

June 2026

Well Re-entry for a Permanent P&A in Deepwater – Case Study



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Agenda

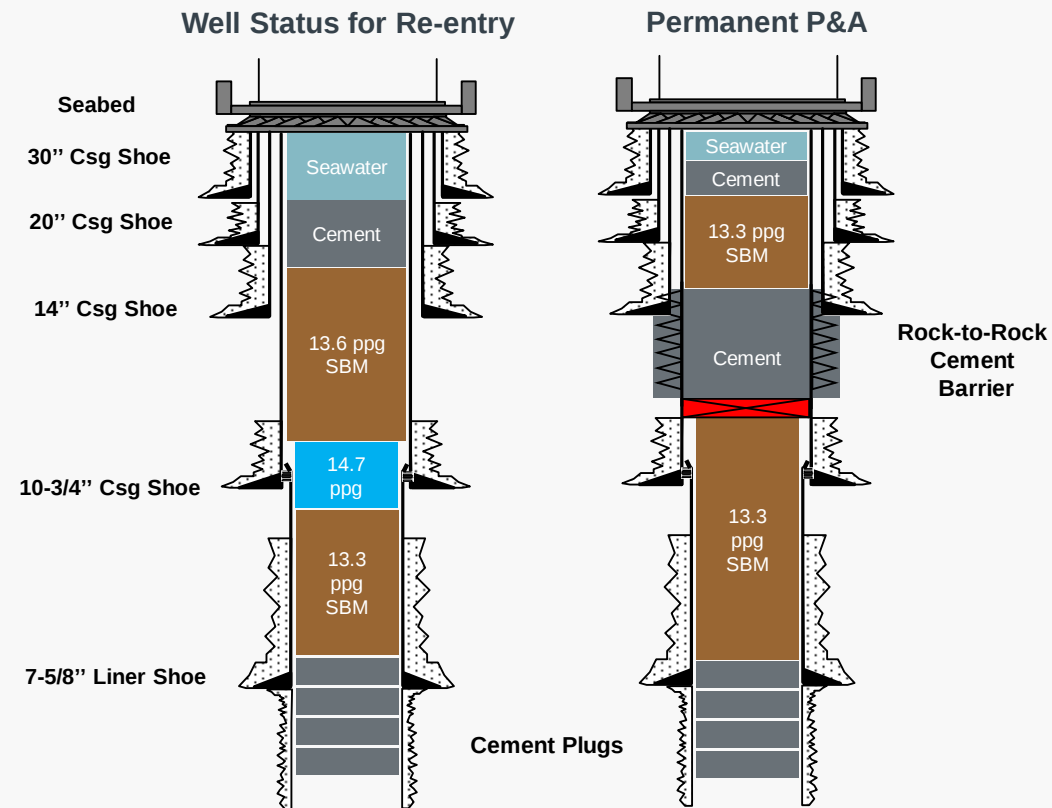
1. Well Status and PP&A Plan
2. Well Re-entry with Modified RBP Plug
3. Perf, Wash and Cement
4. Drill Out, Log CBL and Place Balanced Plug
5. Results



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Well Status and Permanent P&A

- **Work scope:** Permanent abandonment due to lack of cross section barriers integrity.
- **Target depth for new cement Barrier:** 5,576m
- **Challenges:**
 - Possibility of salt creep
 - Casing collapse
 - Pressure buildup below shallow cement barrier

