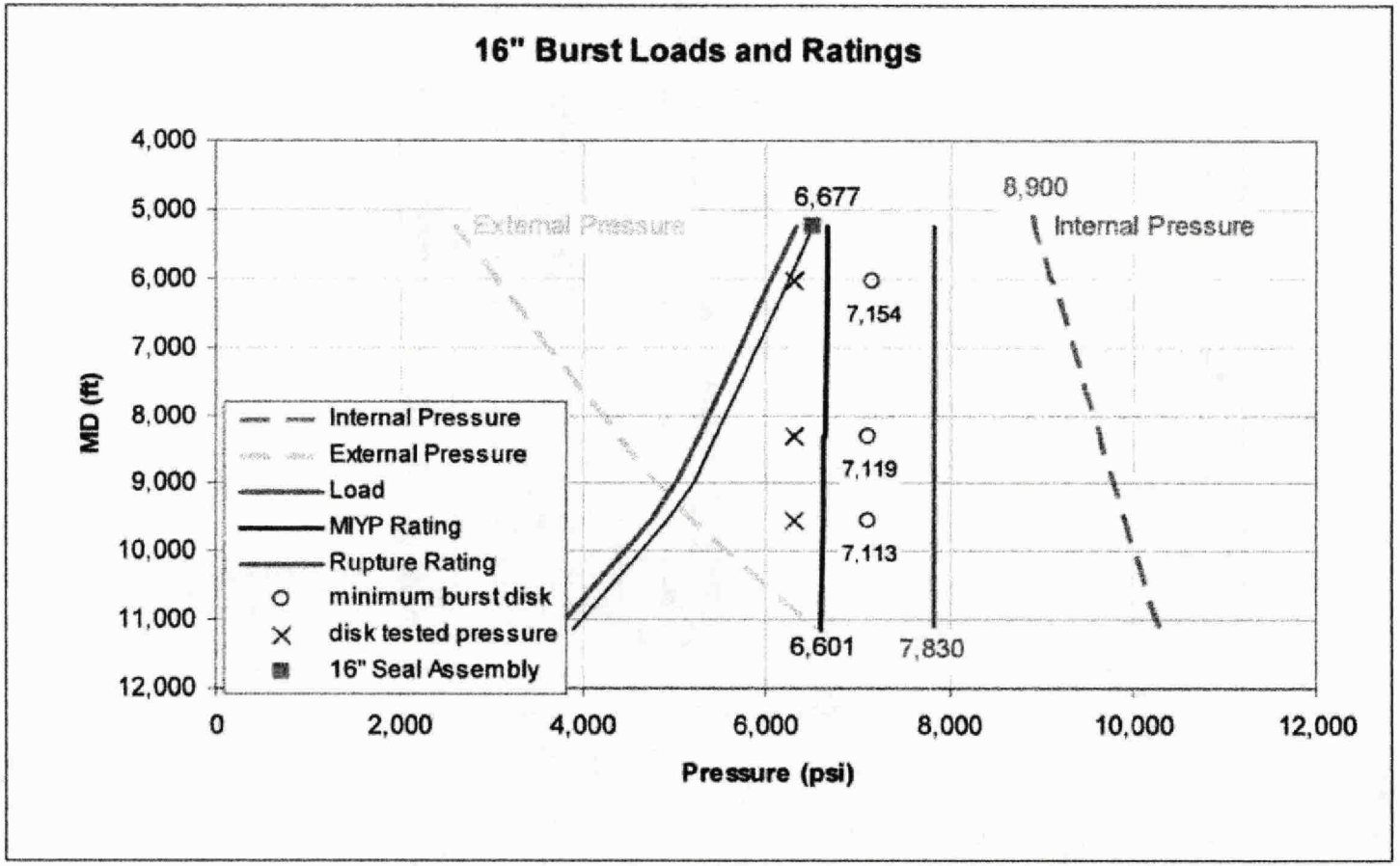
UNCERTAINTY: External pressure load

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

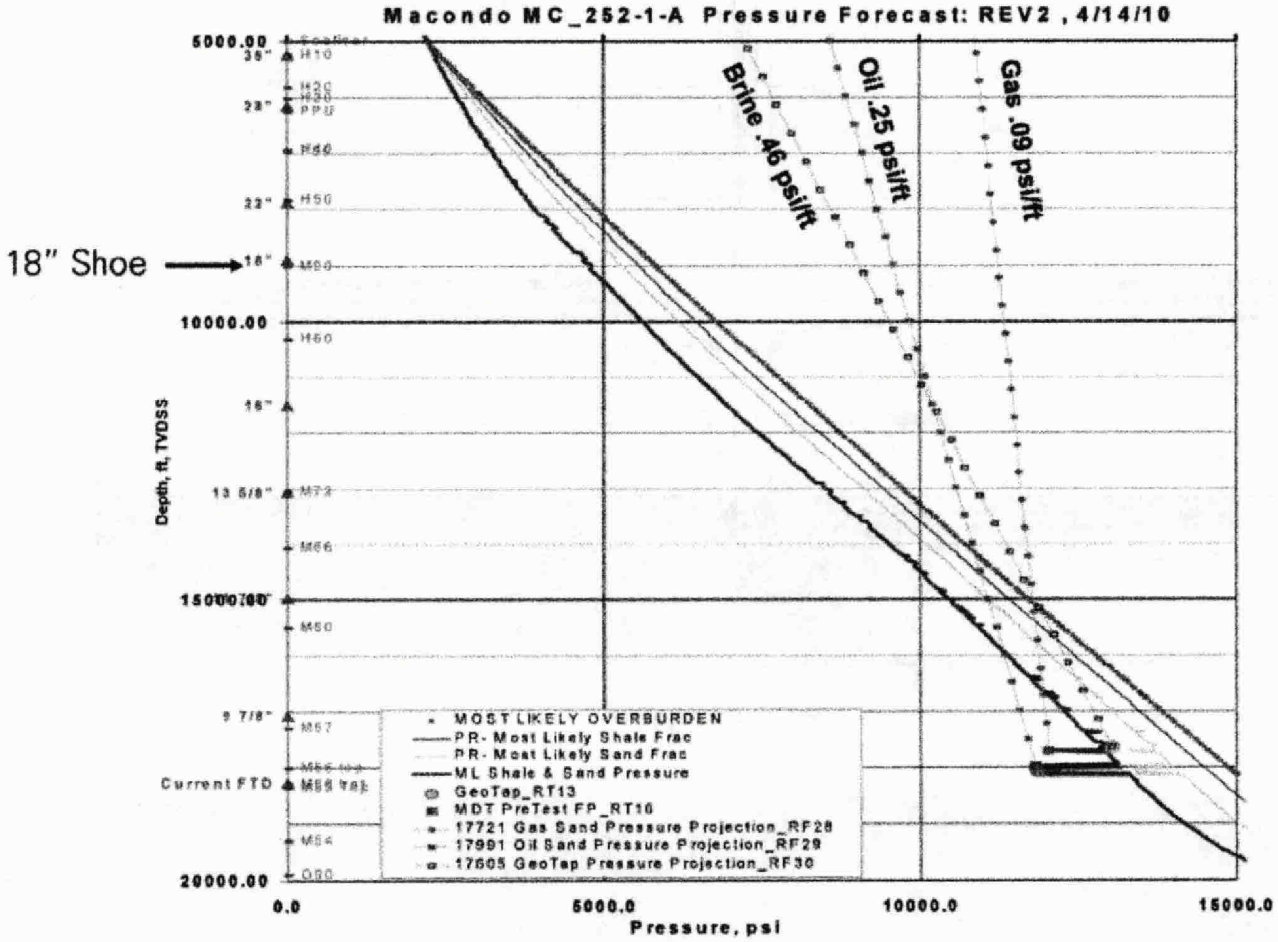
MC 252#1 Wellbore Schematic



