Dynamic Shock Modeling

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Perforating

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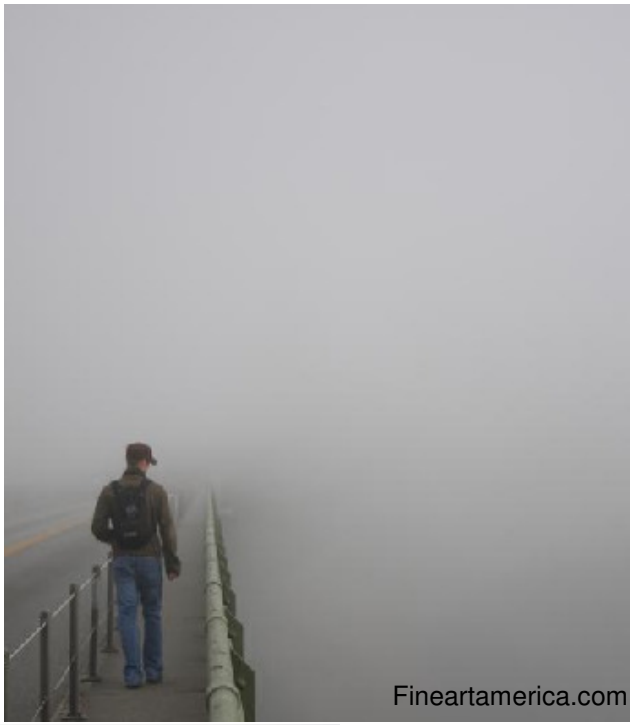
Leon Moisseiff

- What if he had the ability to model?
- What does it cost if you have a major failure on a well?
- Disaster is intriguing if it's not you!

