



Horton Wison Deepwater
Delivering Offshore Solutions™

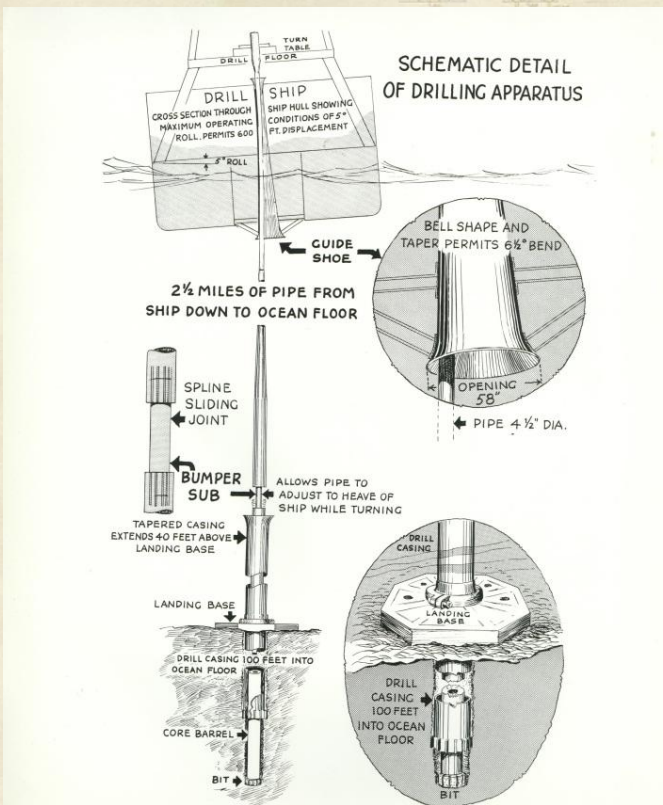
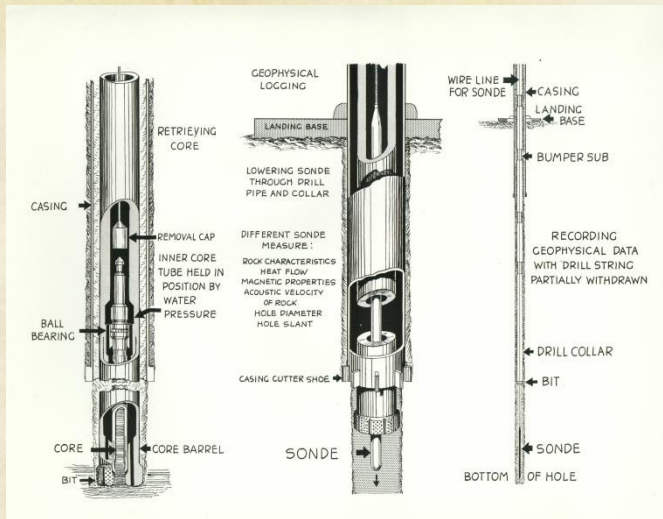
Next Round of Deepwater Challenges

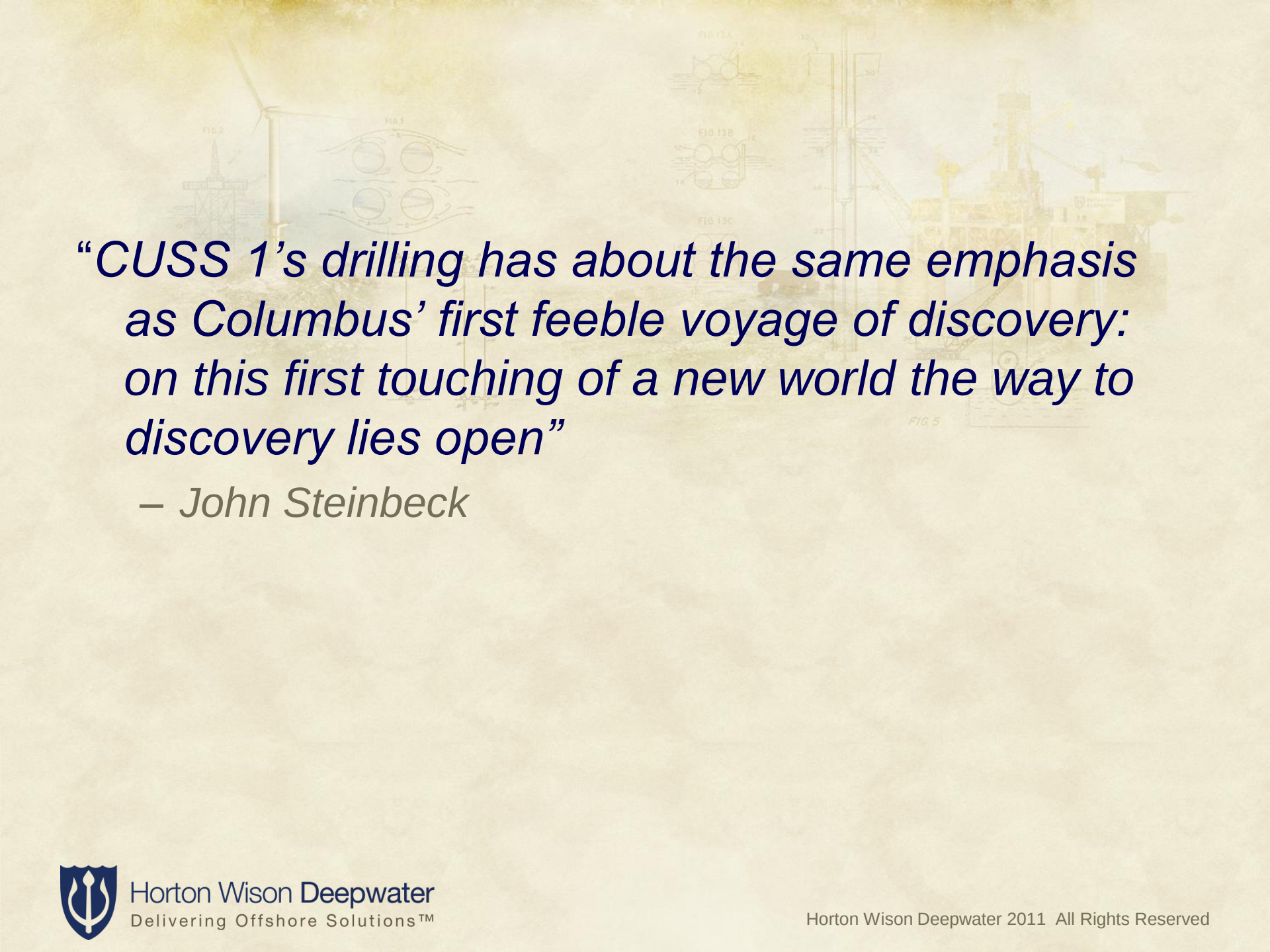
Jim Maher
Frontiers of Engineering
March 2011

Brief Tribute to Mohole Project – 50th Anniversary



- CUSS I
- Set Pace for Deepwater Drilling to Present Day
- Drilled in 13,000' WD in 1961
- Heave compensation
- Dynamically Positioned





*“CUSS 1’s drilling has about the same emphasis
as Columbus’ first feeble voyage of discovery:
on this first touching of a new world the way to
discovery lies open”*