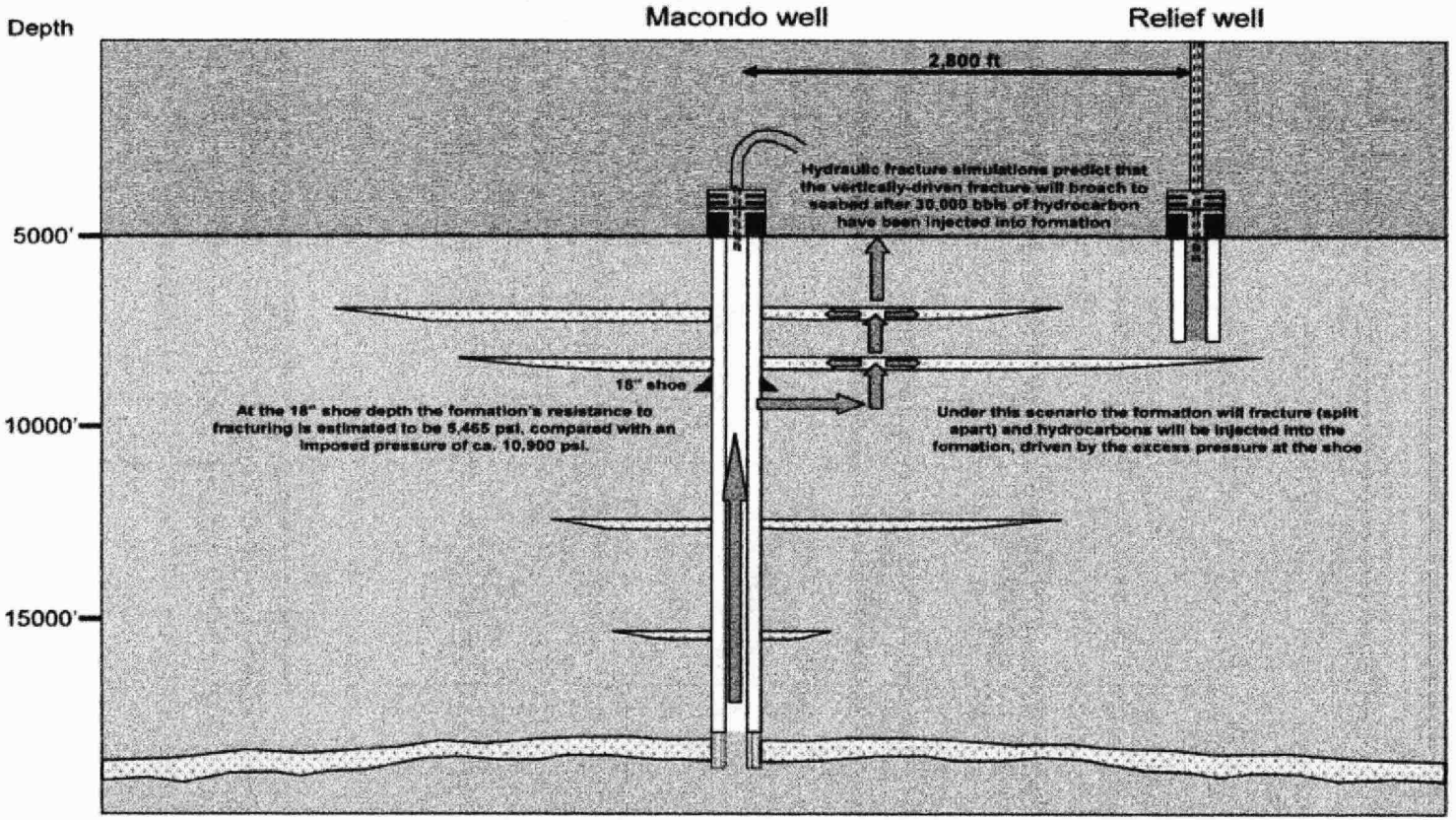
16″ casing implications of SI well head pressure



18" shoe implications – pressure profiles



18" shoe implications – fracturing pathways to sea floor