Key Areas



Fineartamerica.com

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Large Guns

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Modeling versus Reality

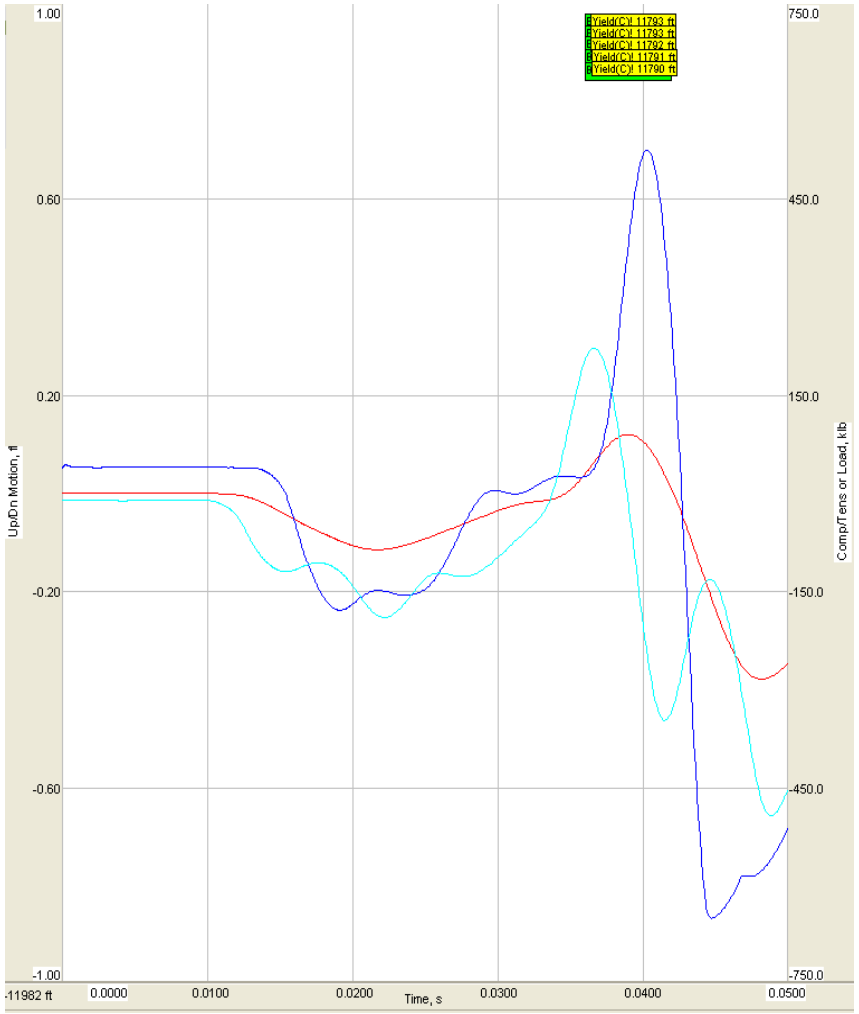
- 275’ of 6 ½ guns
- Reservoir 15K

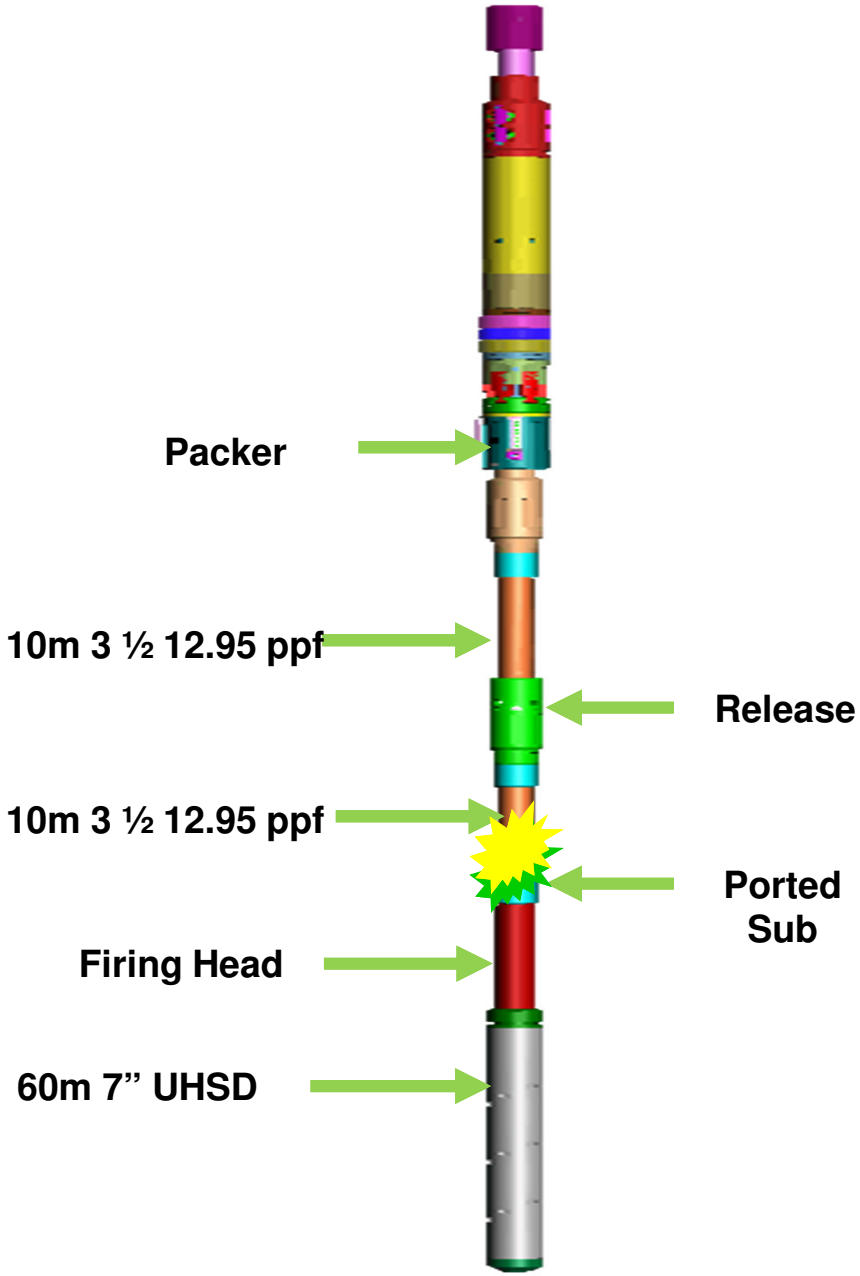
Red – Tubing Movement

Blue – Packer Load