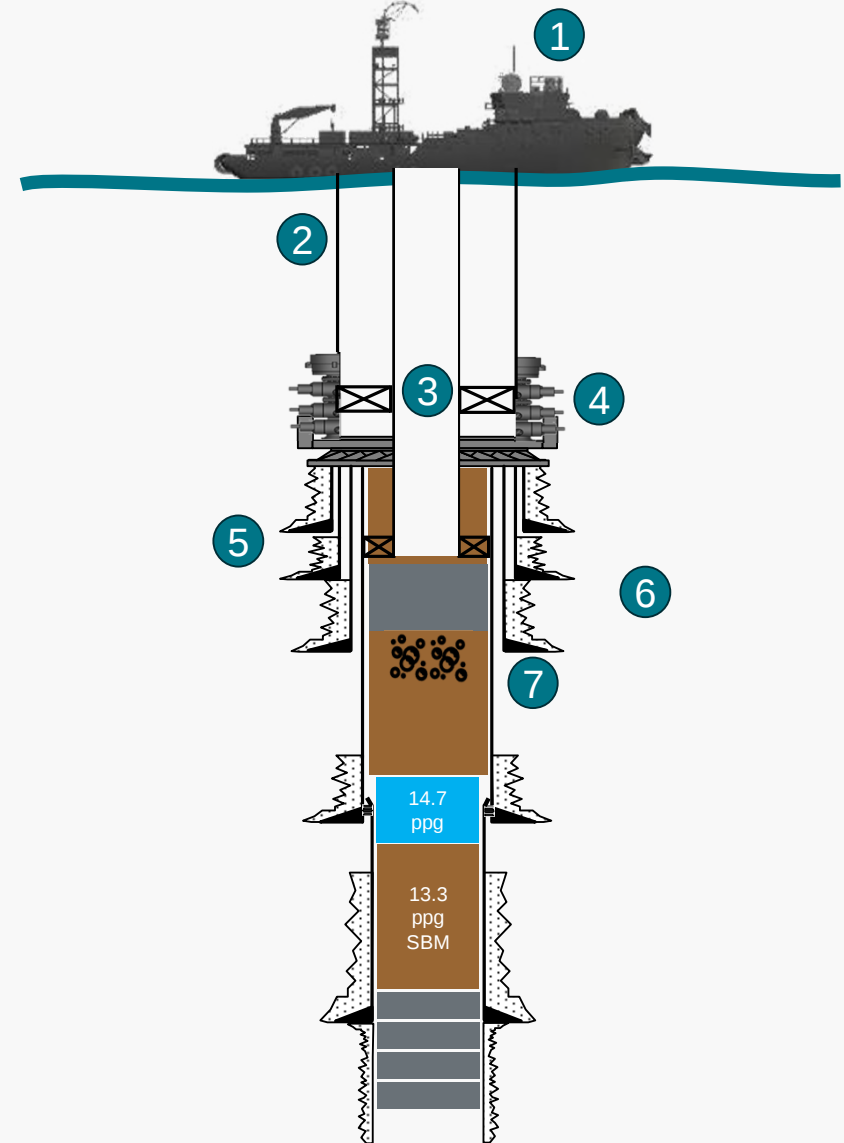




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Well Status and Permanent P&A

1. Coiled Tubing Drilling – 2” Coil
2. Marine Riser
3. Hydril Pipe and SSTT to allow CT inside and seal against BOP
4. Subsea BOP sealing against Hydril Pipe / SSTT
5. Modified Packer from 3” to 4” ID to allow CT drill bit to pass through
6. Cement Plug
7. Unknown pressure below

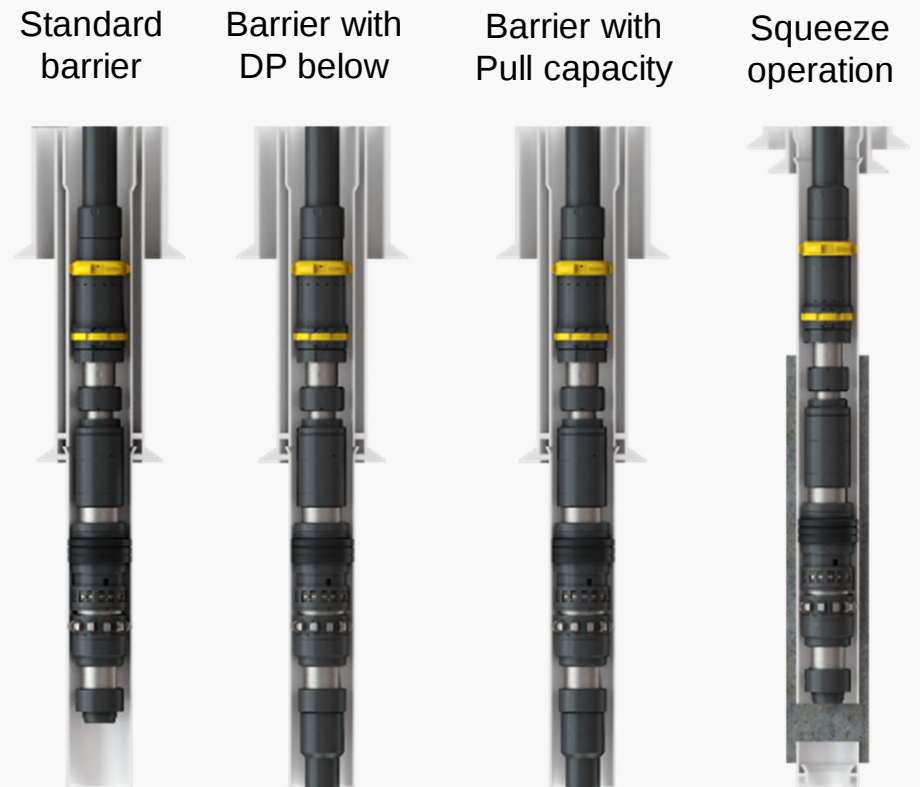




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Well Re-entry with Modified RBP