Governing Question

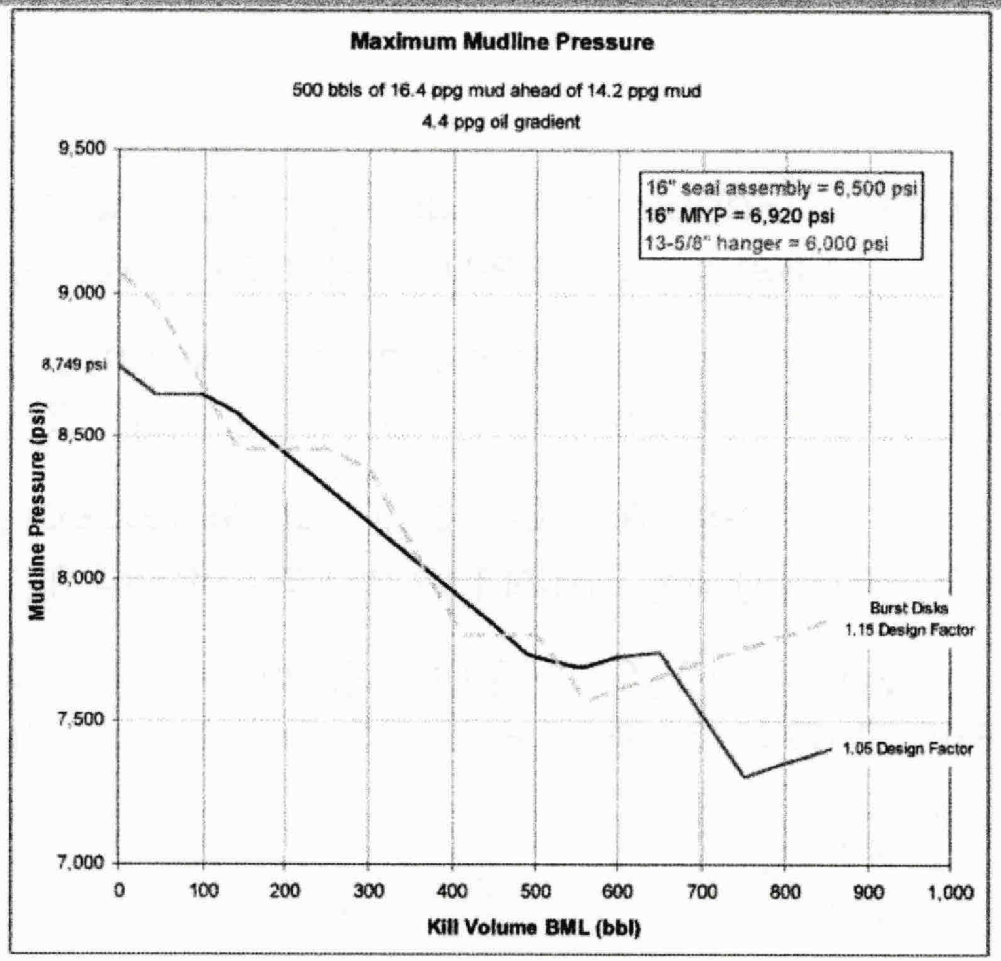
What are the implications of the latest pressure data at the top of the LMRP and base of the BOP?

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	