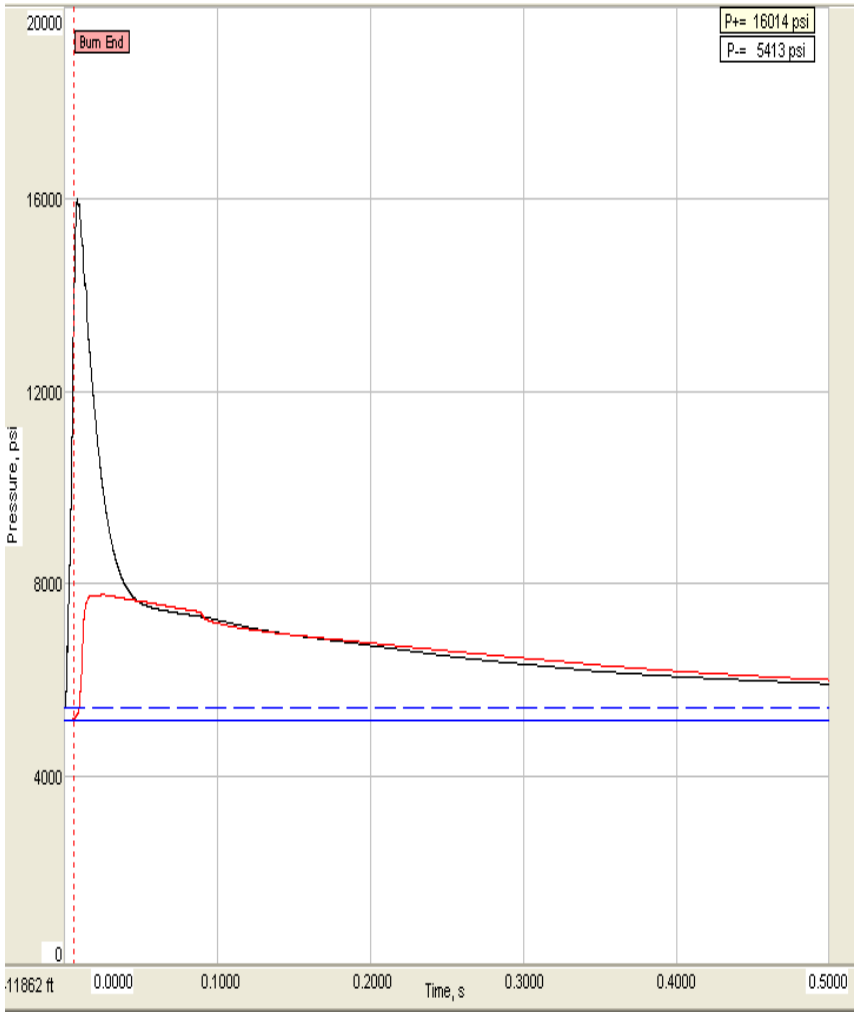
Cyan - Tubing Load C/T

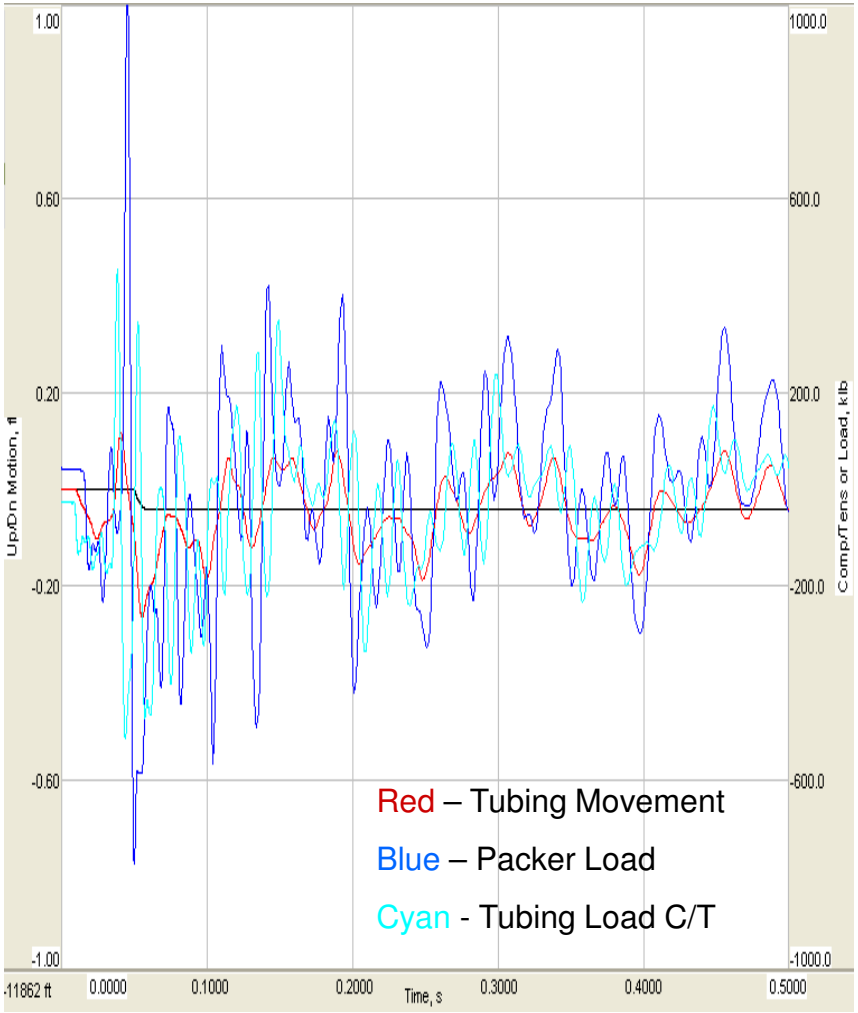
Avoiding NPT



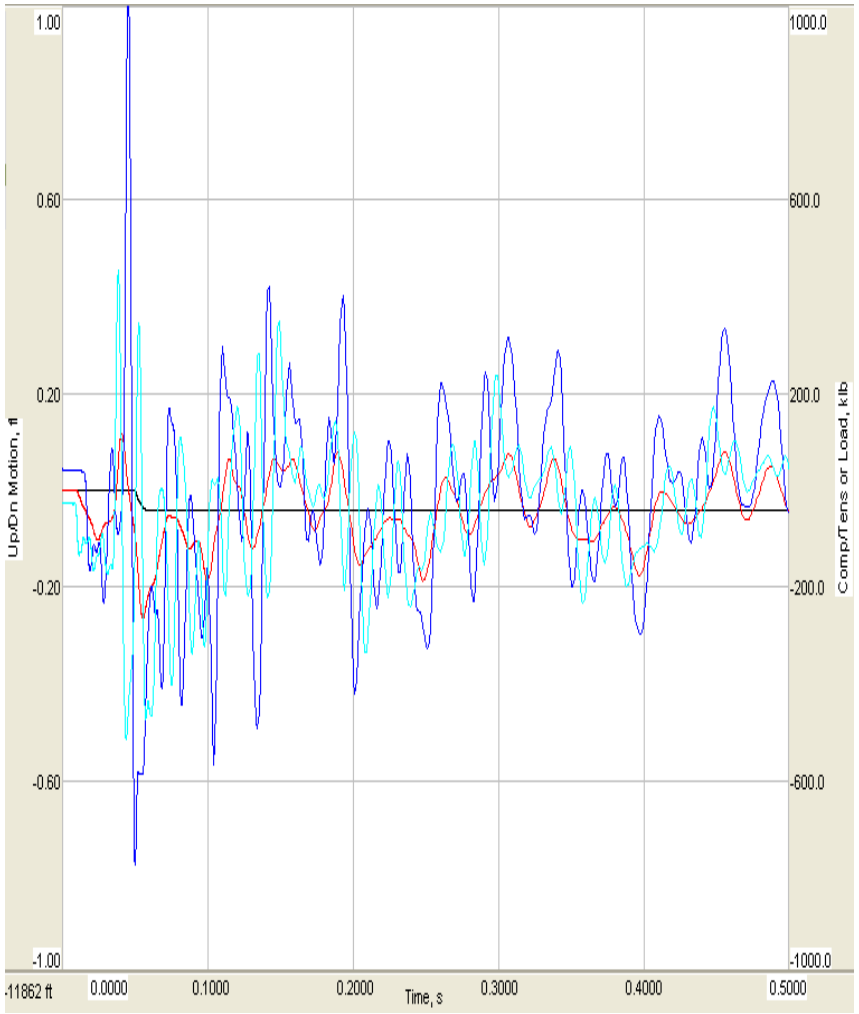