- Typical RBP applications:
 - Standard temporary barrier, short to long time
 - (hours up to 13 years)
 - Pressure testing
 - Leak detection
 - Plug and perf
 - Fundament
 - Spear applications (300+ MT pull capacity)
 - Combinations for many solutions and trip savings

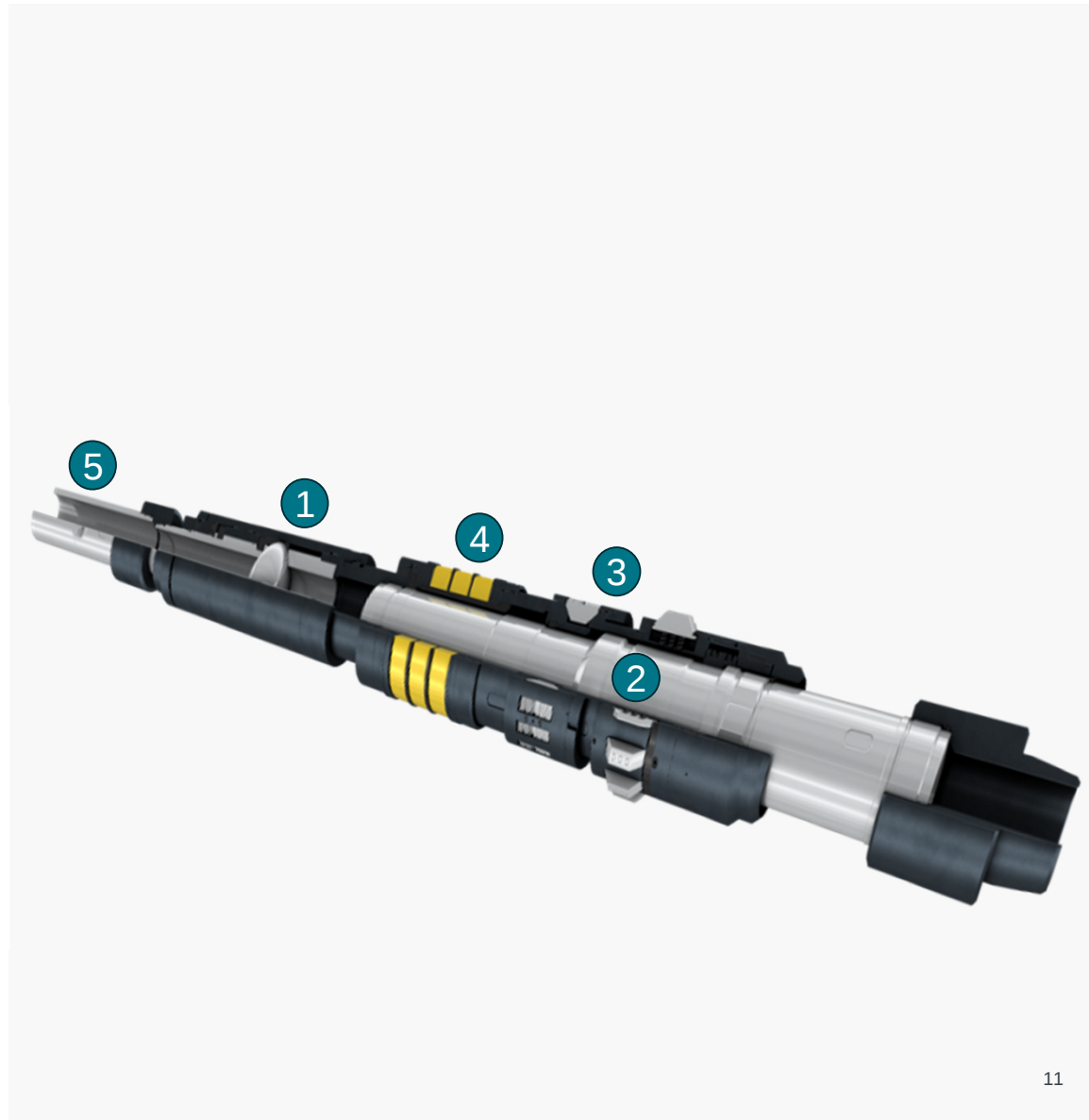




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Well Re-entry with Modified RBP