•Yellow pod function •Subsea system integrity	Limited downside if pump pressure managed
BOP on BOP	•Removal of LMRP •Hydrate formation •Drill pipe presence?	Breach of 18"
Junk Shot then Kill	•Yellow pod function •Subsea system integrity •Choke and kill line configuration	Pressure increase in BOP before kill
Valve on top of LMRP	•More complicated than BOP on BOP •ROV operations •Hydrate formation •Drill pipe presence?	Breach of 18"

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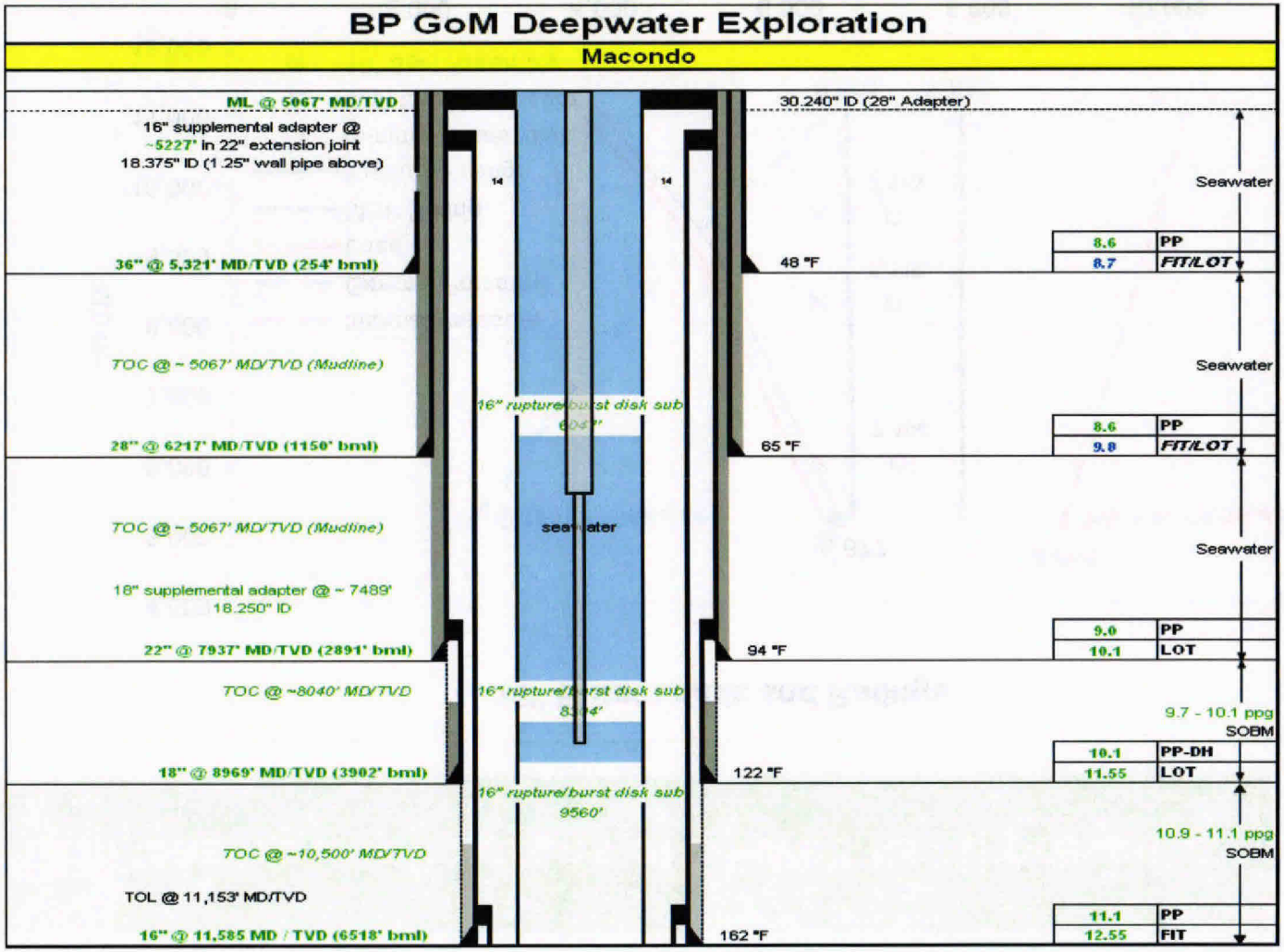

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