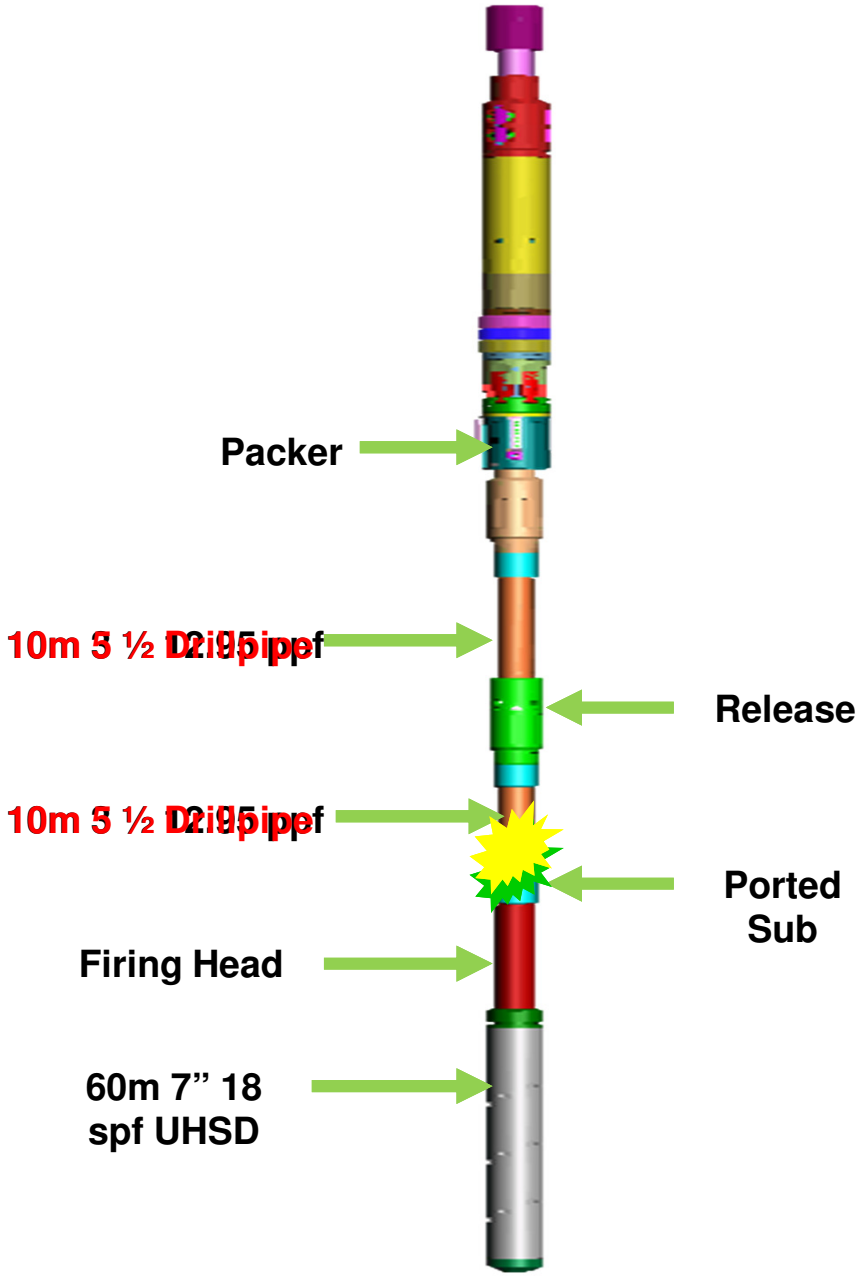
Pressures Equals Loading

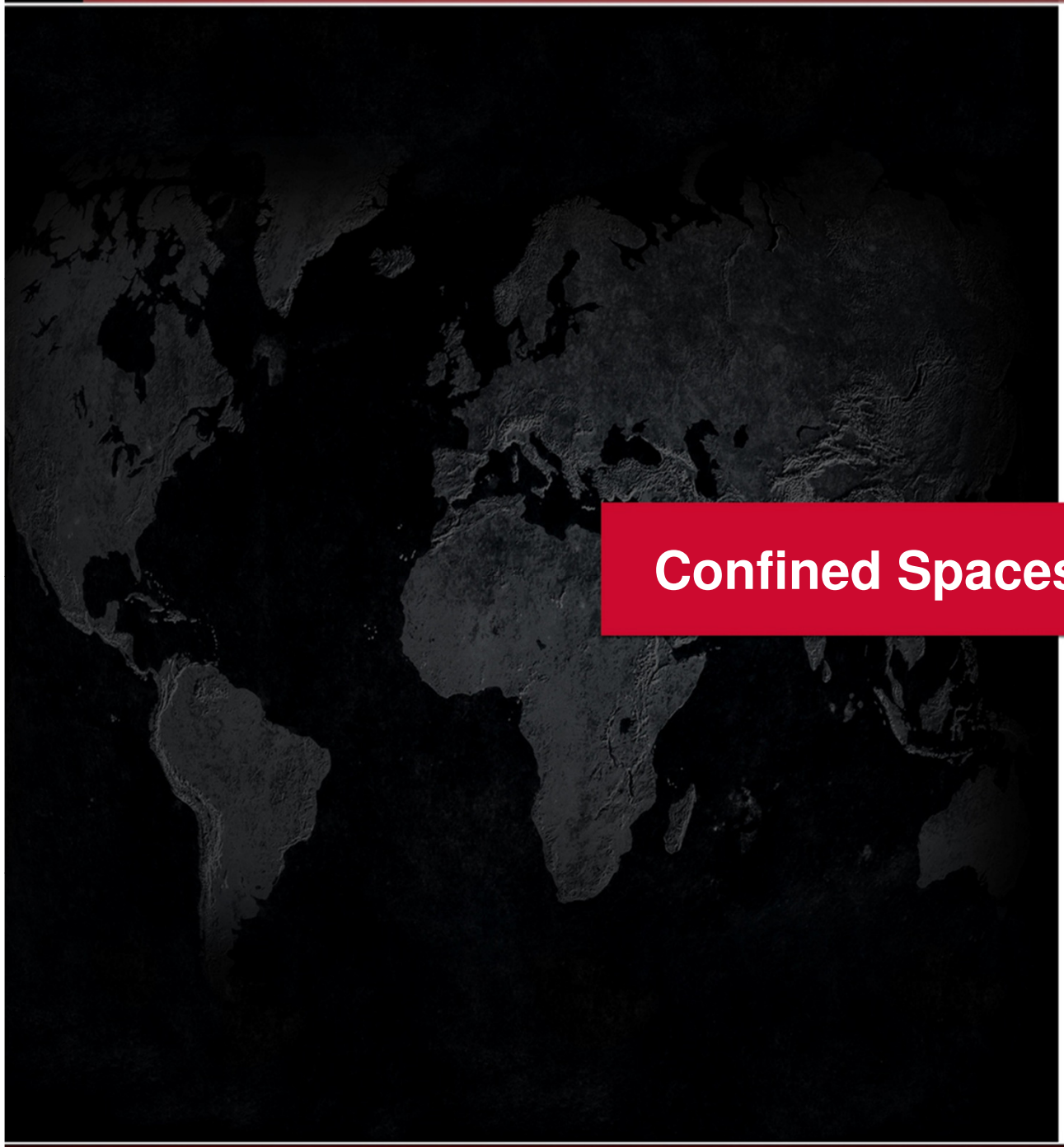




Strengthening the BHA







Confined Spaces

