

BOEMRE Permitting Workshop
WCST Panel Discussion
Level 2 Considerations
August 30, 2011

Nicholas Lirette



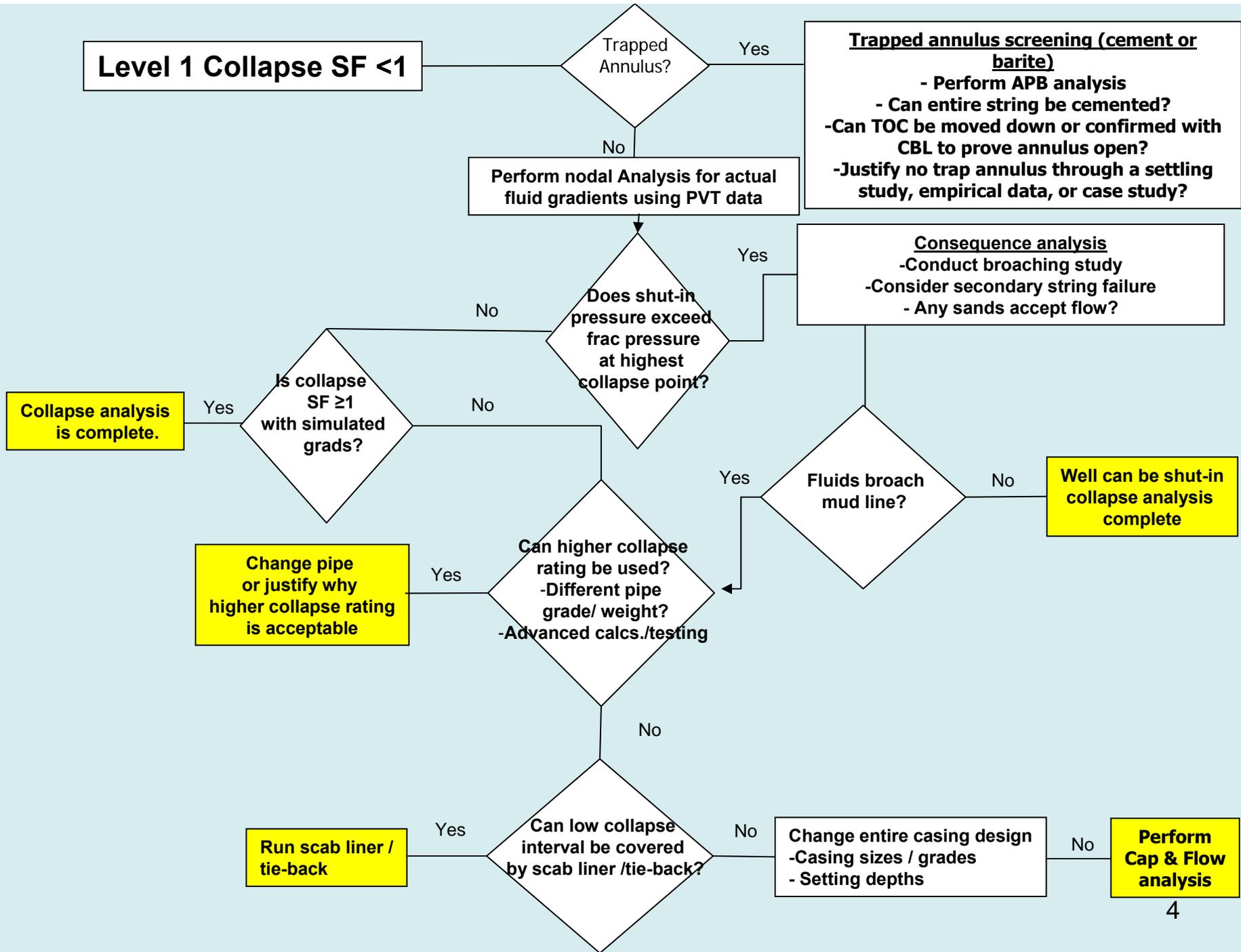
NBL

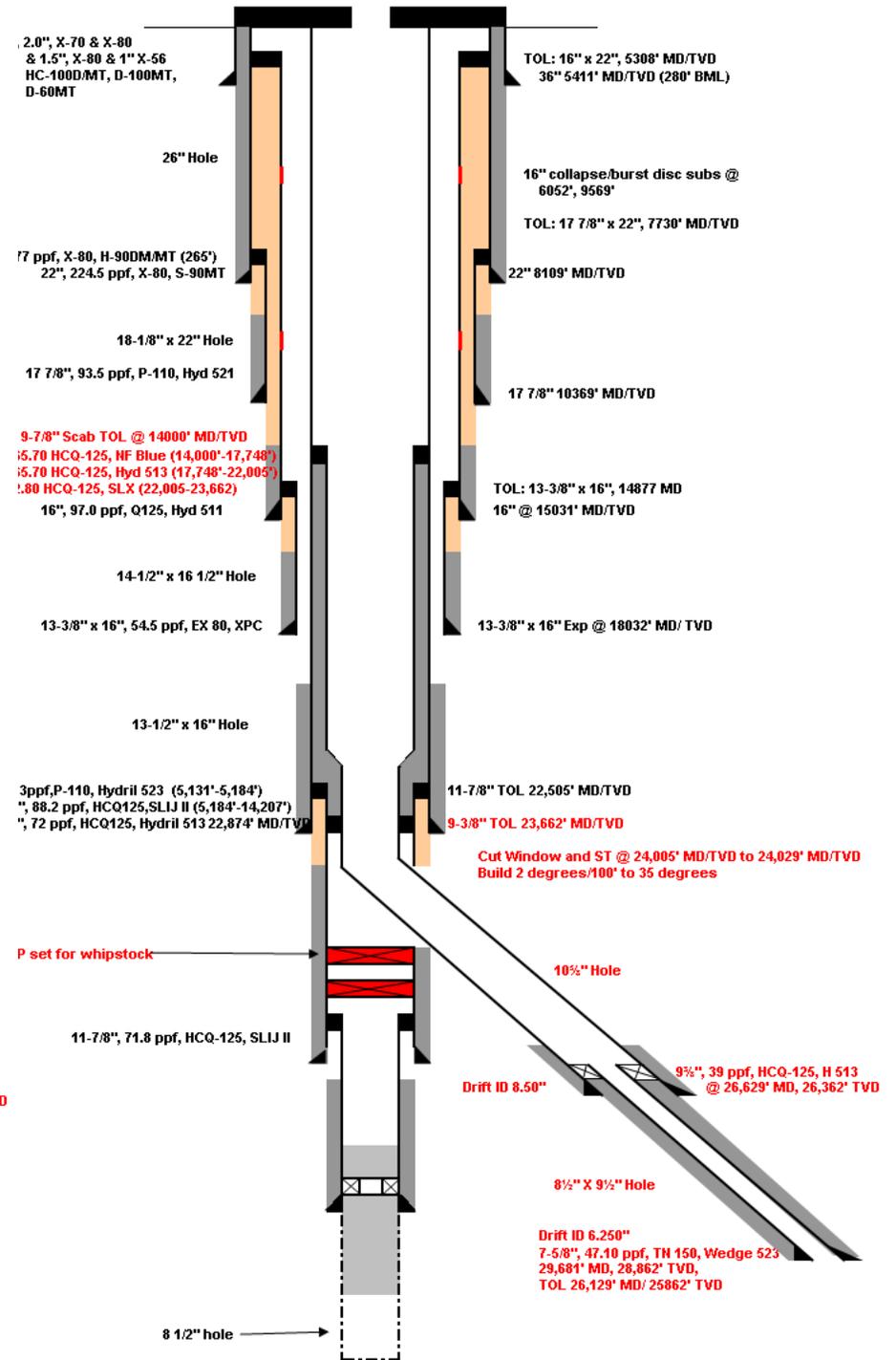