— John Steinbeck



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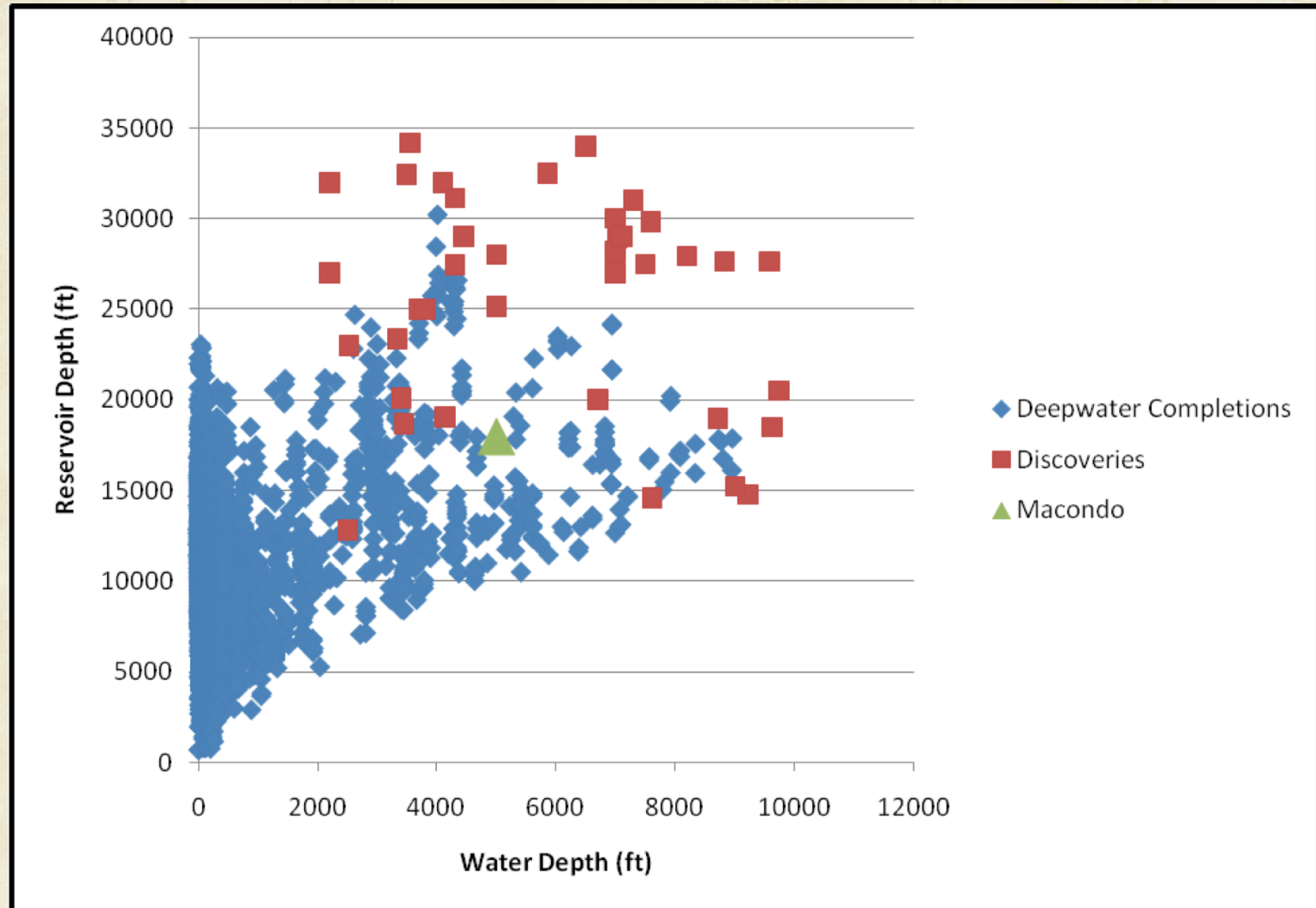
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DEEP WATER