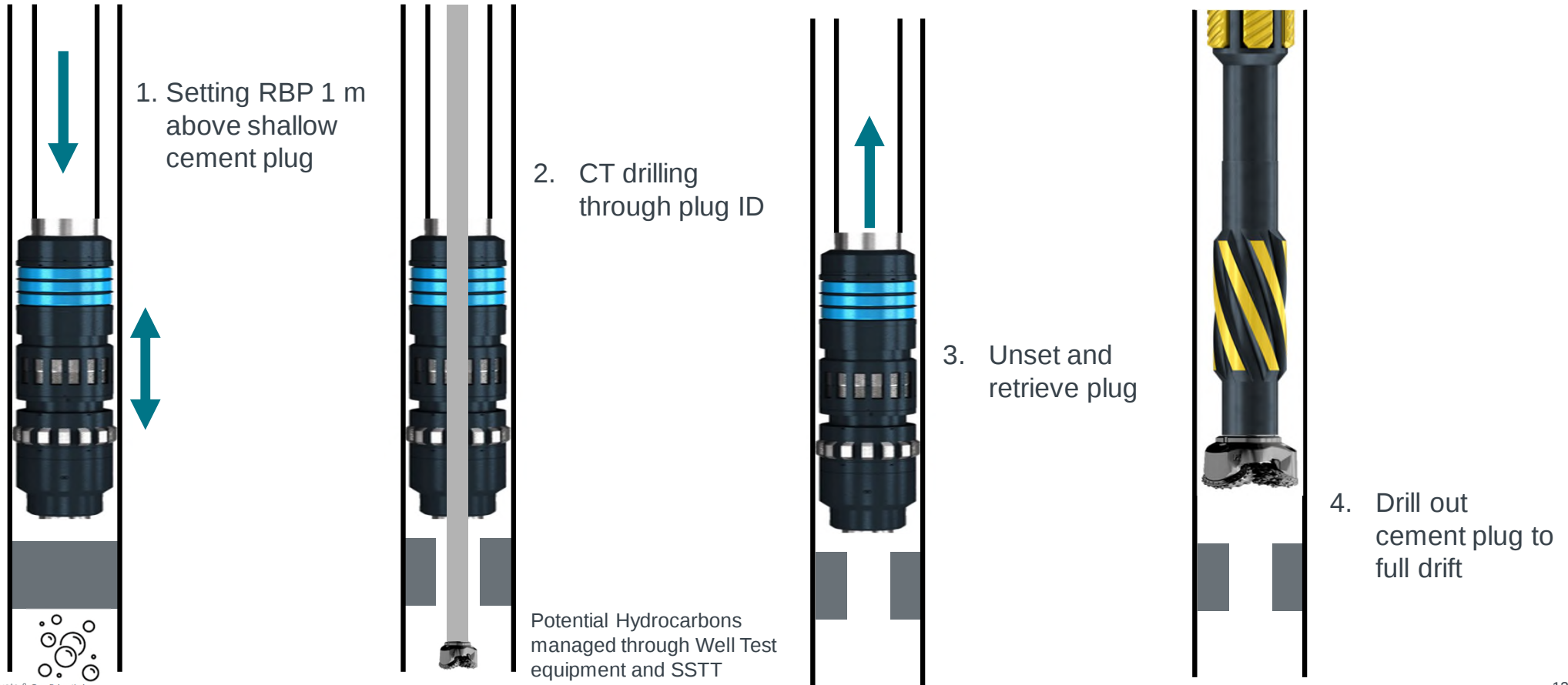
1. Remove Ball Valve System
2. Increase Bore ID for drill Bit
3. RBP Plug for 10 3/4" 85.3# Casing
4. New Running tool Hydril connection
5. Modifications done in < 3 mths
6. Packer test approved by Operator and well integrity committee





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Well Re-entry with Modified RBP



