

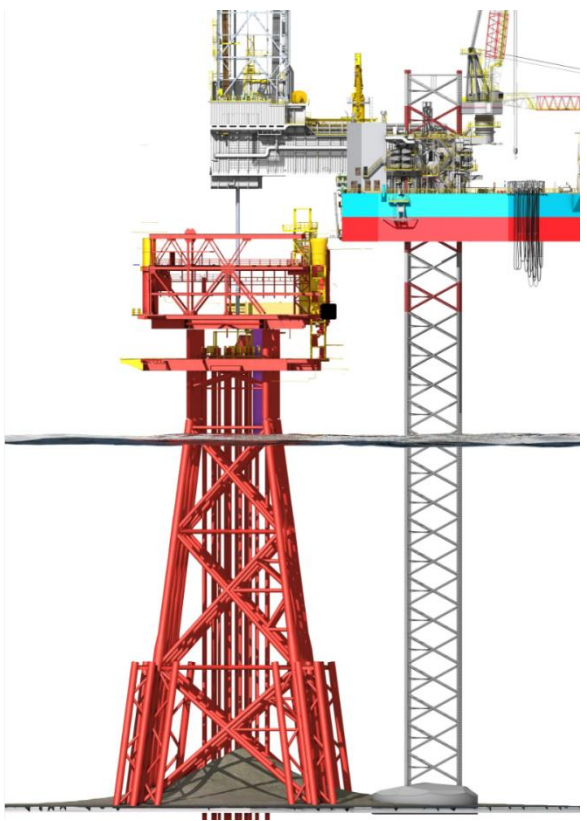
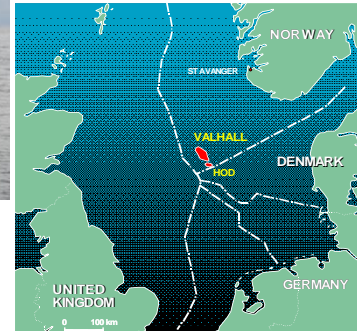


Valhall DP P&A project: “The Project that has it all”