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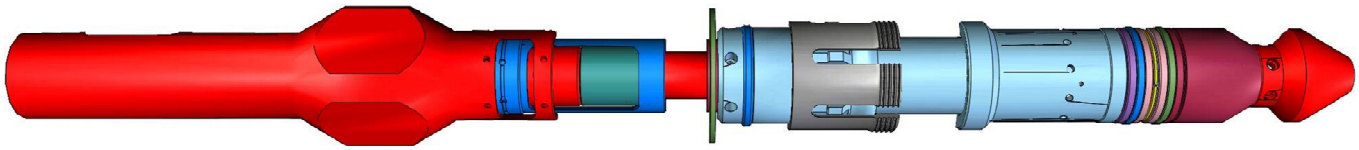
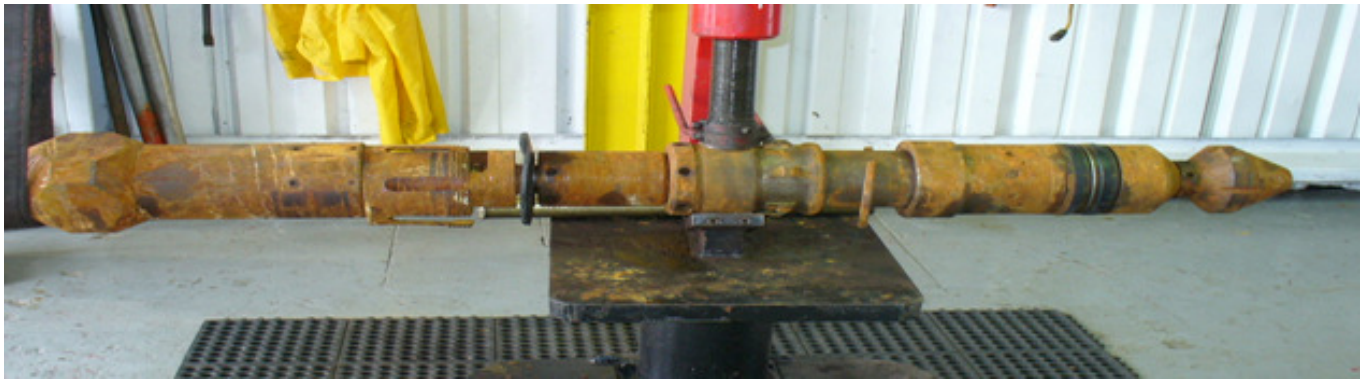
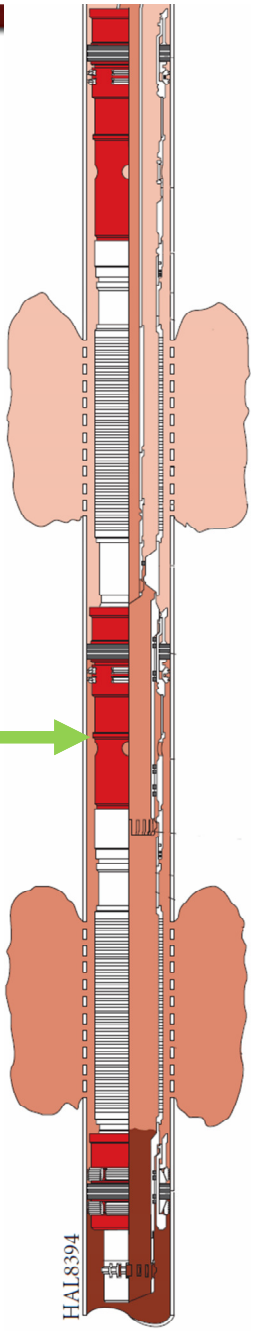
Loss of well