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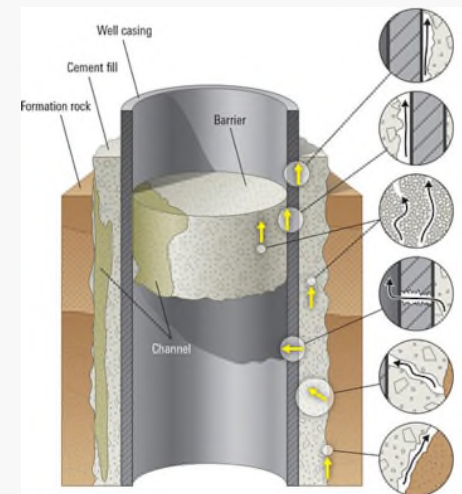
Perf, Wash and Cement

- The Perforate, Wash and Cement system provides an economical and effective alternative to traditional plug and abandonment (PP&A).

As an option for section milling, the systems deliver a step-change in efficiency for PP&A. Together with Tubing Conveyed Perforating (TCP) or mechanical perforating and a cement base in a single run, it provides time and cost savings for well PP&A operations.



Closed Loop Perf, Wash and Cement system for optimum use of hydraulic energy. Allows for real time feedback on washing performance



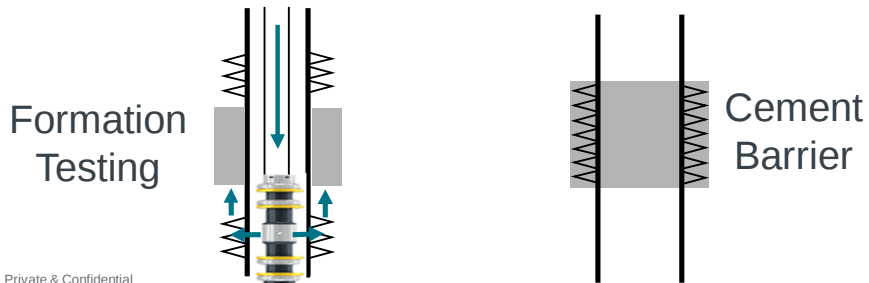
Potential leak paths, including channelling, micro annuli and mud cake occur during poorly executed cementing operations.



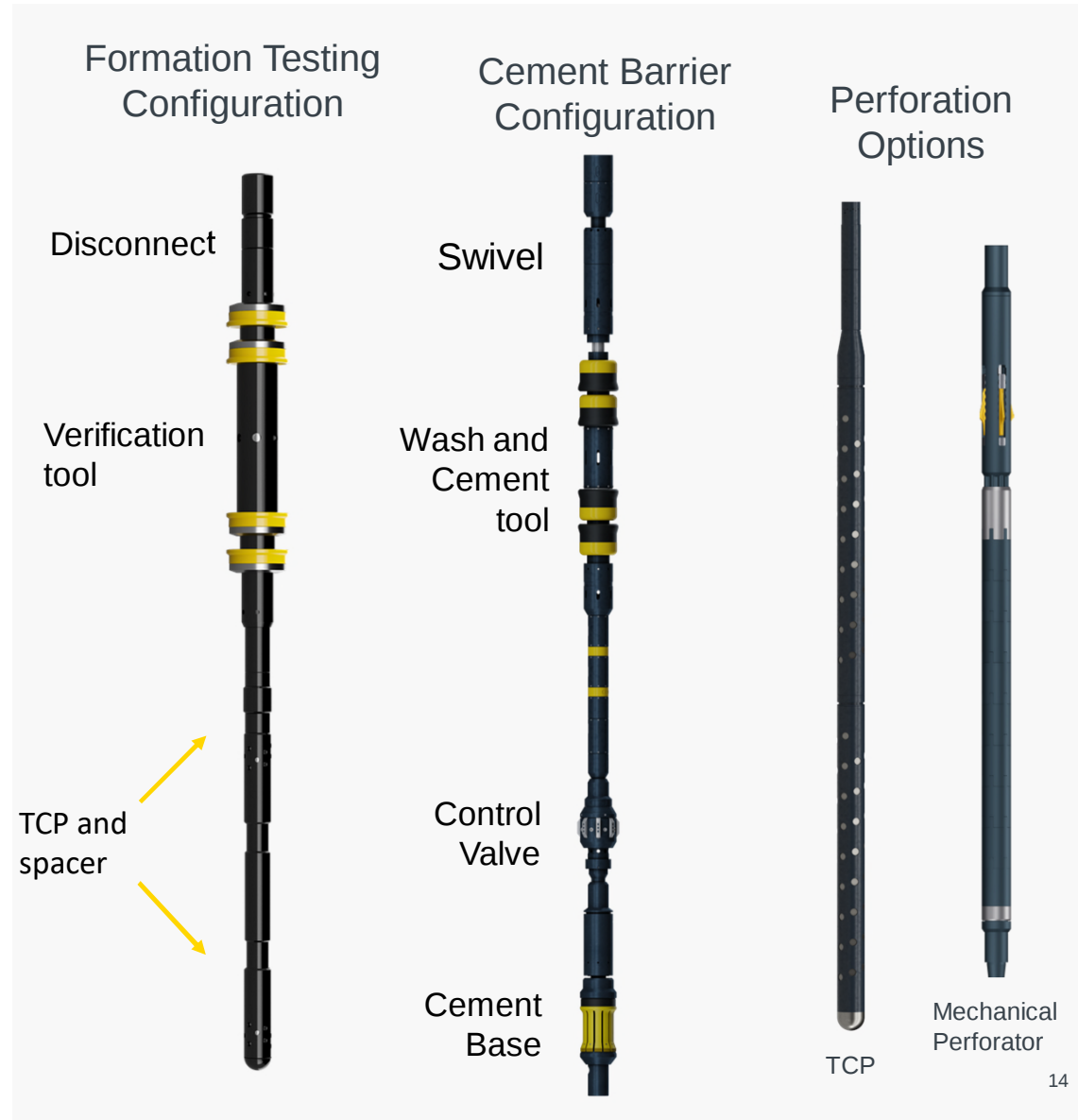
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Perf, Wash and Cement