Keep it Simple – Safely Delivering Great Performance

Valhall P&A Team
BP Norway

Stavanger, September 2016

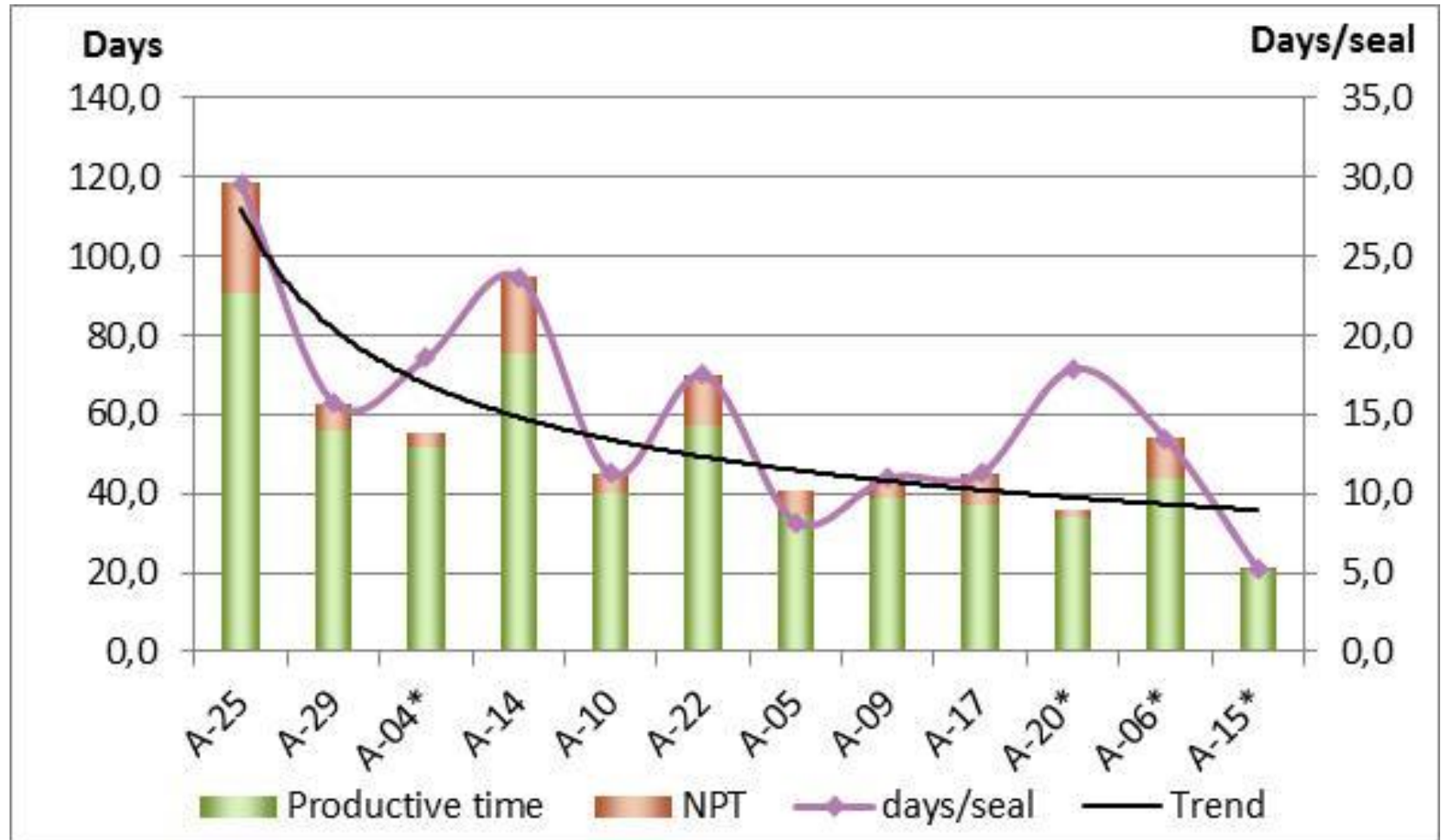


Delivered safe, compliant, reliable and competitive wells operations

In addition, the “One Team” was able within 25 months of operation to:

- Reduced the average days per P&A'd well by 45%
- Reduced the costs per P&A'd well by average 35% (total savings \$210MM)
- Deliver 13 wells P&A'd towards the end of rig contract versus 6 original planned.