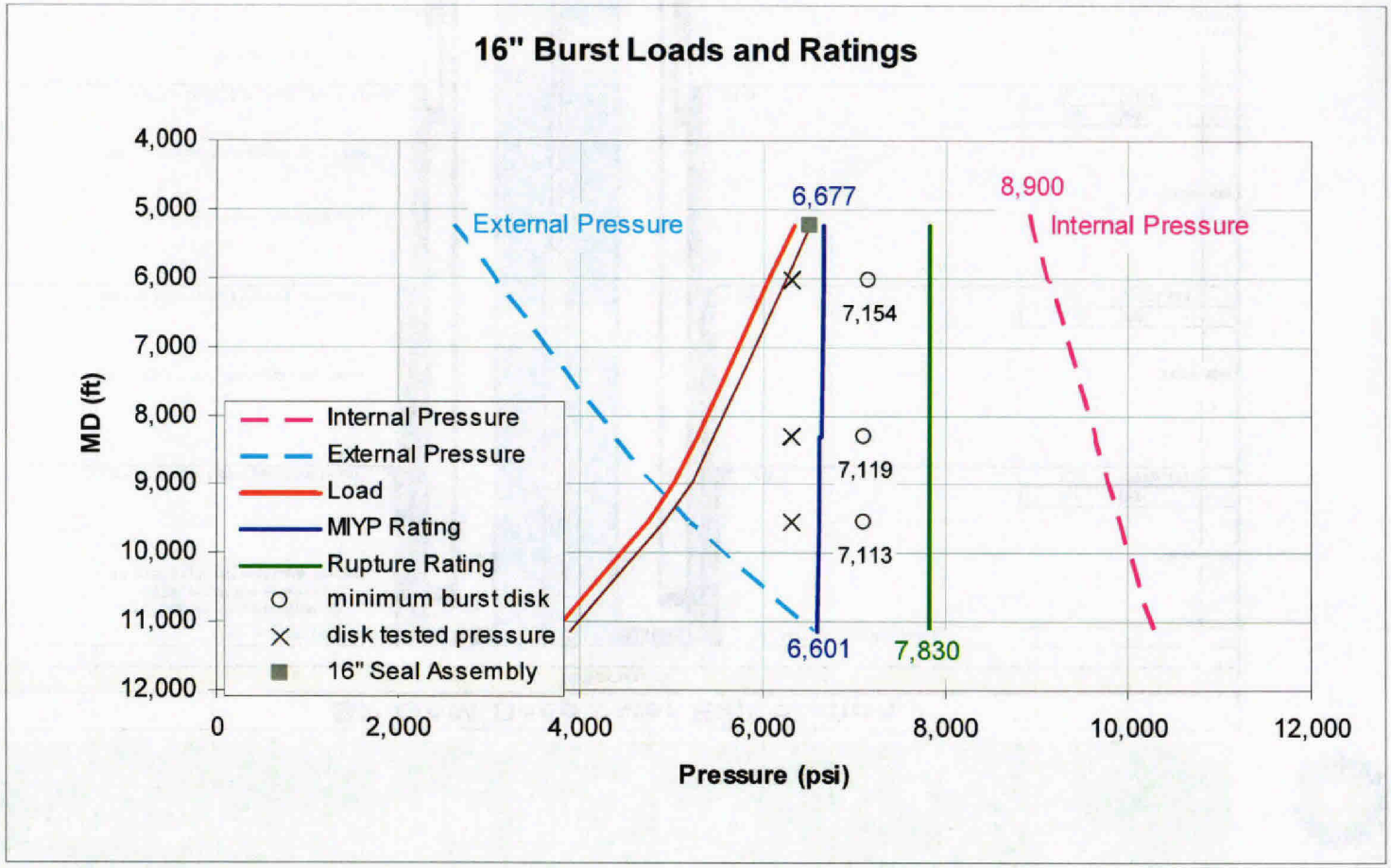

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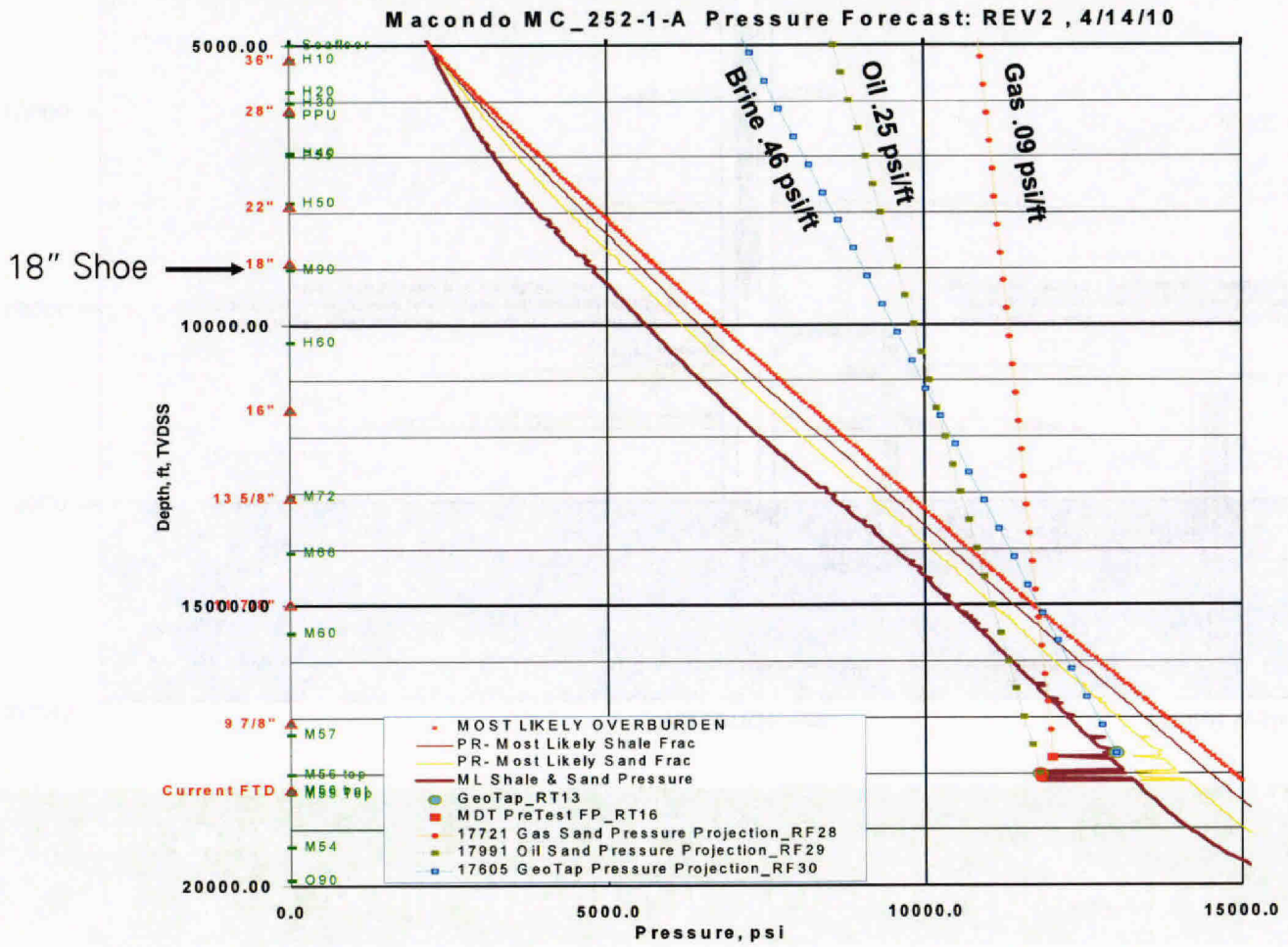

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