The Gulf Oil Disaster and the Future of Offshore Drilling



Macondo

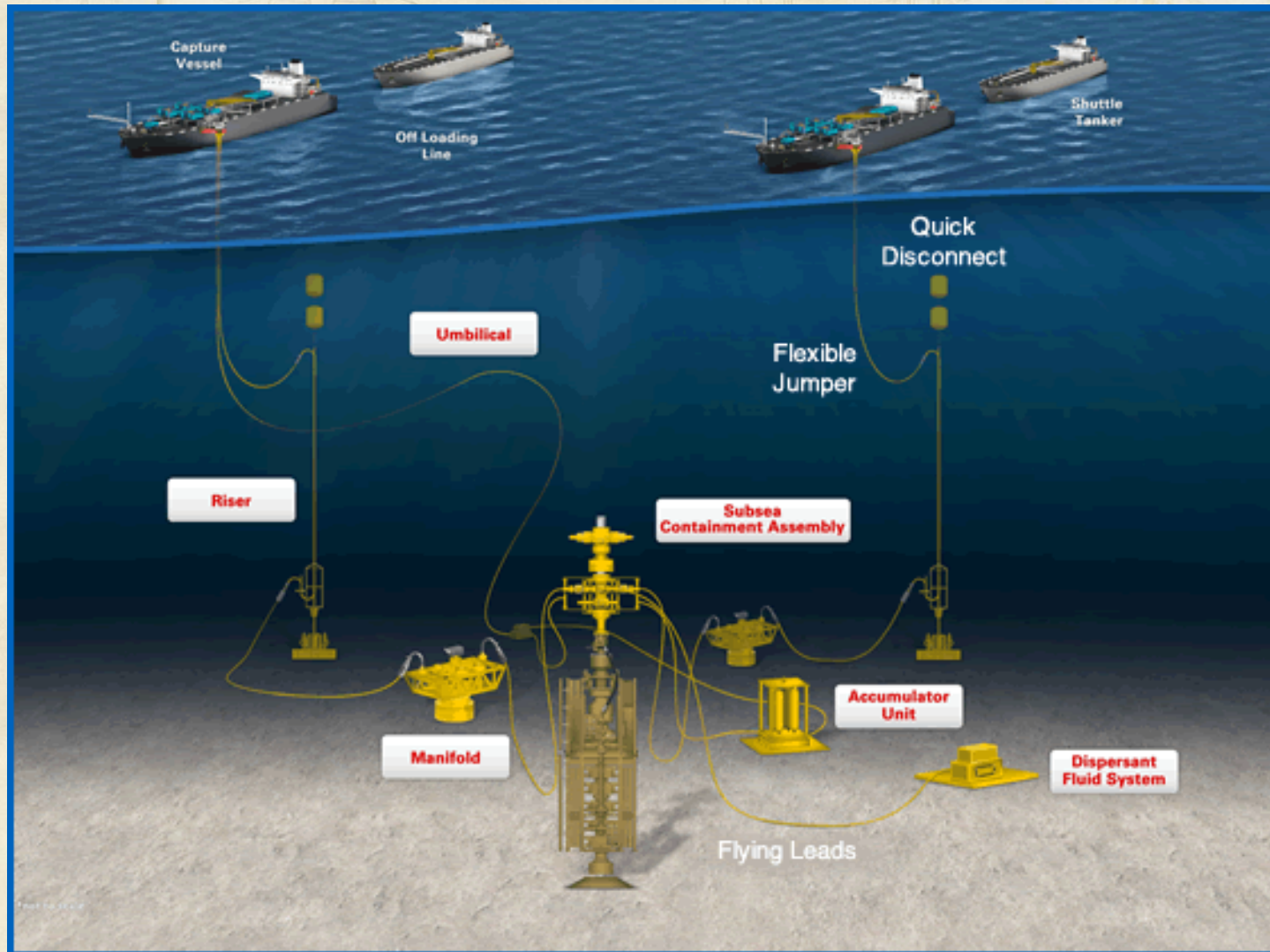


Changes in the Deepwater Business

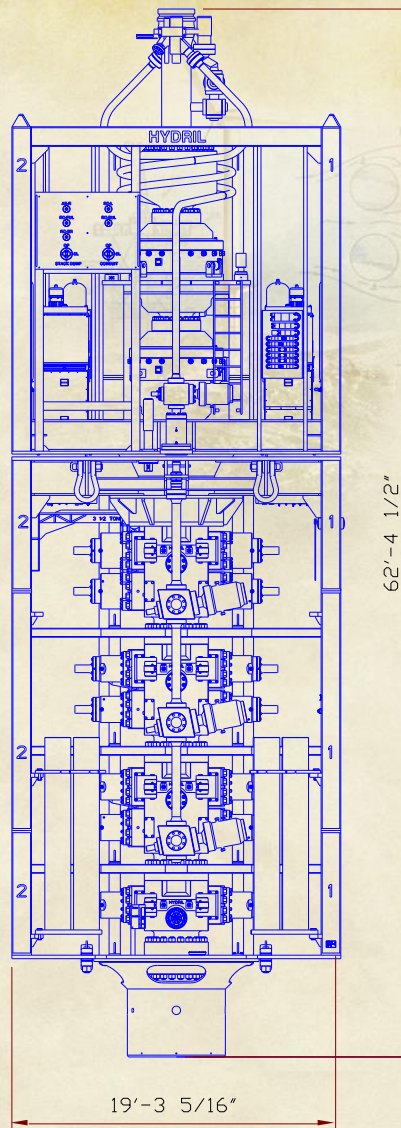
- **More Comprehensive Safety Standards**
 - Additional levels of redundancy may be required
- **New Technical Drivers**
 - Higher Pressure Regimes
 - More Complex Reservoirs
- **Changes in Appraisal**
 - Less information available prior to making project decisions