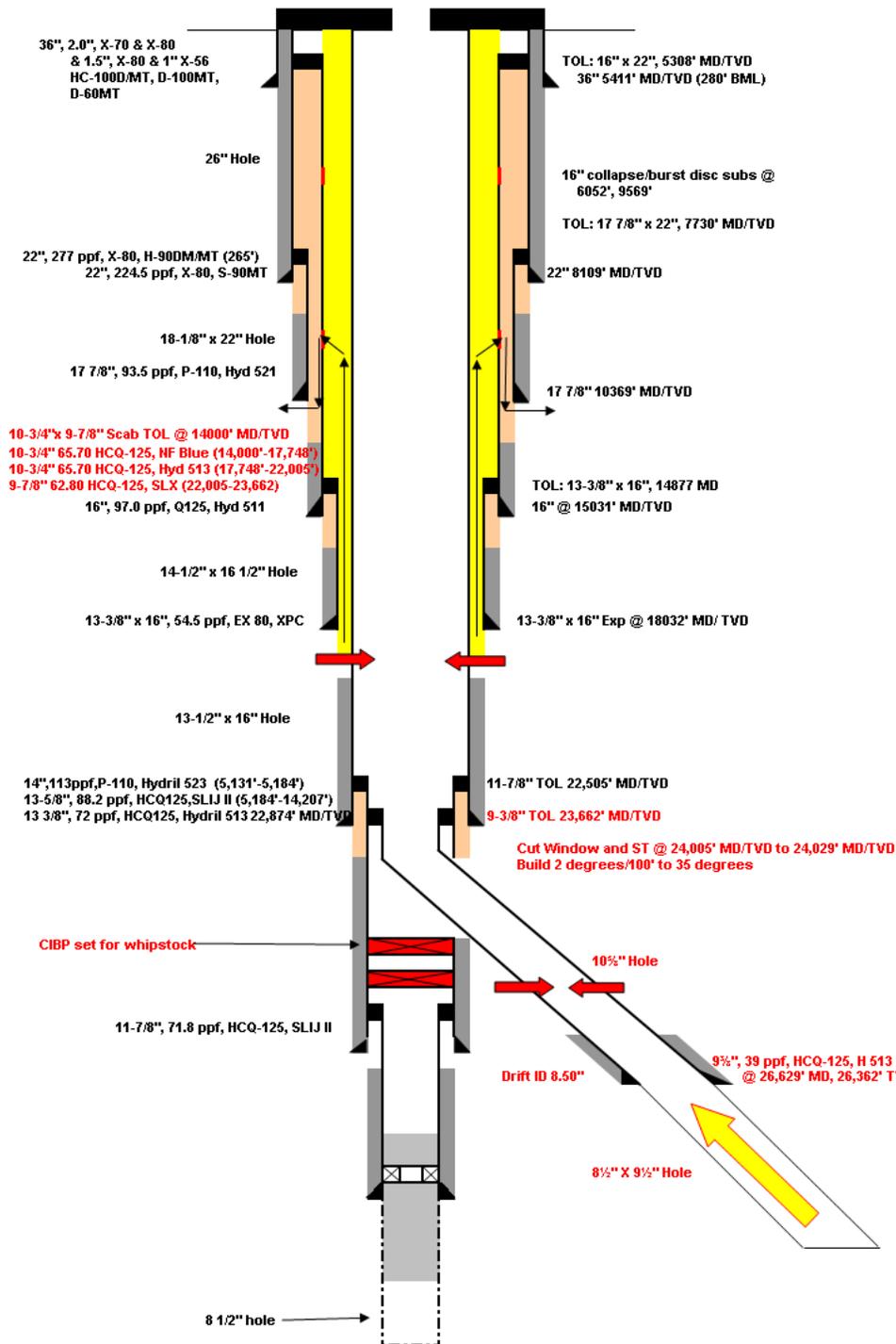
Noble Energy Recent Deepwater Permitting