What we have delivered so far



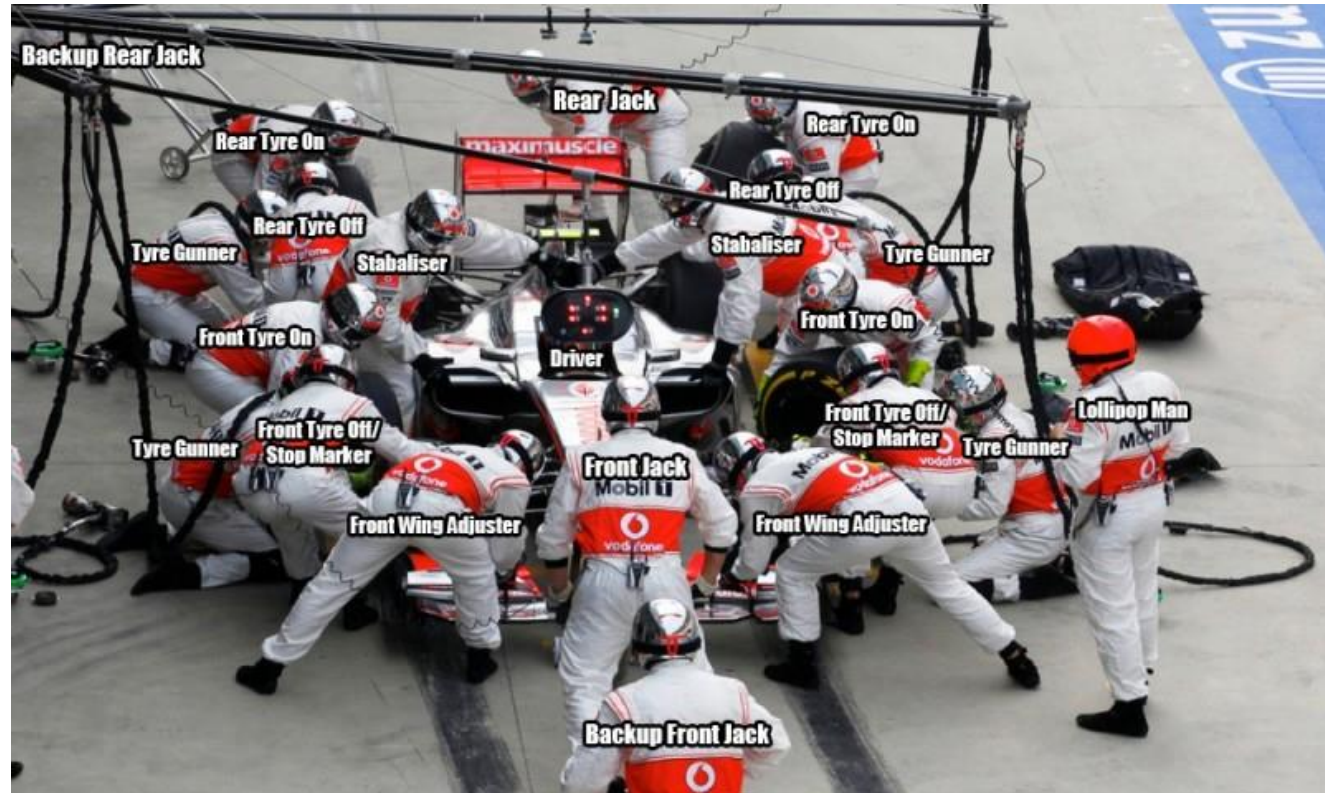
Worked 16 156 hrs with 2 623hrs Non Productive Time – i.e. 14,4%

What is Performance ?



Changing a tyre:

Similar scope of work, but one has been developed to perfection: 1.5 hrs vs 1,93 sec (Red Bull nov '14).