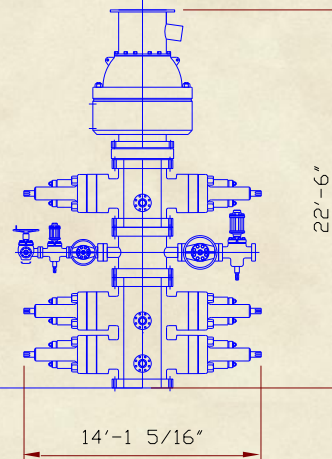
Containment System Overview



Blow-Out Preventers Surface Drilling Safety Joint Industry Project



SUBSEA BOP



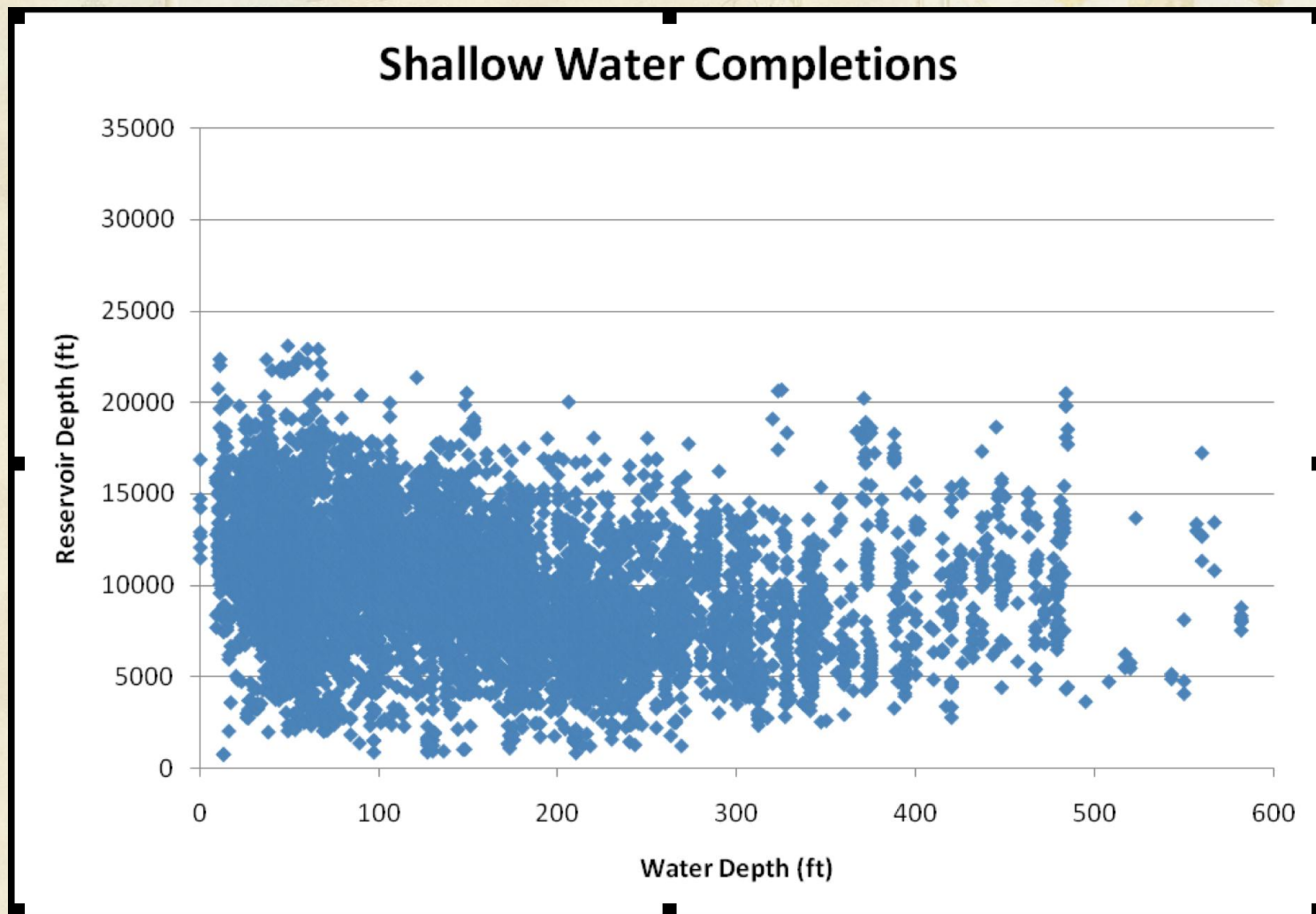
SURFACE BOP

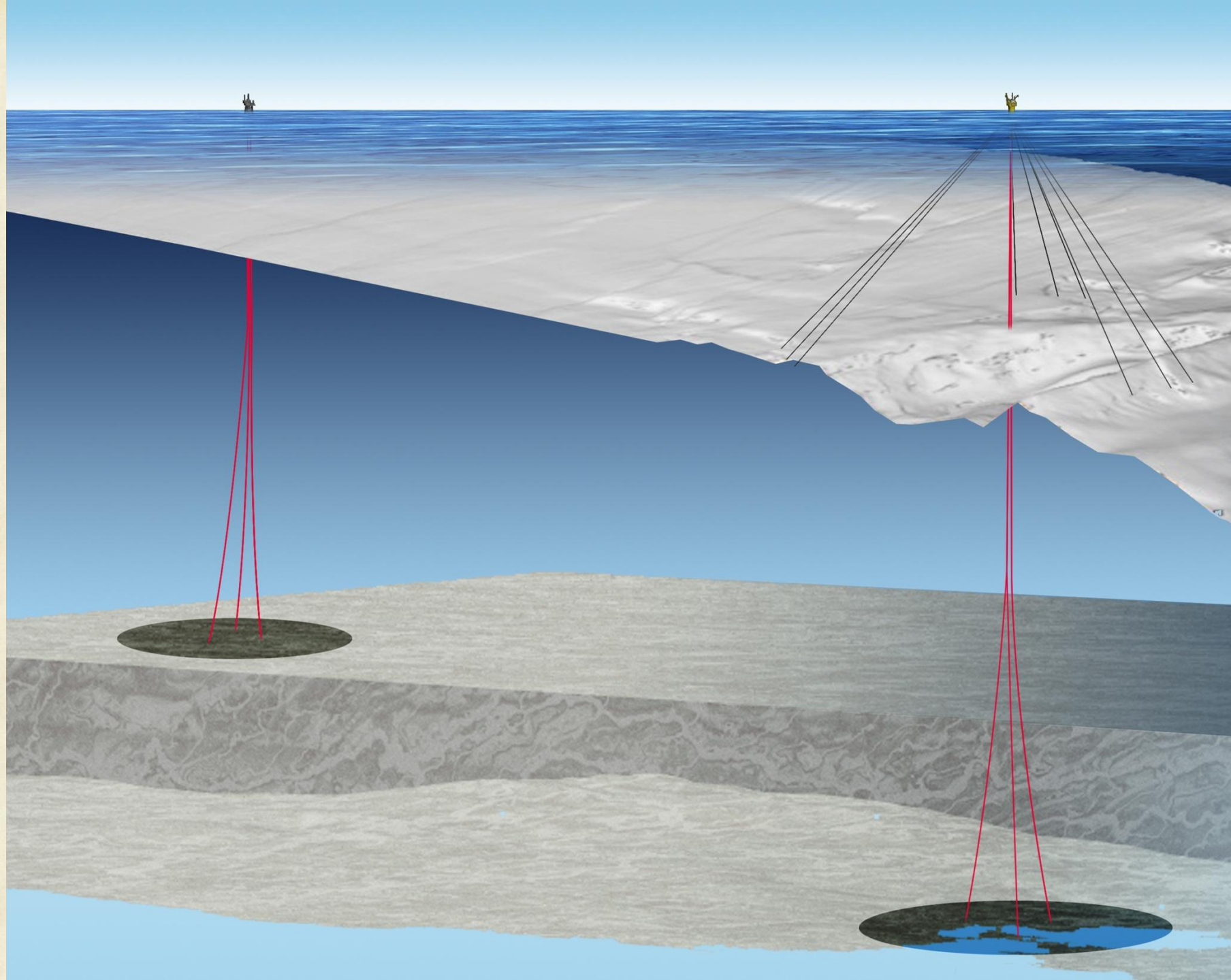


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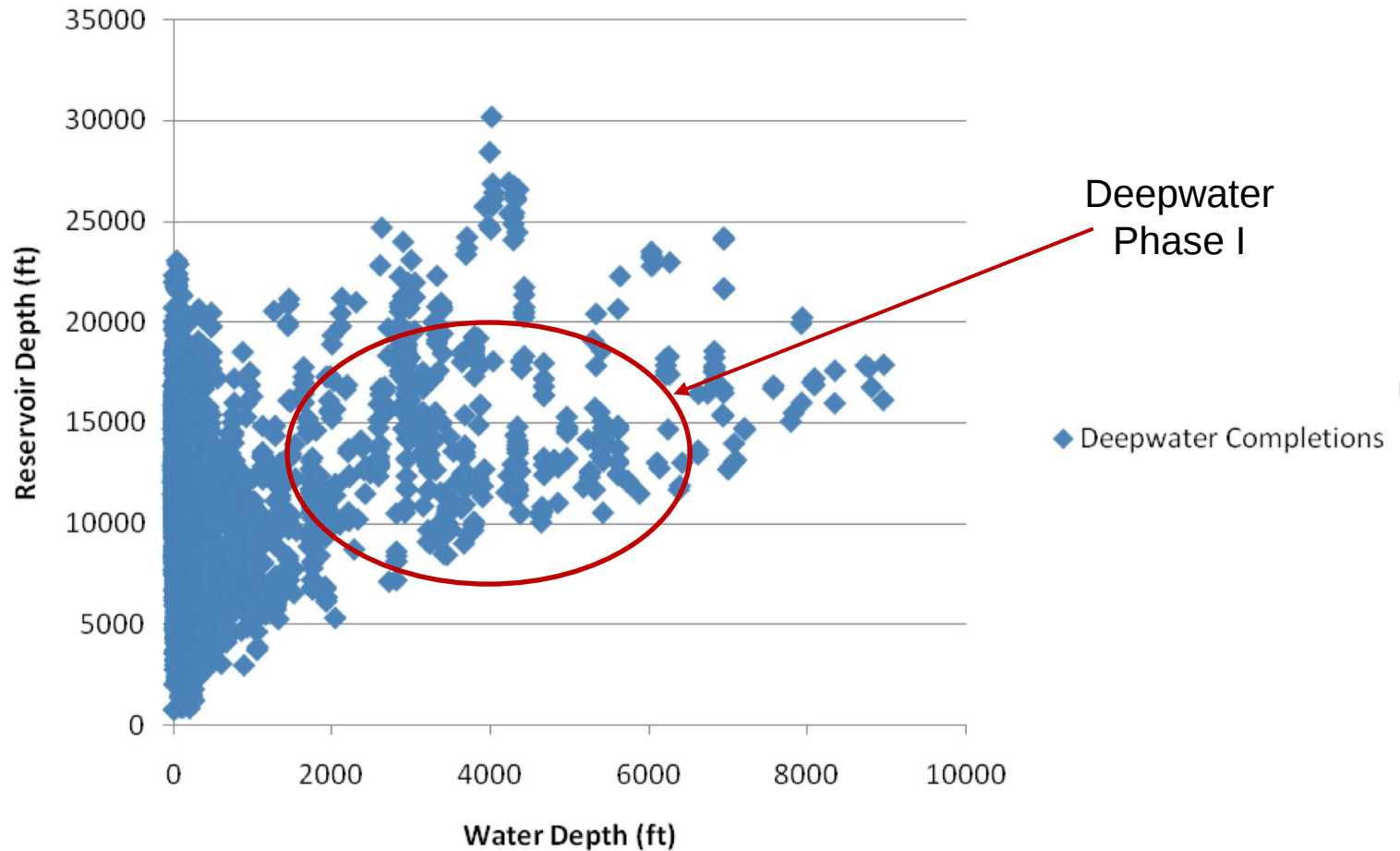
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Significant Experience in Shallow Water