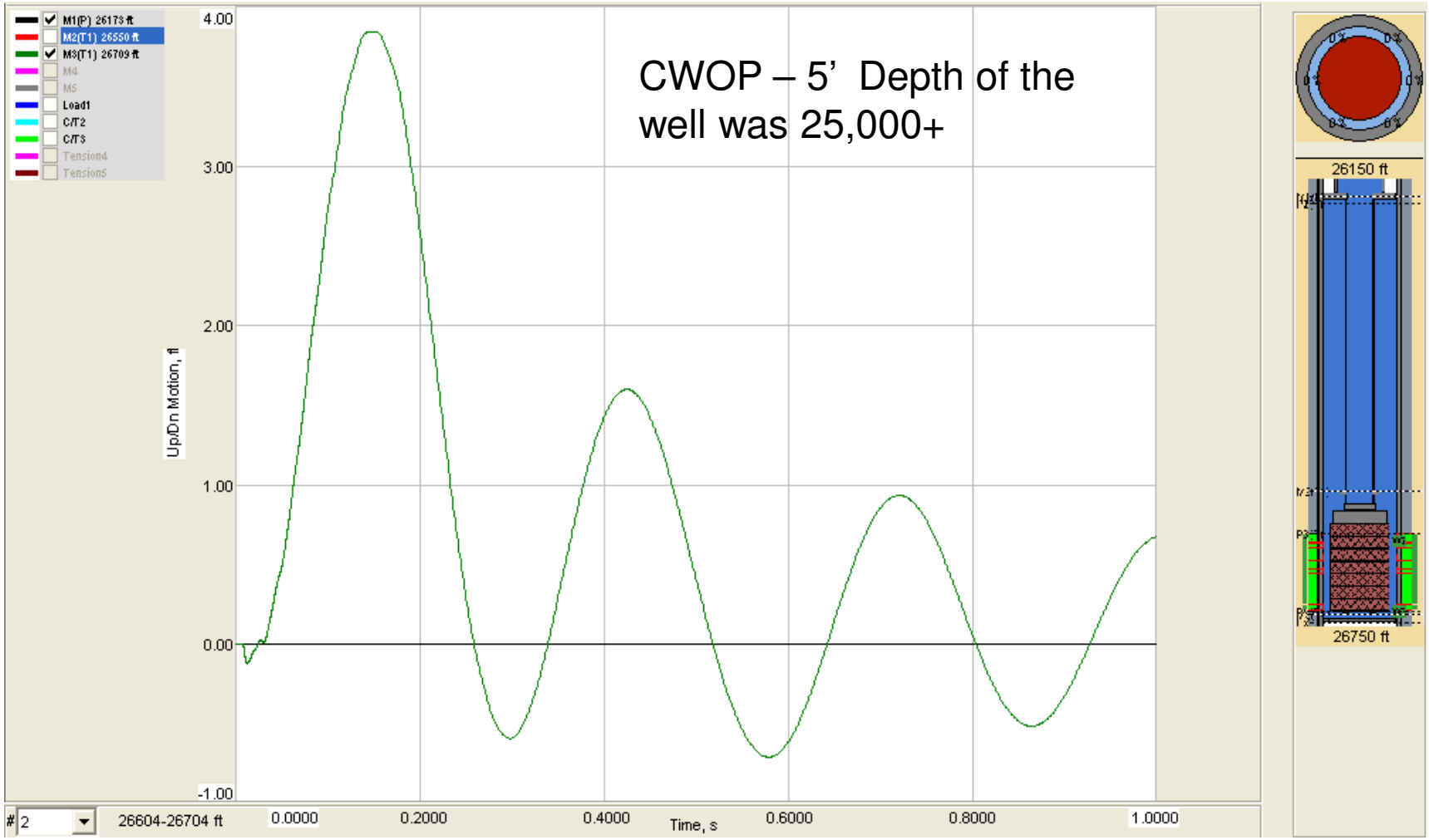


Isolation Packer

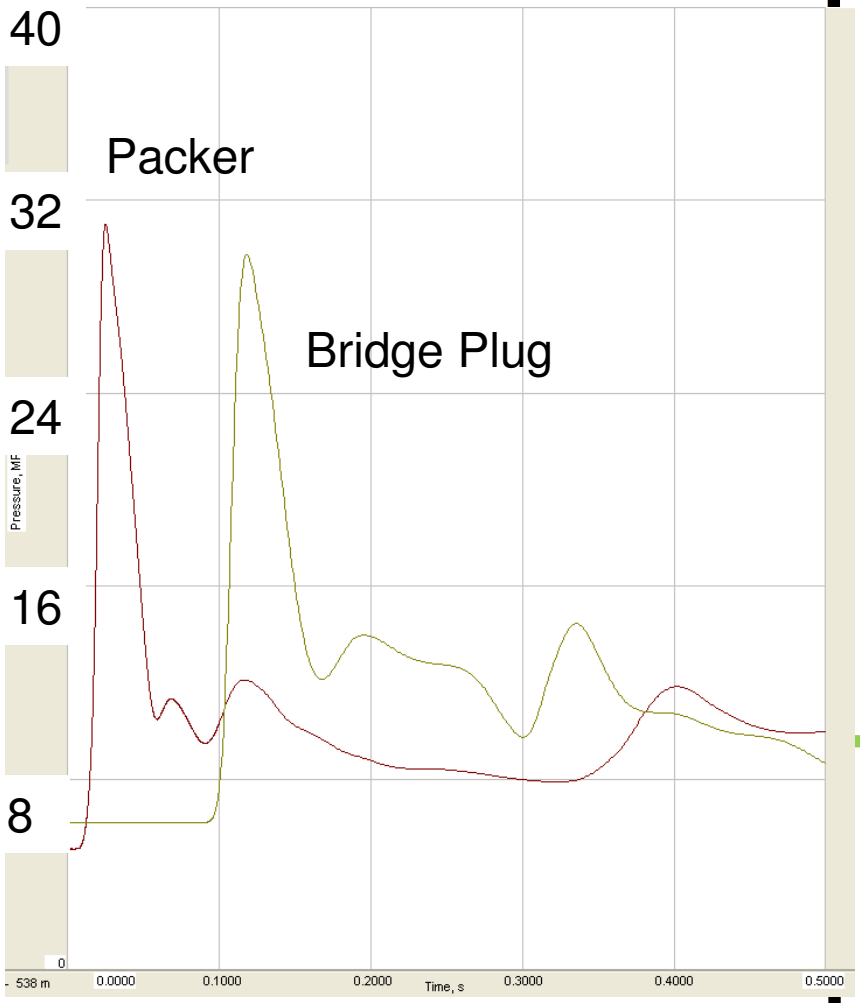


Dual-Zone Completion

Movement


M1(P) 26178 ft
M2(T1) 26550 ft
M3(T1) 26709 ft
M4
M5
Load1
C/T2
C/T3
Tension4
Tension5
4.00
3.00
2.00
1.00
0.00
-1.00
Up/Dn Motion, ft
CWOP – 5’ Depth of the well was 25,000+
2
26604-26704 ft
0.0000
0.2000
0.4000
Time, s
0.6000
0.8000
1.0000
26150 ft
26750 ft

Bridge Plug- Well Integrity