- Two configurations prepared for re-entry and P&A:
 - Formation Testing:
 - Perforate the casing
 - Test the annular barrier
 - Cement across perforations
 - Cement Barrier:
 - Perforate the casing
 - Wash cement, barite or shales in annulus
 - Cement across and through perforations



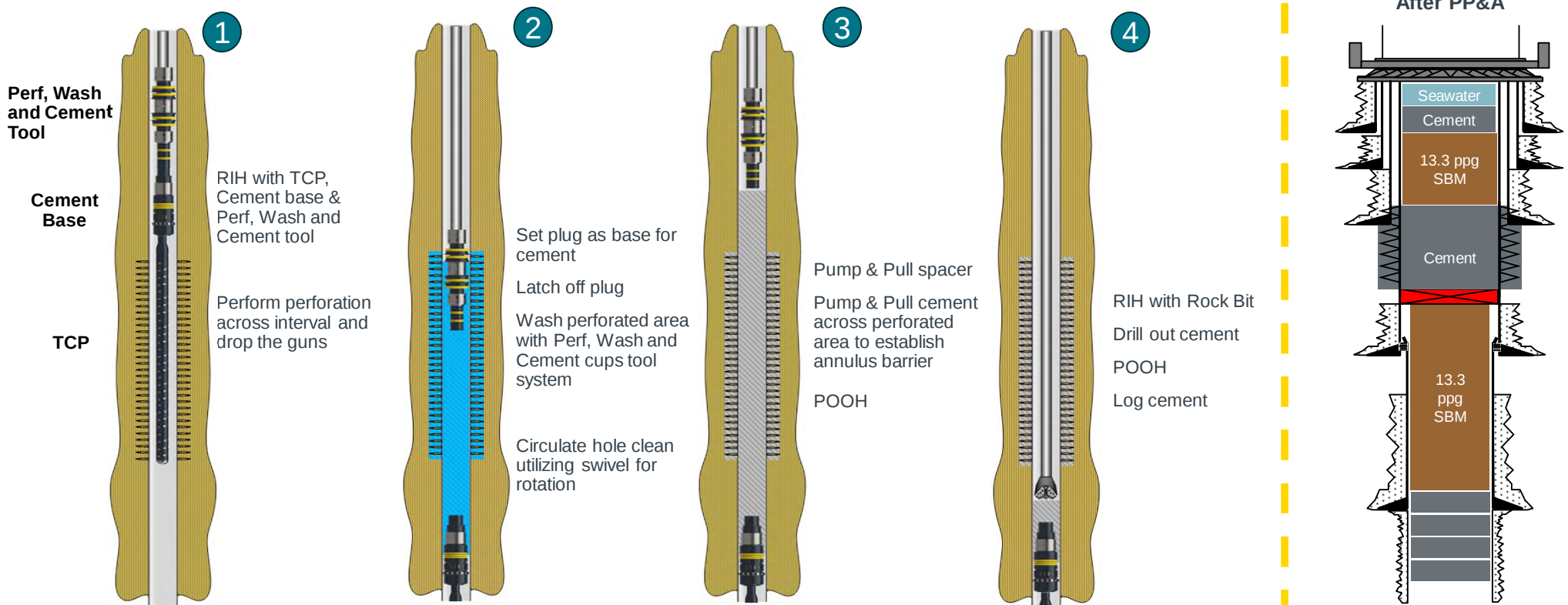
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Perf, Wash and Cement – Drill Out Option