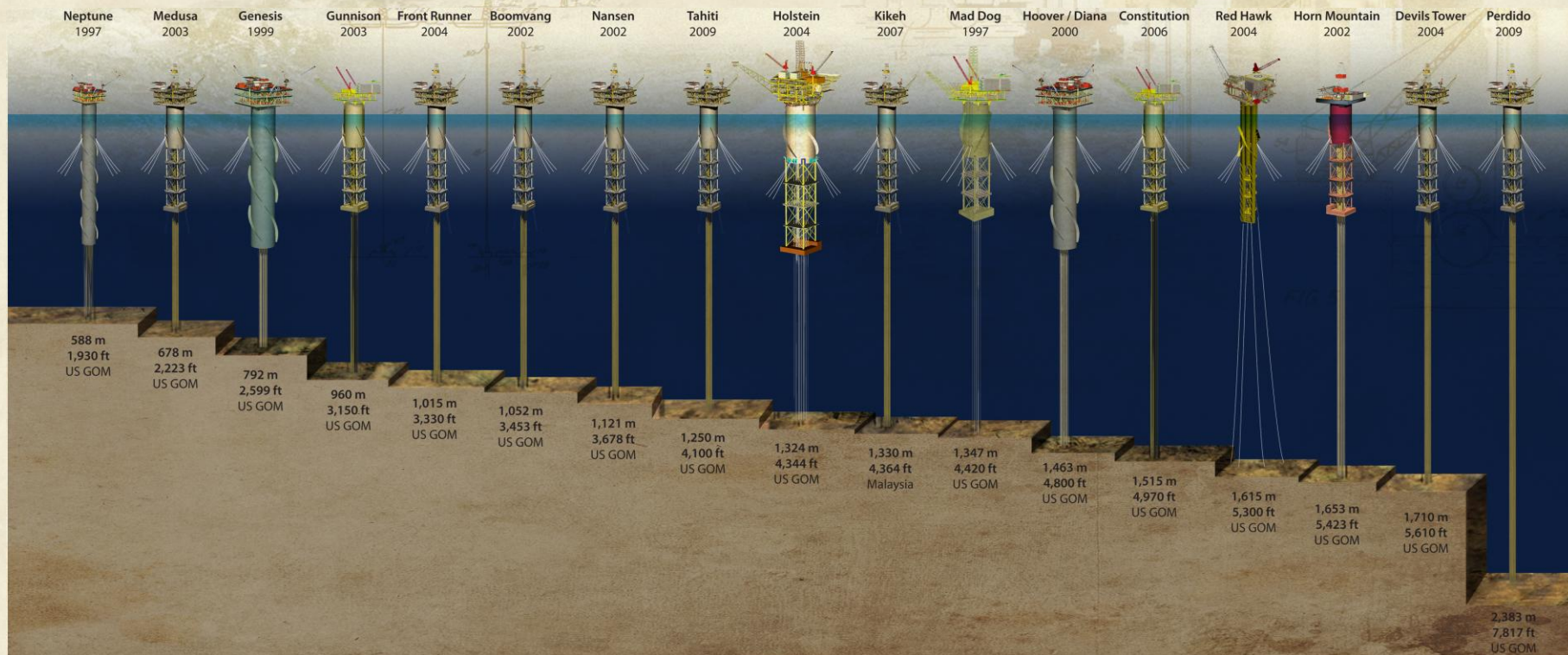




Deepwater Completions



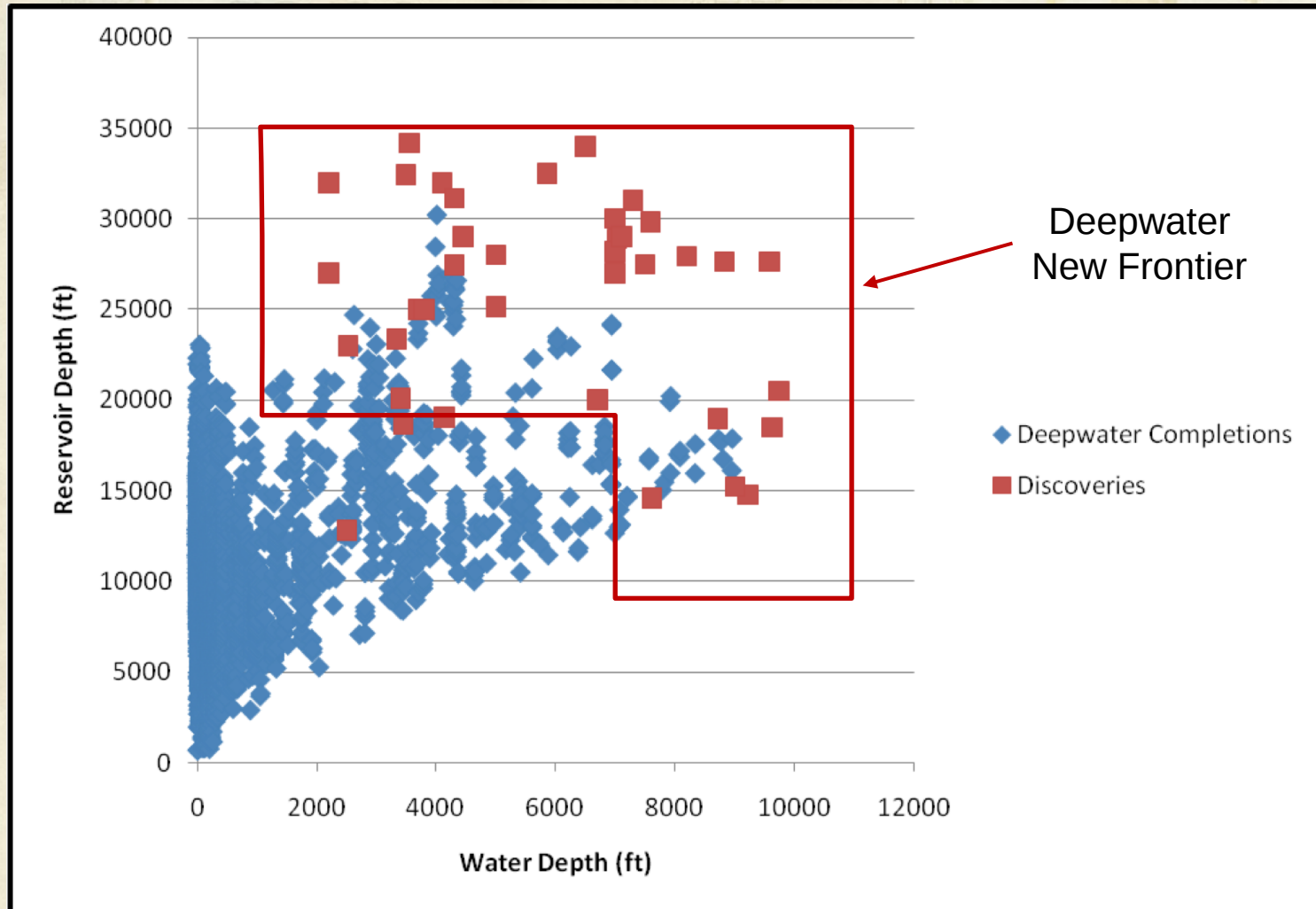
Deepwater Spars



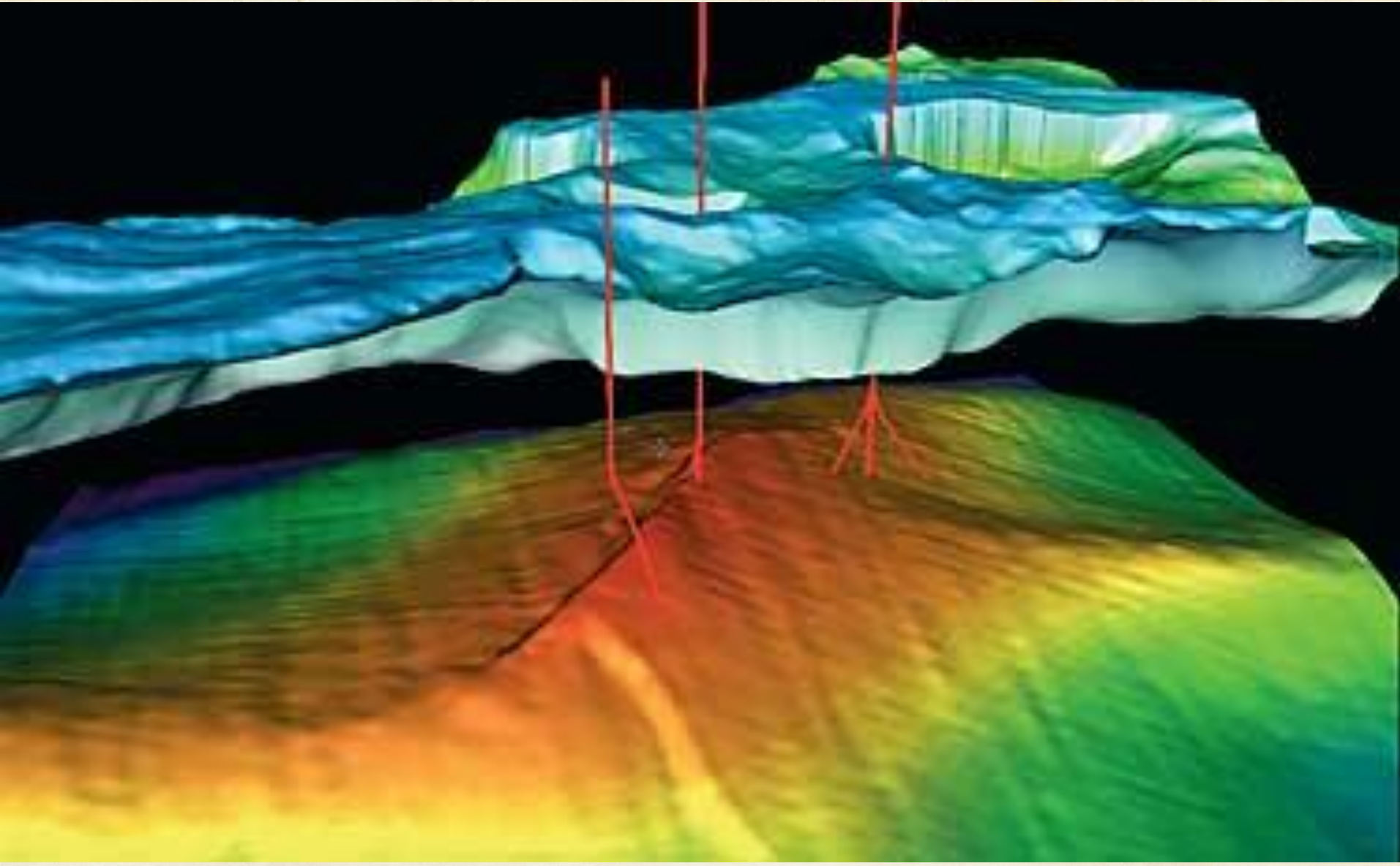