Unknowns

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Component Failure

Why was Failure NOT Predicted?

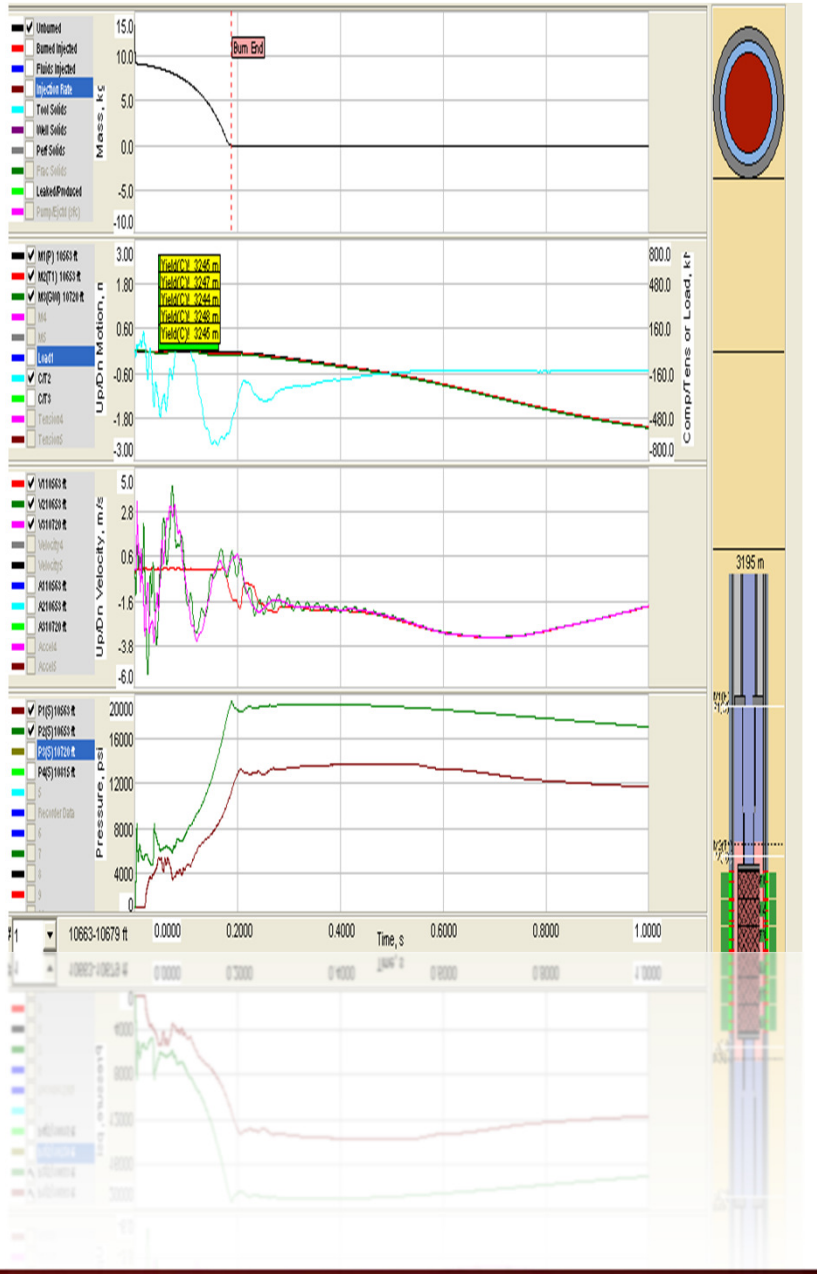
Post Failure Analysis

Gauge Analysis:

- Reported k = 0.2 md
- Actual k = 0.02 md
- Changed perm and re-ran model

Predicted failure @ 3244m

Actual failure @ 3245m



Summary

How can modeling help your completion challenges?

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