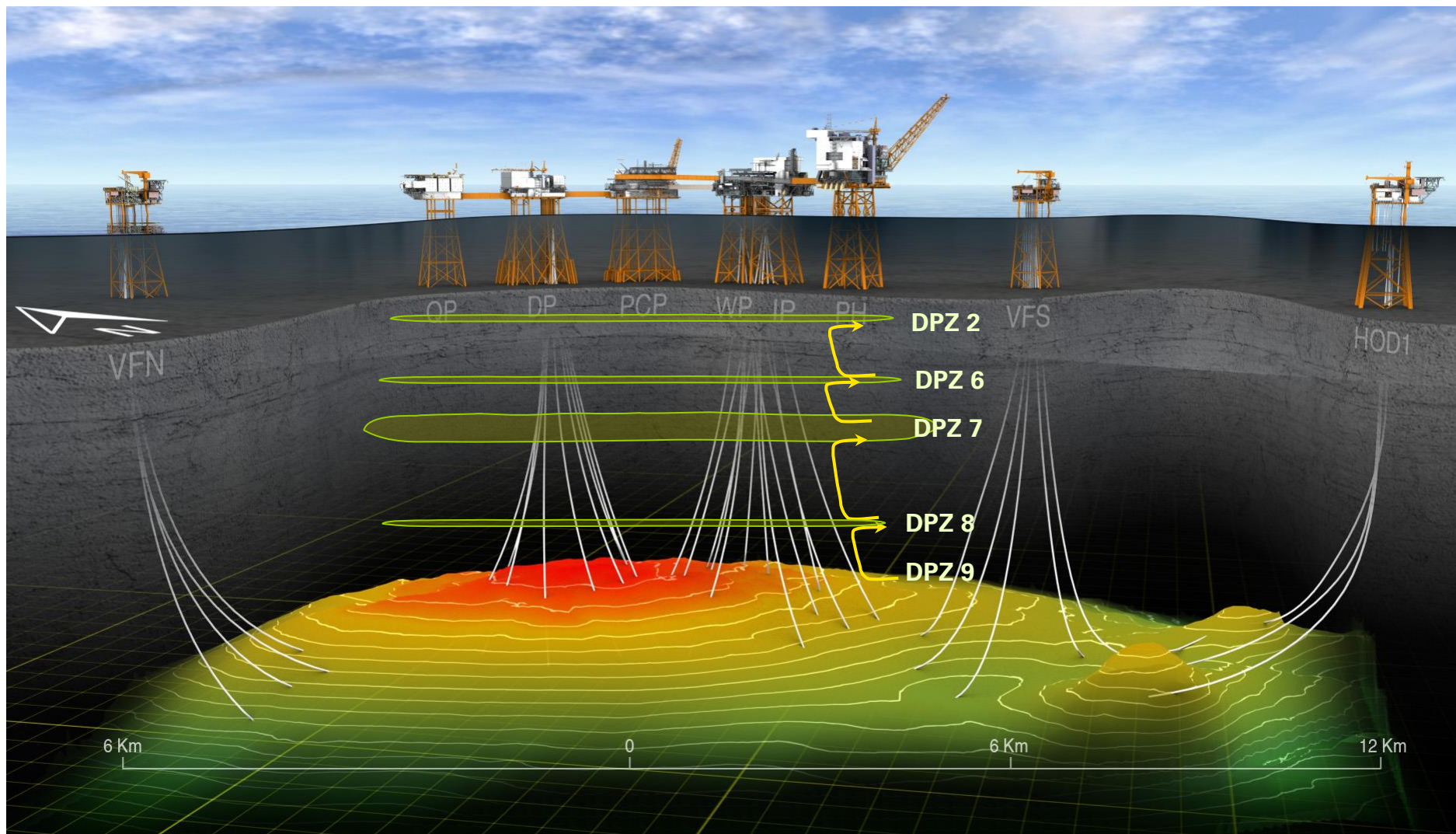


Valhall DP P&A project



- Two teams joined together, engineers and operations
- One of the biggest P&A project within the BP group for a decade (31 wells on DP, and 8 on Hod).
- Required to deliver compliant P&A' d wells as per local guidelines (NORSOK D-010) and internal procedures (BP Group Practices).
- Extreme high focus from the organization on how the ONE TEAM set a “standard” for estimating the provisions
- Nine DPZ and a very complex overburden

Strategy for Valhall DPZ zonal isolation



Building Blocks



- Kill A-annulus
- Recover tubing
- Clean out and log 9-5/8" casing
- Restore seal 9, 8, and 7 (PWC)
 - Kill B-annulus
 - Remove C-section
 - Recover 9-5/8" casing
 - Clean out and log 13-3/8"
 - Restore seal 6
 - Kill C-annulus
 - Remove B-section
 - Recover 13-3/8"
 - Clean out and log 20"
 - Restore seal 2
- Install surface barrier



- Implement Lessons Learned, and optimize your “building blocks”
- Measure yourself – **don’t be defensive** or afraid that you are **held accountable for your inefficiency**. Instead provide the shortcomings in the operations (open culture).
- Have regular re-cap sessions with the birds eye view, and see if you are still in line with the original objectives.

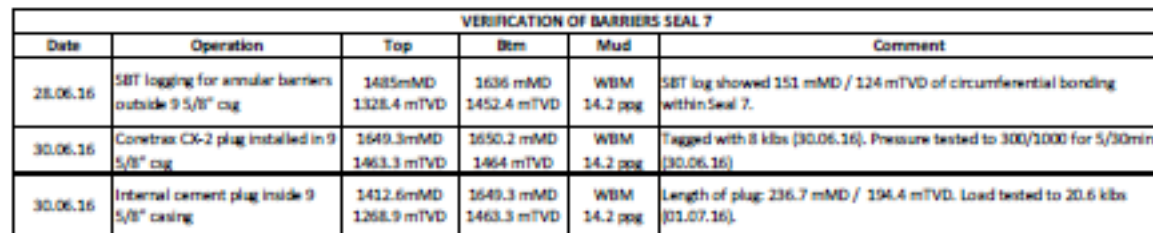
Refine procedures and standardize



- Once you have obtained the best practices, standardize this. See if these “building blocks” can be used multiple times within the project
- Break down the project in smaller “pieces”.
 - Dive into the details – the devil is in the details
- Repeat your best practices, and build competence and confidence within the team