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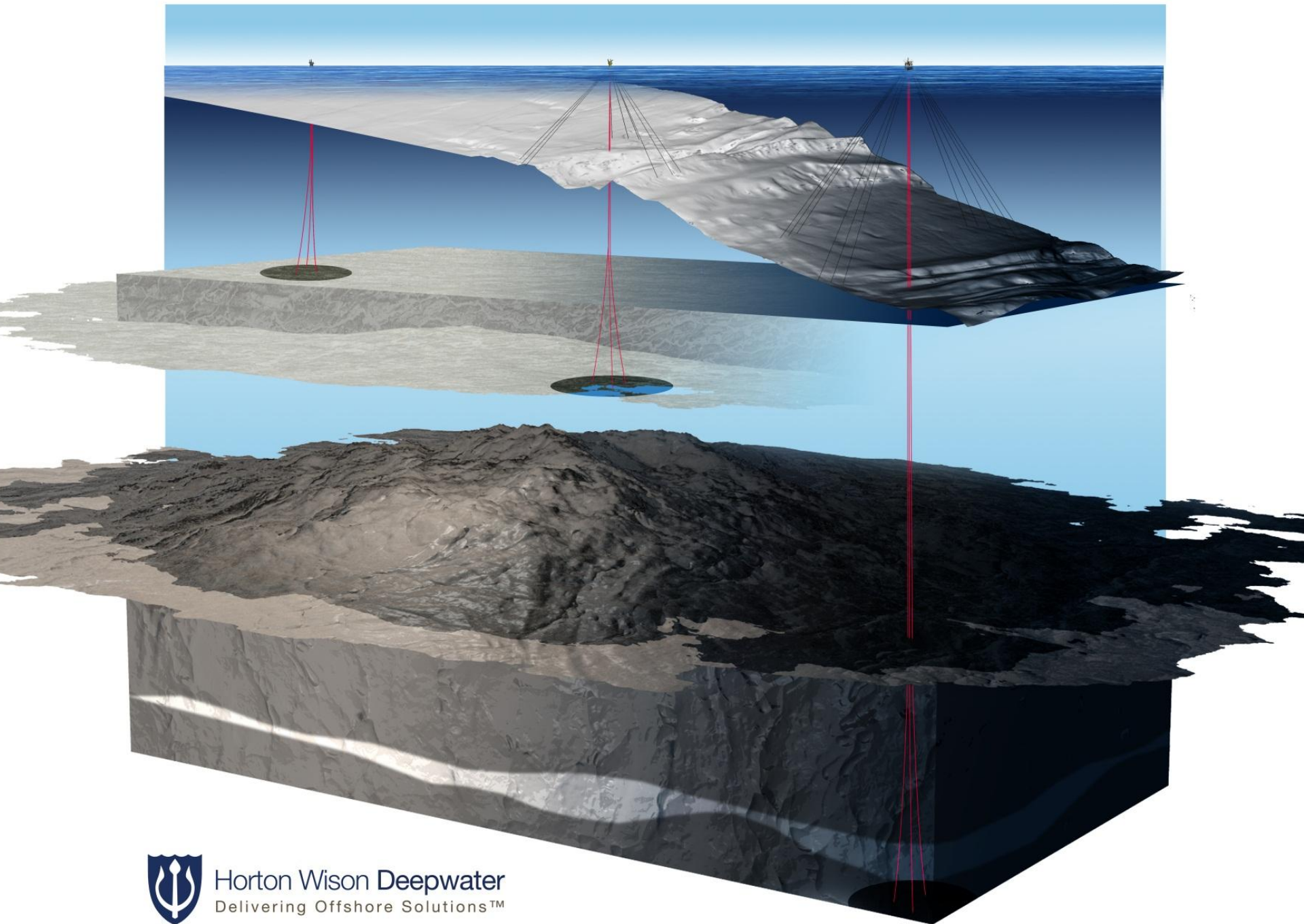
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New Deepwater Frontier – Deeper and Deeper



Is the Salt Winning?





