SPE Workshop: Managed Pressure Drilling (MPD) and Underbalanced Drilling (UBD)

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Optimizing Productive Drilling Times in Deep Critical Wells with Managed Pressure Drilling in Mexico

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Key Milestones in Mexican Oil Industry

- ✓ Late 19th-century inception in Veracruz
- ✓ Creation of PEMEX post-1938 nationalization
- ✓ Cantarell fields discovery in the 1970s
- ✓ Modern challenges and technological advancements
- ✓ 2013 Energy Reform enables private investment

Objectives:

Optimize drilling times through efficient time management and innovative techniques

- ✓ Challenges in Deep Wells
- ✓ Characteristics of Deep Wells in Mexico
- ✓ Best Practices
- ✓ Specific Case

Schematic Well:

- ✓ Target: 6,090 MD/ 5,520 TVD
- ✓ Section Length: 3,005 MD
- ✓ Last Casing Depth: 3,085 MD
- ✓ Incl Max: 18°
- ✓ Mud Weight: 2.00 – 2.02 g/cc
- ✓ ECD Range: 2.05 – 2.11 g/cc

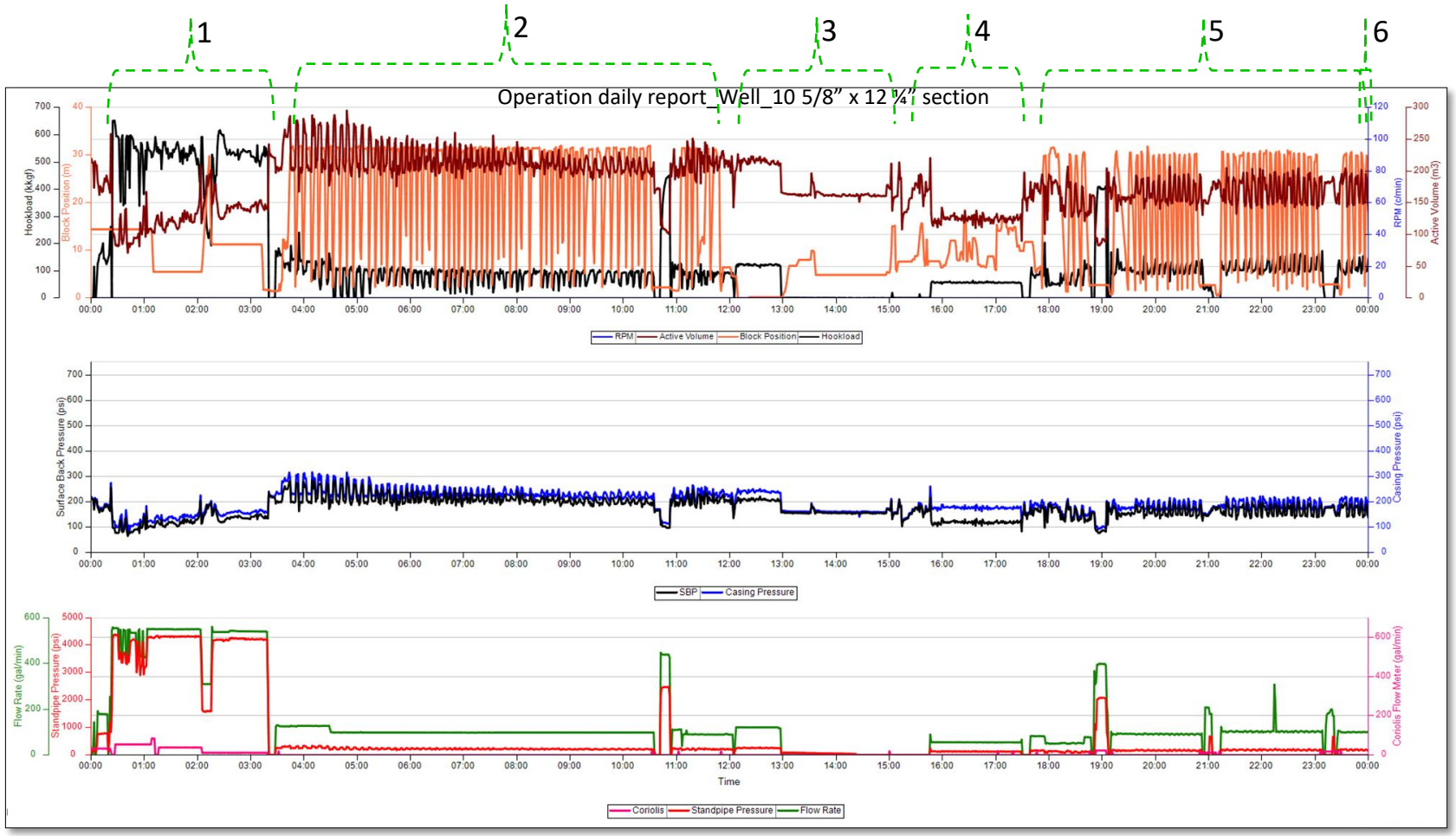
Problems:

24-Hour Delay in Resuming Drilling

- ✓ Additional costs
- ✓ Impact on the schedule

Problems…

1. Suspend/circulates 4,902 m
2. POOH to 3,143 m
3. Client activities
4. Install New Seal element
5. RIH
6. Resume Drilling



Problems…

- ✓ Time-Consuming Process
- ✓ Client Impact
- ✓ Production Delays
- ✓ Cost Implications
- ✓ Need for Efficiency

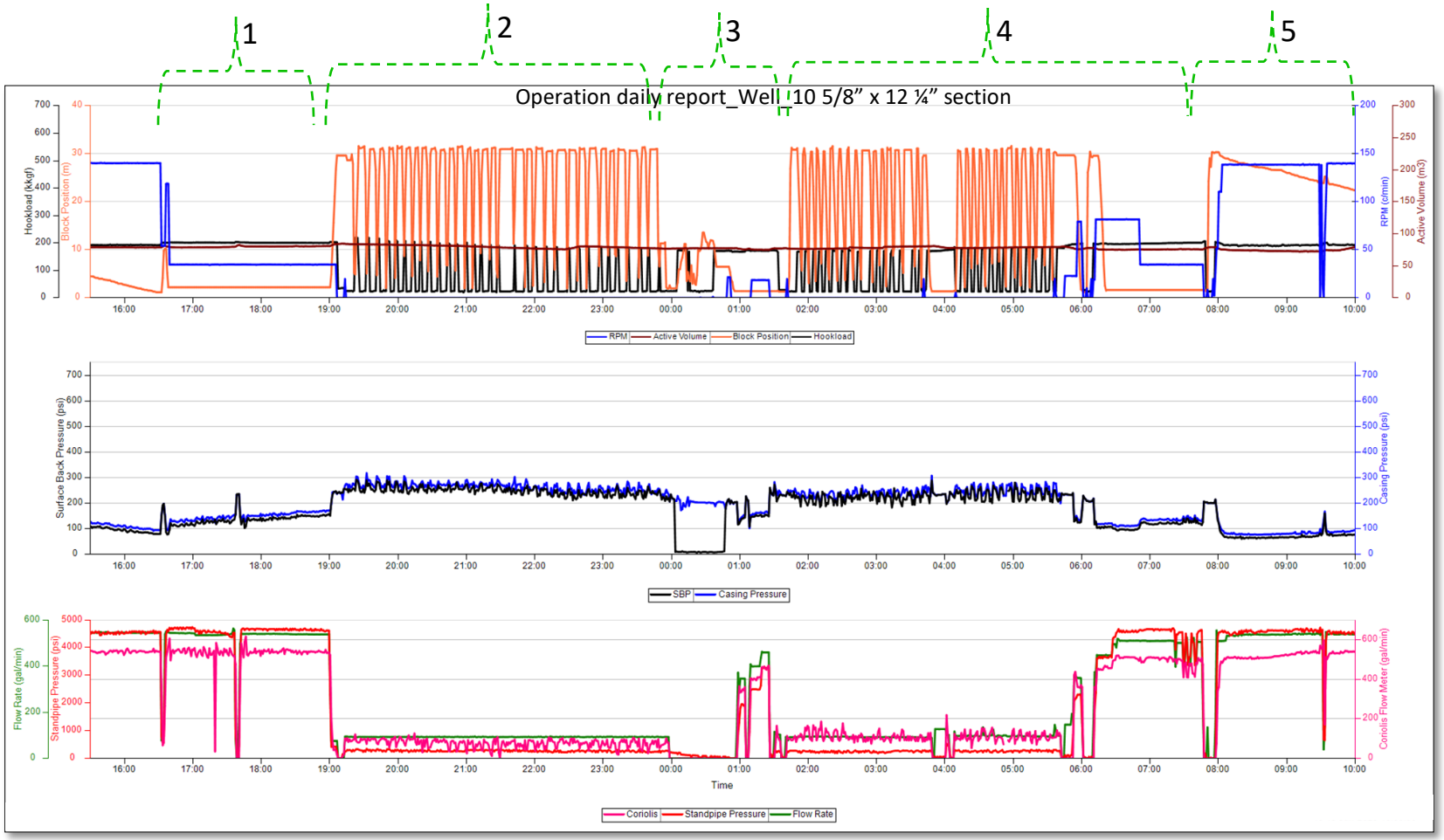
Strategies for Optimization

The choice of an enlarged section has several potential advantages:

- ✓ Geological Stability
- ✓ Risk Mitigation
- ✓ Operational Optimization
- ✓ Collaboration and Approval

Solution:

- ✓ Significant Reduction in Operation Time
- ✓ Maintained Safety Measures
- ✓ Effectiveness in Deep Wells
- ✓ Successful Operational Strategy



Conclusions:

Implementing the proposed changes reduced the operation time for sealing element replacement by 35%, from 24 to 15.5 hours, while maintaining safety. The study demonstrates the effectiveness of optimizing replacements in deep wells and highlights the importance of risk assessment and strategic planning. This approach has the potential to improve drilling performance and client satisfaction in other wells.

Q&A