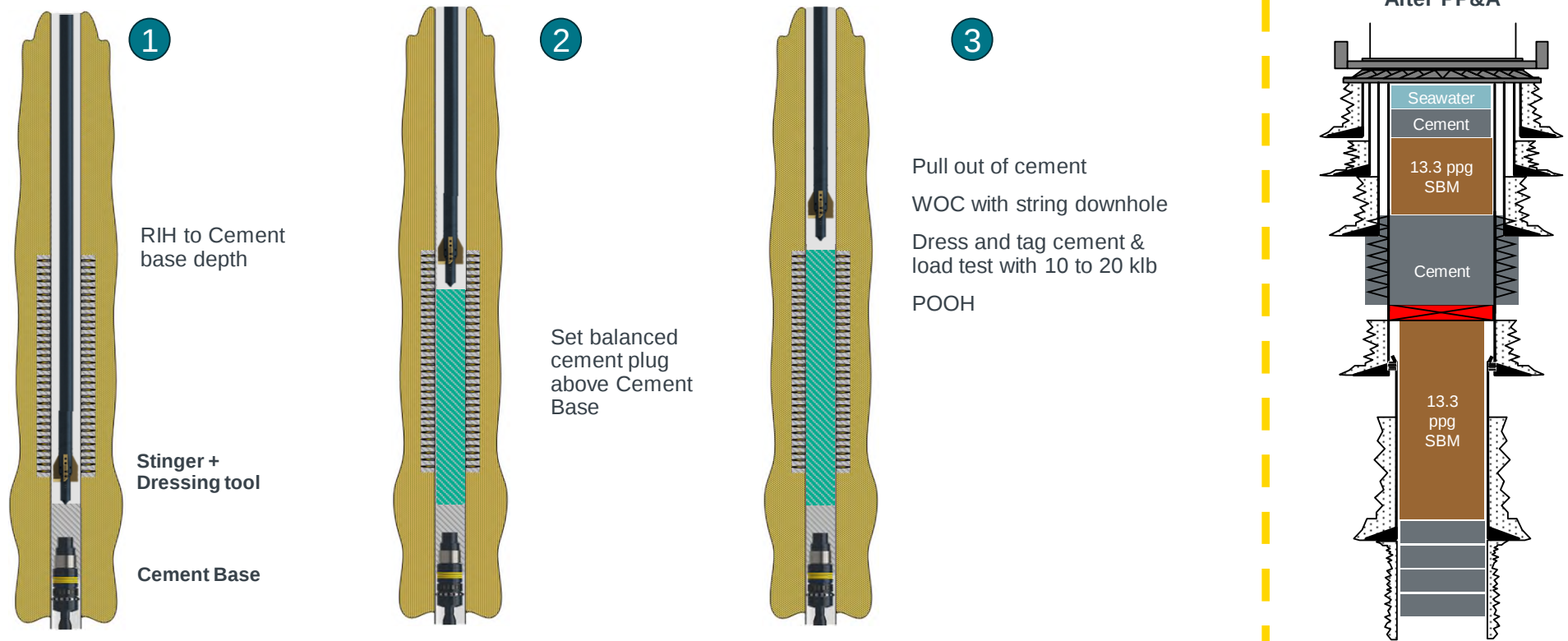


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Perf, Wash and Cement – Drill Out Option – Balanced Cement Plug





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Results – Re-entry and P&A

- Regained access to temporarily abandoned well
- Secured the surface cement plug drill out with potential pressure below.
- Installed packer with 4" full bore ID and hydрил pipe to surface for safer drill out
- Placed 80m rock-to-rock cement barrier with Perf, Wash, Cement technique
- Verified annular barrier with drill out and logging operation
- Final placement of balanced cement plug with dress, tag and pressure test