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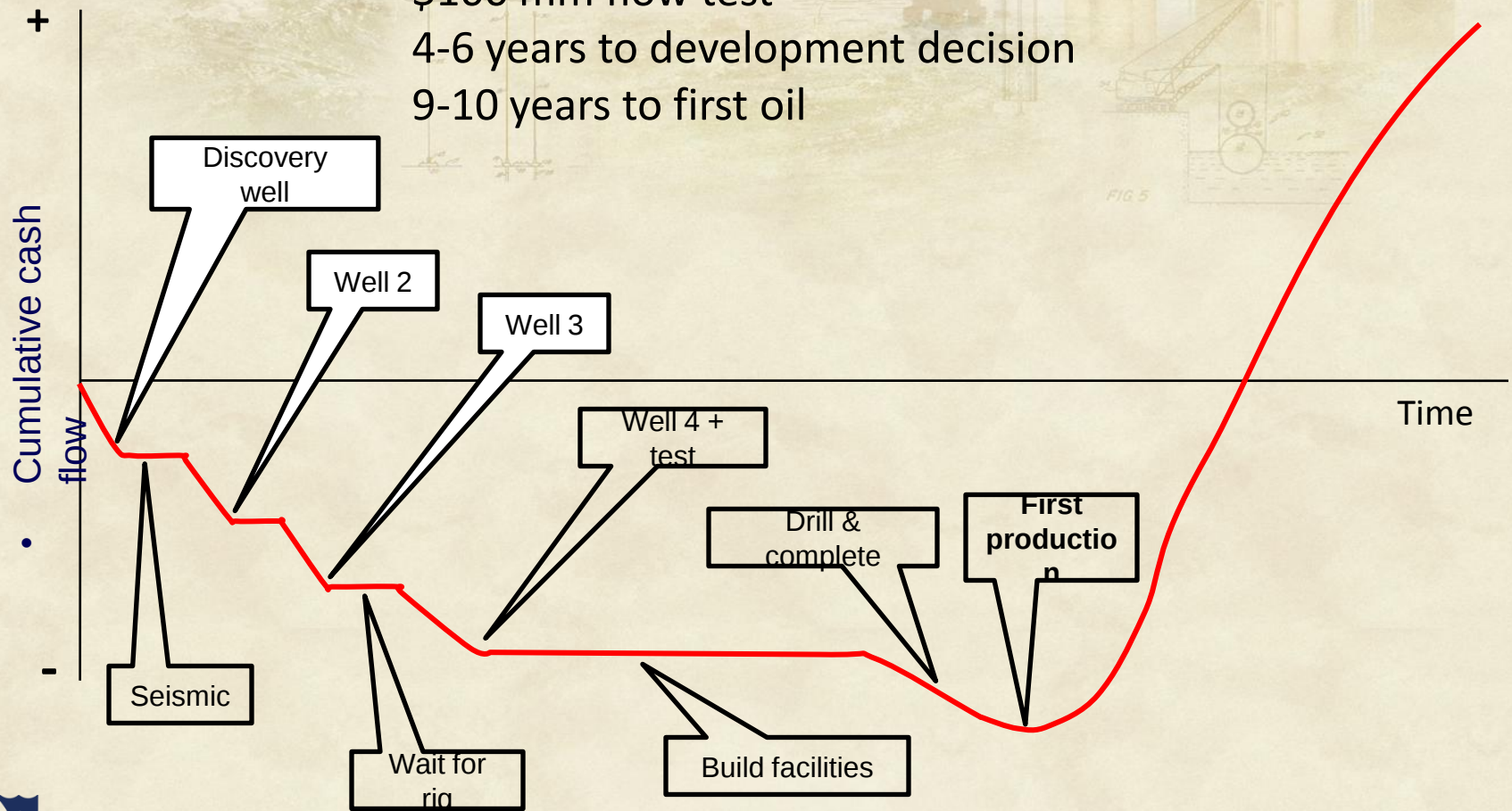
Deepwater Appraisal Sequence (Traditional)