- ▶ **2 completion permits approved during the moratorium**
- ▶ **2 drilling permits, 1 completions APM post moratorium**
 - **Development by-pass approved February 28, 2011**
 - **Completion APM approved in May 27, 2011 (2 days)**
 - **Exploration sidetrack approved July 22, 2011**
- ▶ **1 appraisal well permit currently being reviewed.**

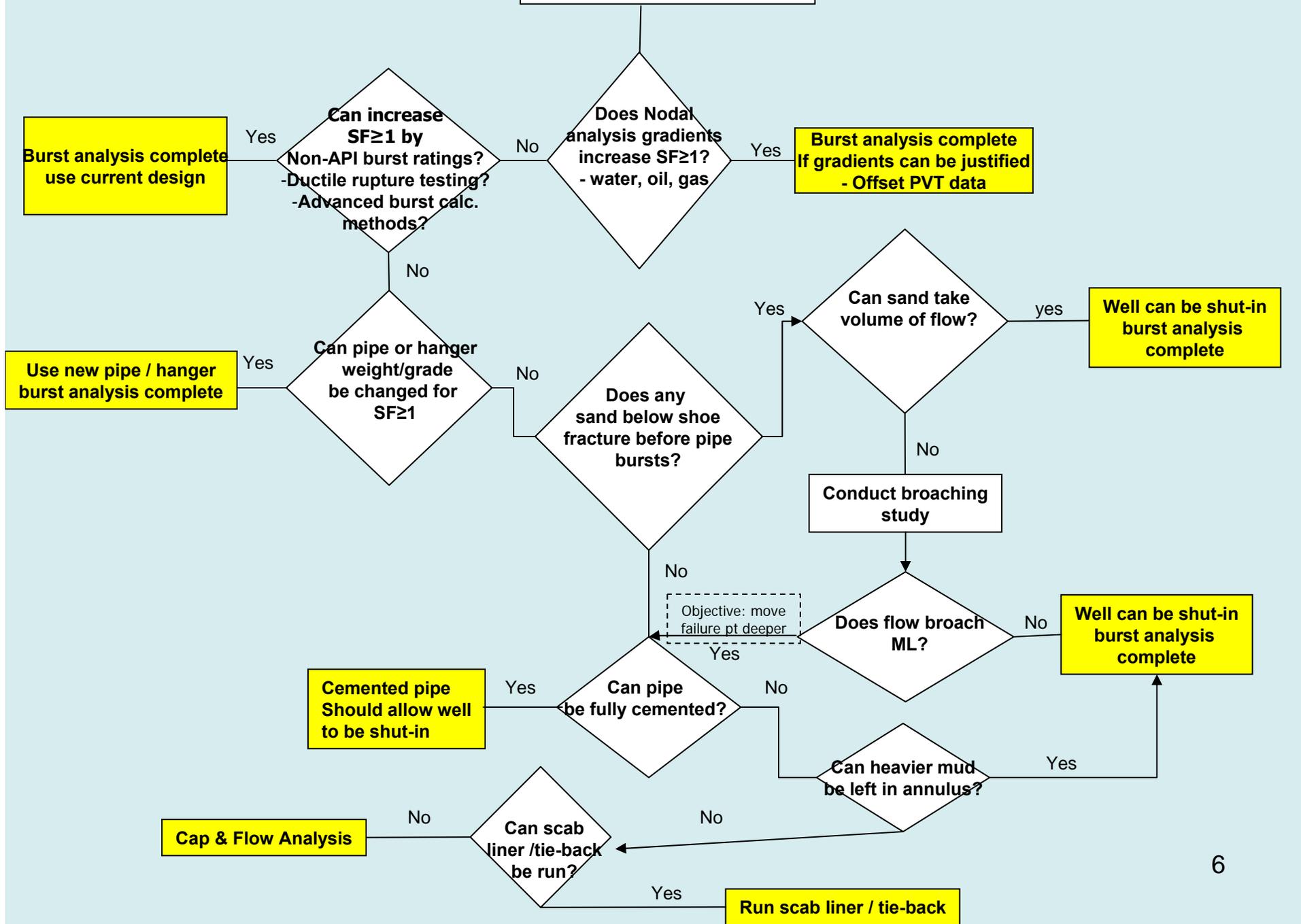
Recent Permitting Experience

- ▶ **Ensure all data is complete and consistent prior to submitting.**
- ▶ **Organization is learning as we go, takes significantly more man hours to get permit ready.**
- ▶ **Internal training to fulfill new permitting requirements (WCP, WCST, attachments, etc).**
- ▶ **Expect revisions during review process.**
- ▶ **Document learnings to prevent repeat mistakes.**
- ▶ **When in doubt, call BOEMRE and ask for clarification.**





Level 1 Burst SF <1



Questions / Open Discussion

Broaching Study Elements

- ▶ **Executive summary stating conditions evaluated and findings**
- ▶ **Broaching Analysis considering the following**
 - **Mapping of major and minor faults (sealing / non sealing, ability to transfer fluid)**
 - **Ability of pressure to exceed net pressure to propagate fracture of significant length.**
 - **Orientation of fracture with respect to faulting.**
 - **Presence of sand to except flow rate/volume and prevent vertical fracture.**
- ▶ **Conclusion of findings**
- ▶ **Appendix with supporting data (maps, calculations, etc.)**