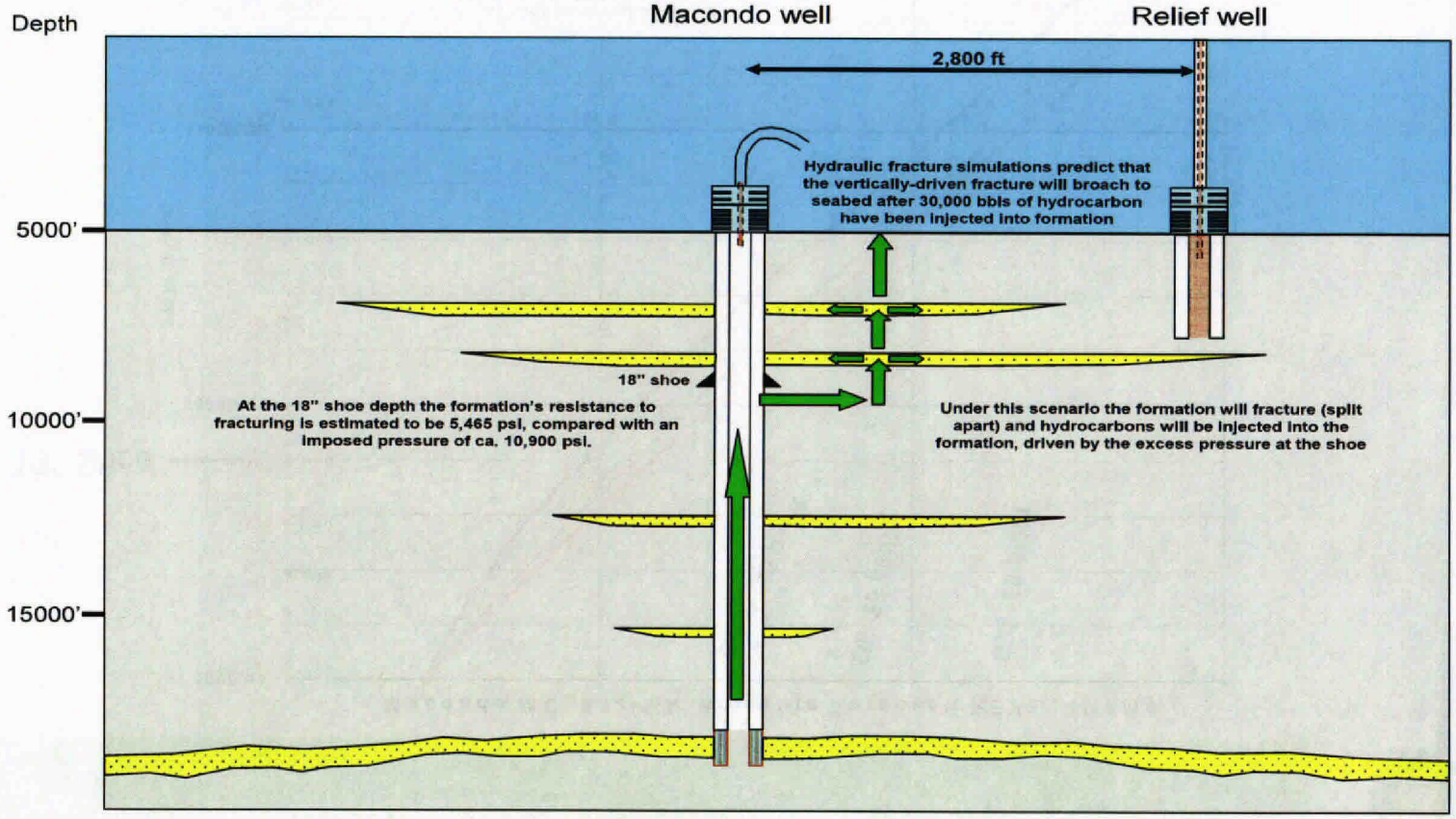

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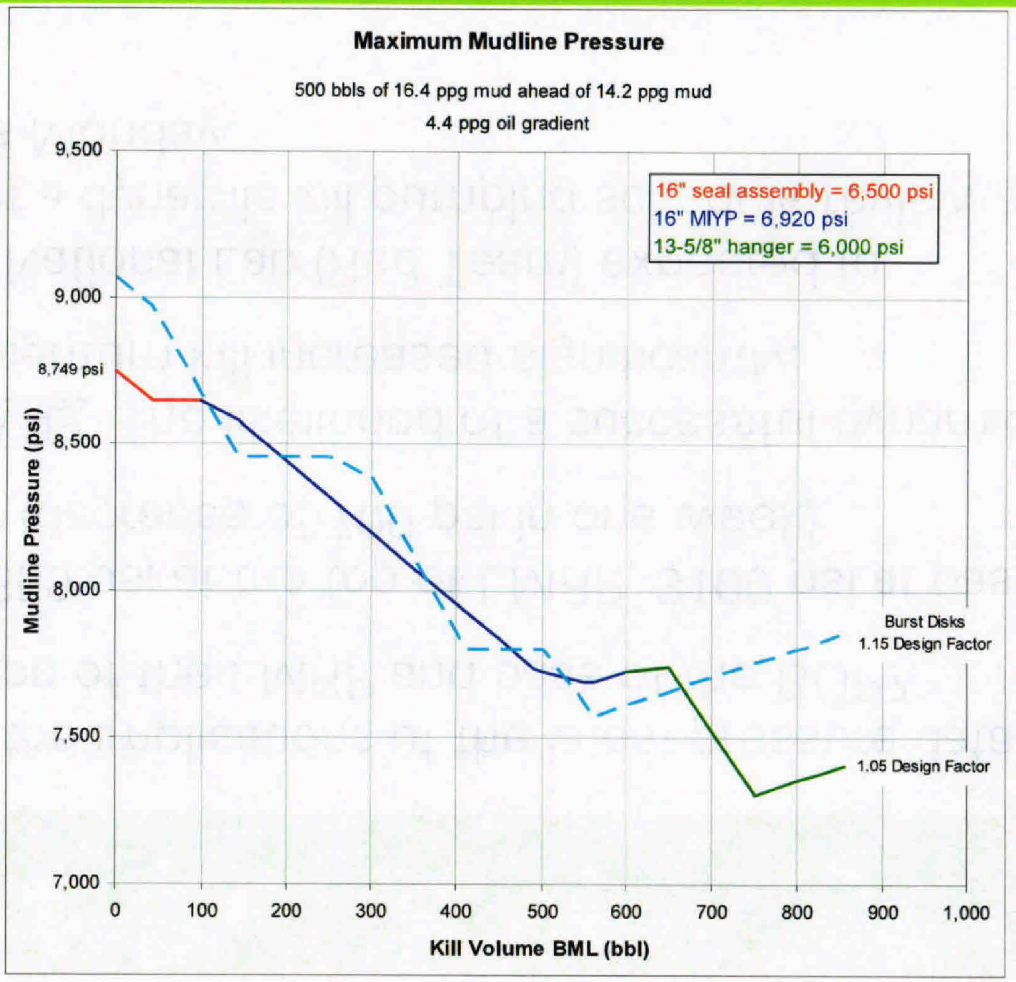

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