\$150-200+ mm per well = \$600-800 mm

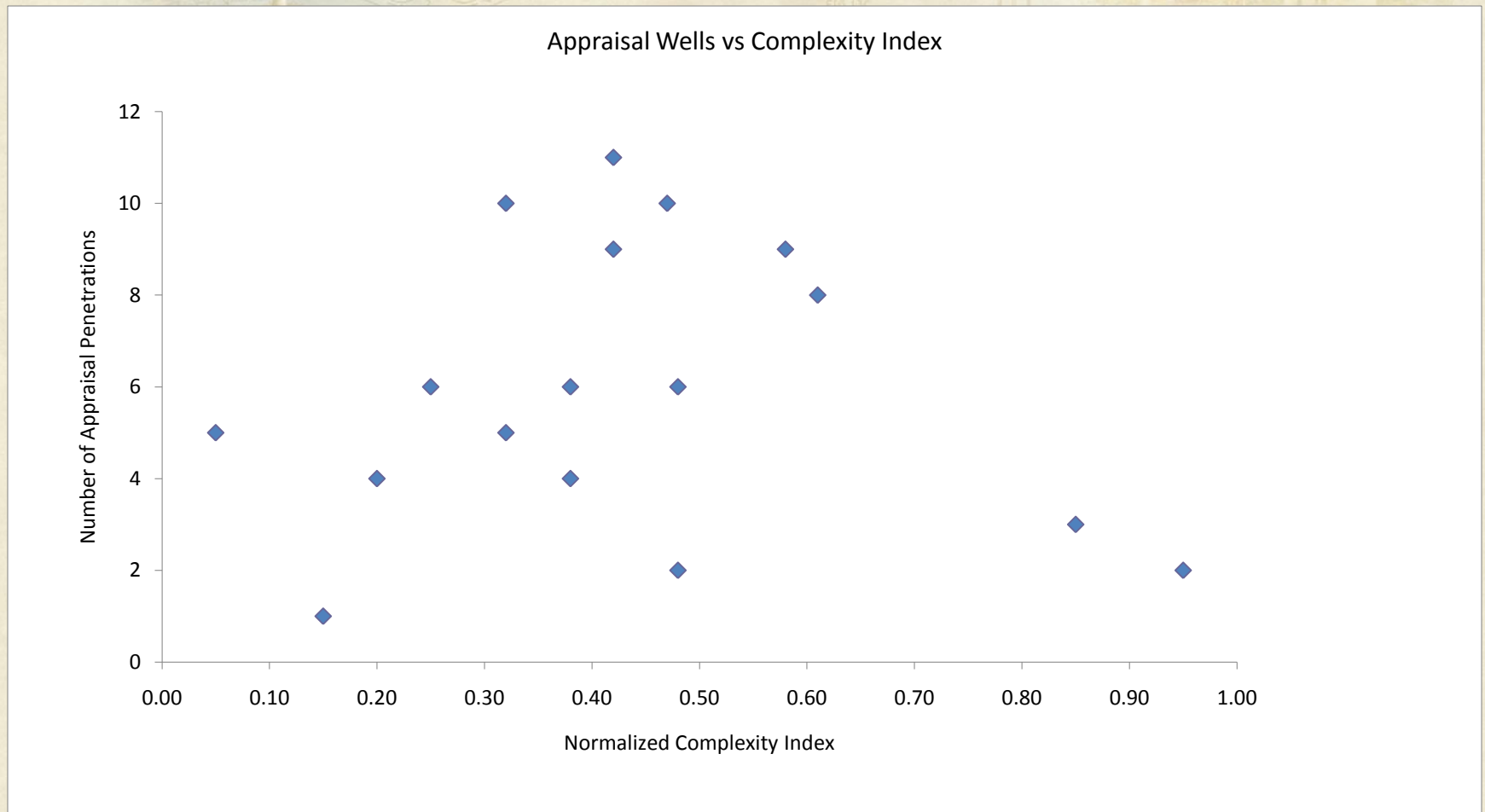
\$100 mm flow test

4-6 years to development decision

9-10 years to first oil

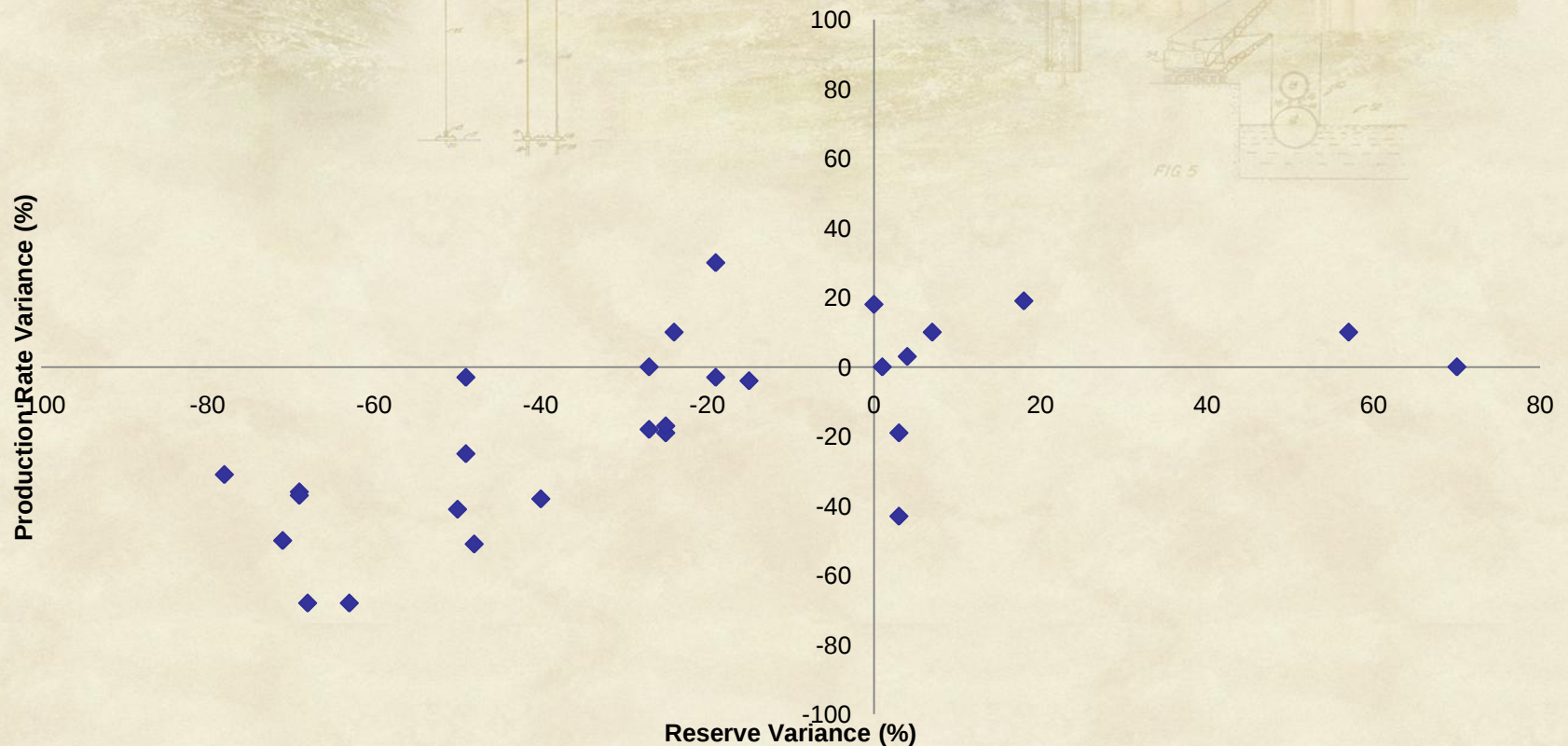


New Fields More Complex – Need to Make Decisions Based on Limited Data

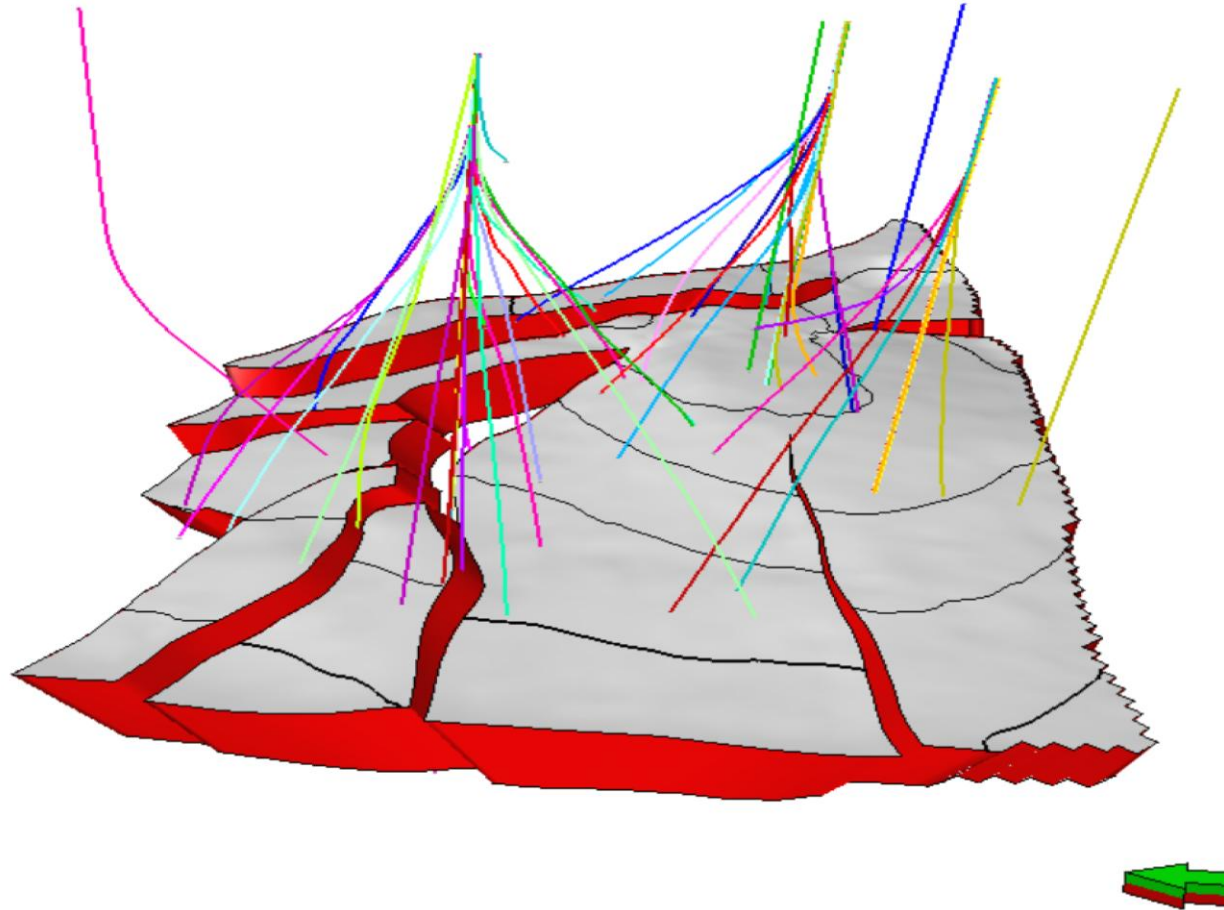


Traditional Appraisal Has Not Been Successful

Reserve vs Production Variance Model



Understanding Reservoirs Prior to Production Is Difficult – Learn Much After Production Data Available



Future of Deepwater

- We need to handle new technical complexity
- Regain trust through safety standards
- Address appraisal challenges and reservoir complexity