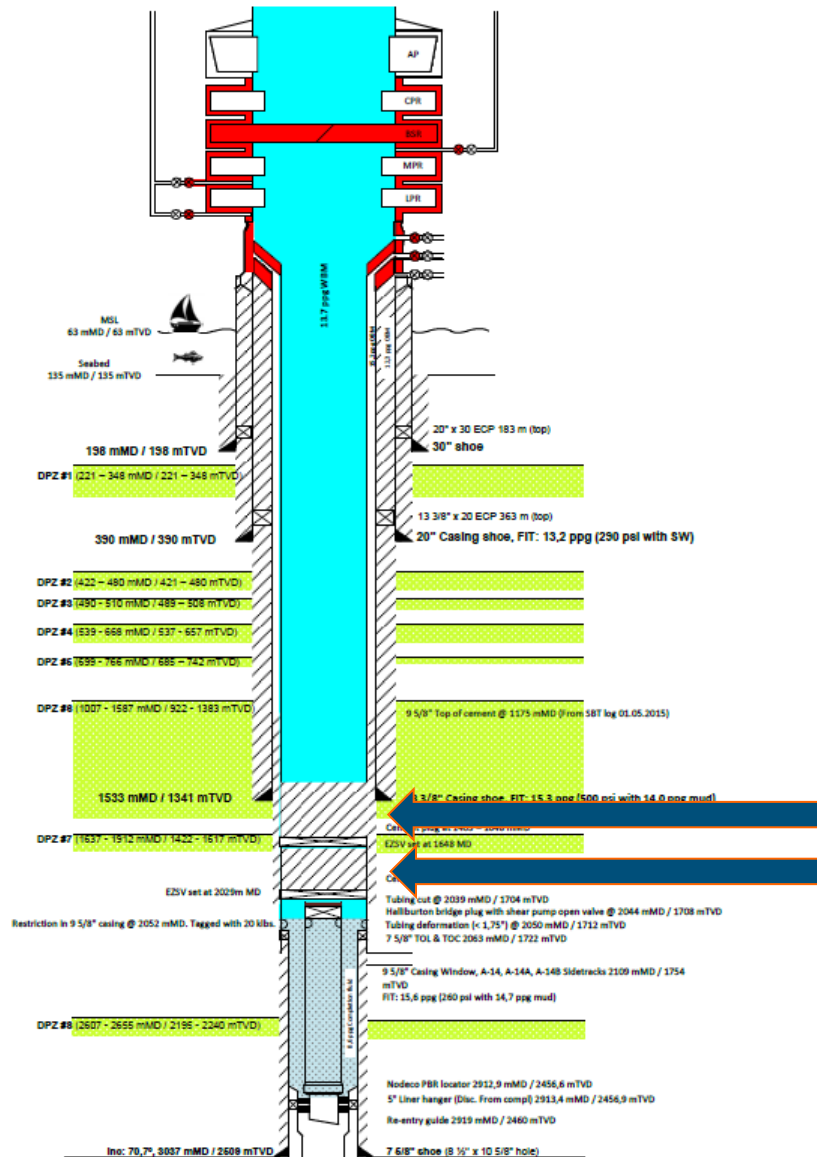






Daily Well Status – Communication Tool

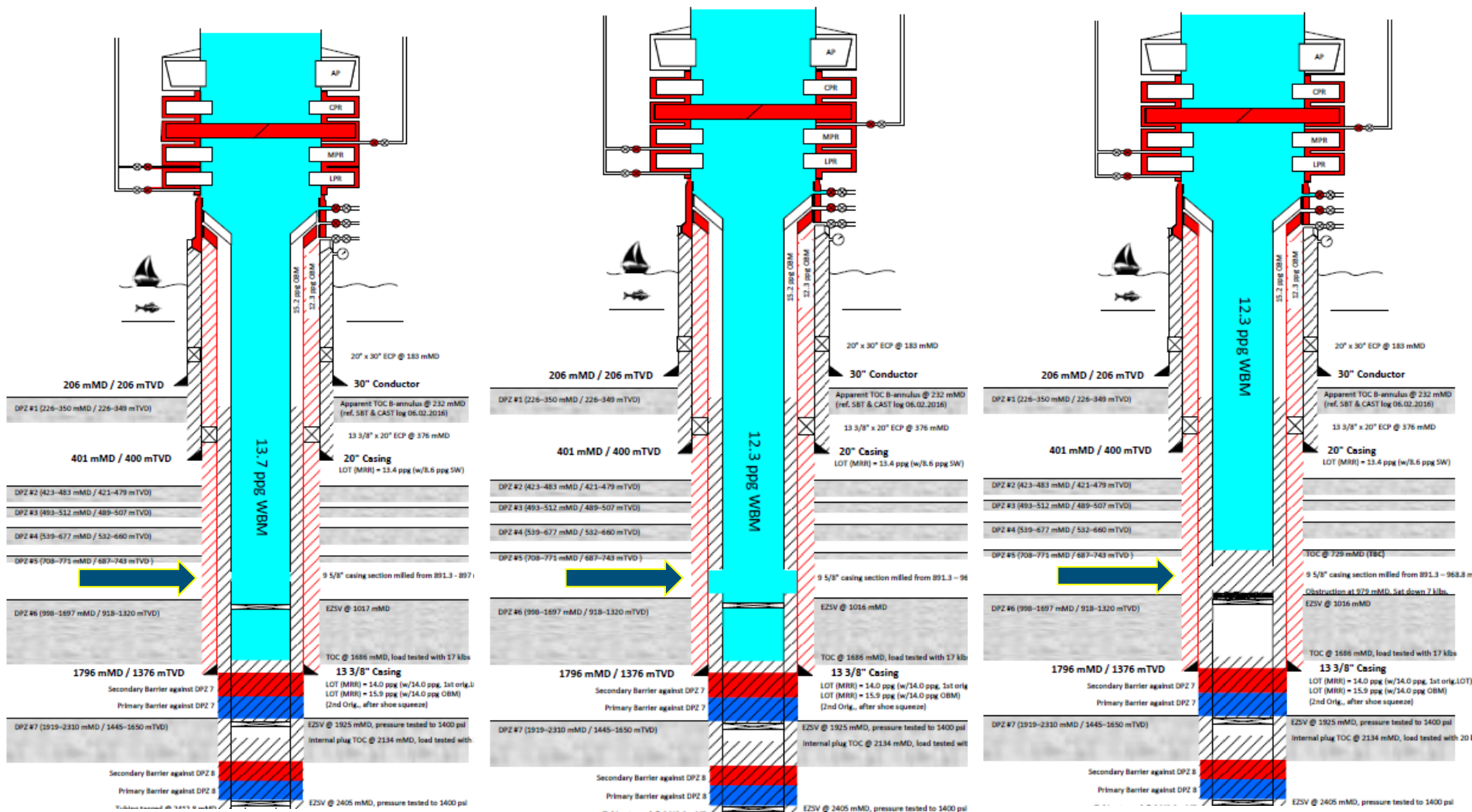
Shale and PWC



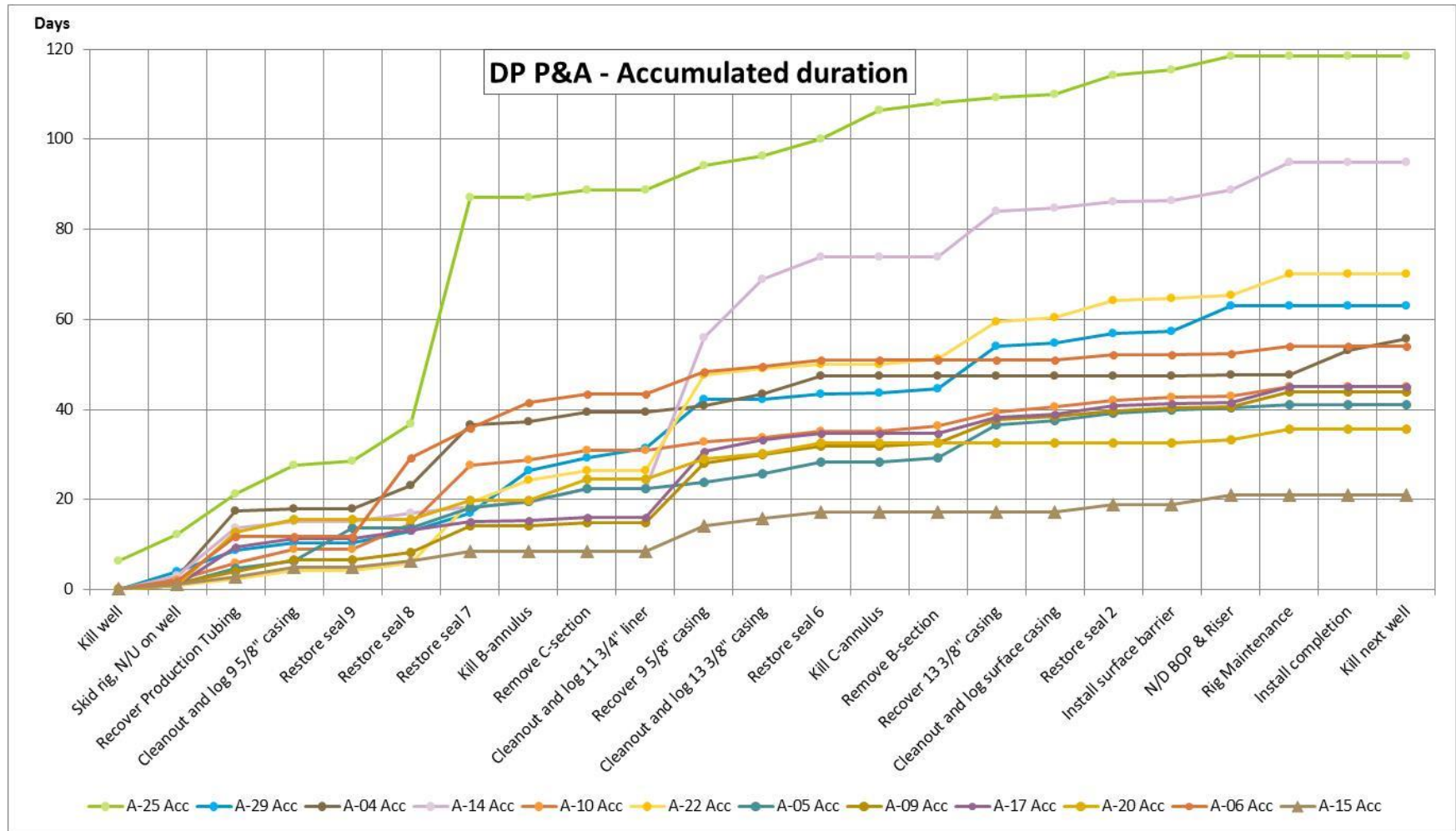
Perf, Wash & Cement barrier

Shale barrier externally, cement internally

Daily Well Status – Milling casing inside casing



Improving results



Delivered safe, compliant, reliable and competitive wells operations

In addition, the “One Team” was able within 25 months of operation to:

- Reduced the average days per P&A’d well by 45%
- Reduced the costs per P&A’d well by average 35% (total savings \$210MM)
- Deliver 13 wells P&A’d towards the end of rig contract versus 6 original planned.

More important, we are setting a thorough high standard on how to deliver safe and compliant P&A wells for the future.

End of the first phase of the project

