

# Improved P&A Performance on Valhall.

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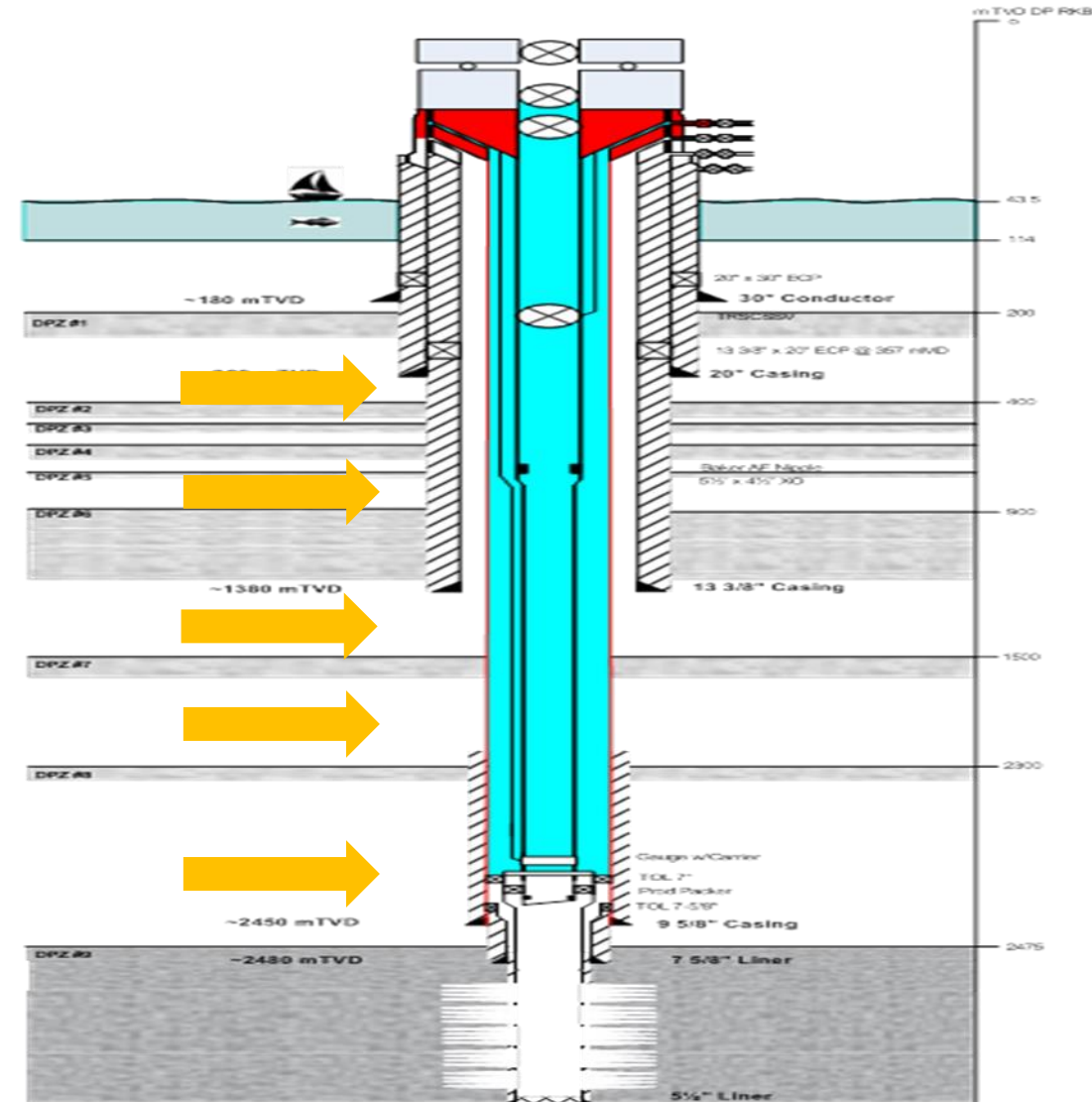
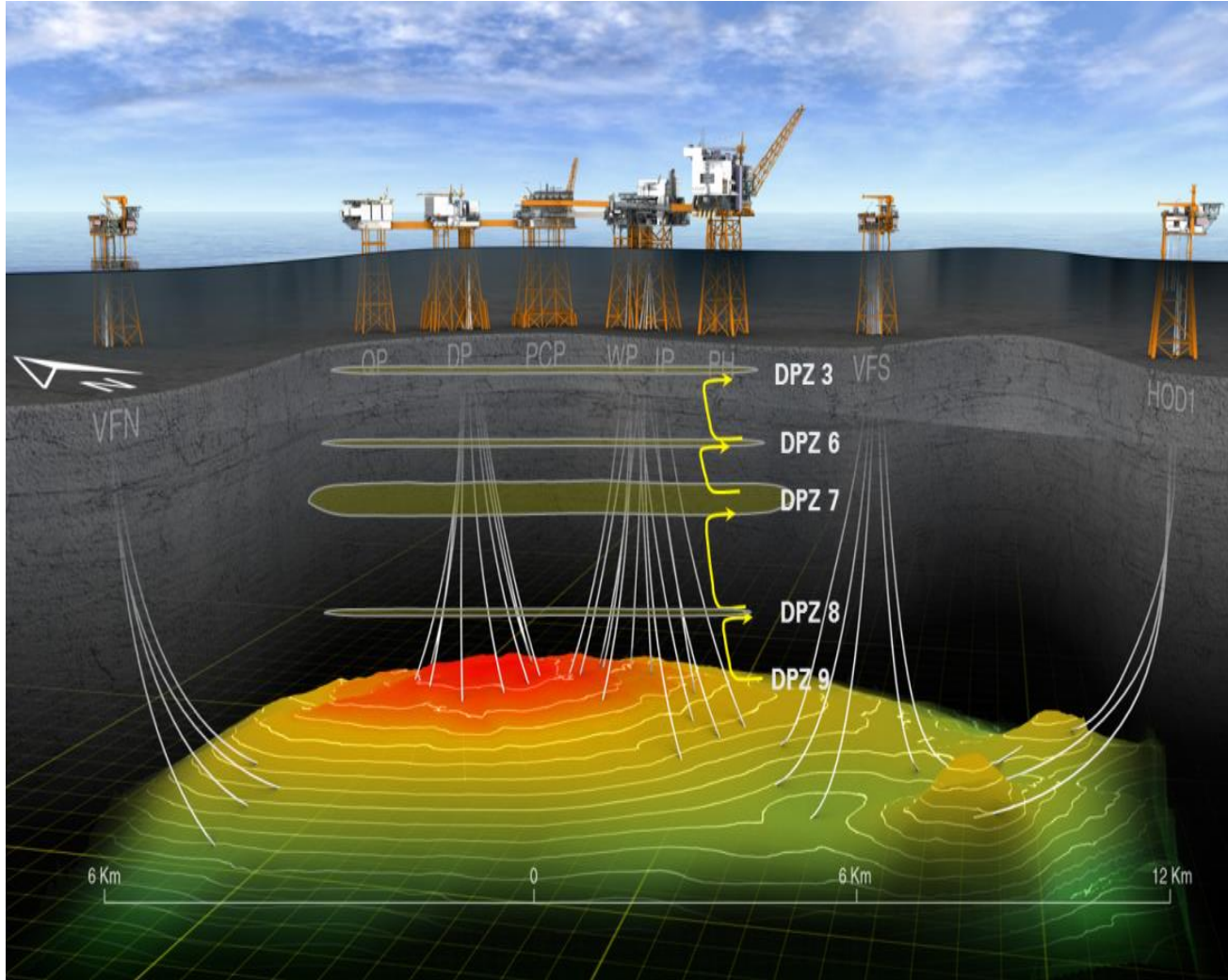
Oct 18, 2018



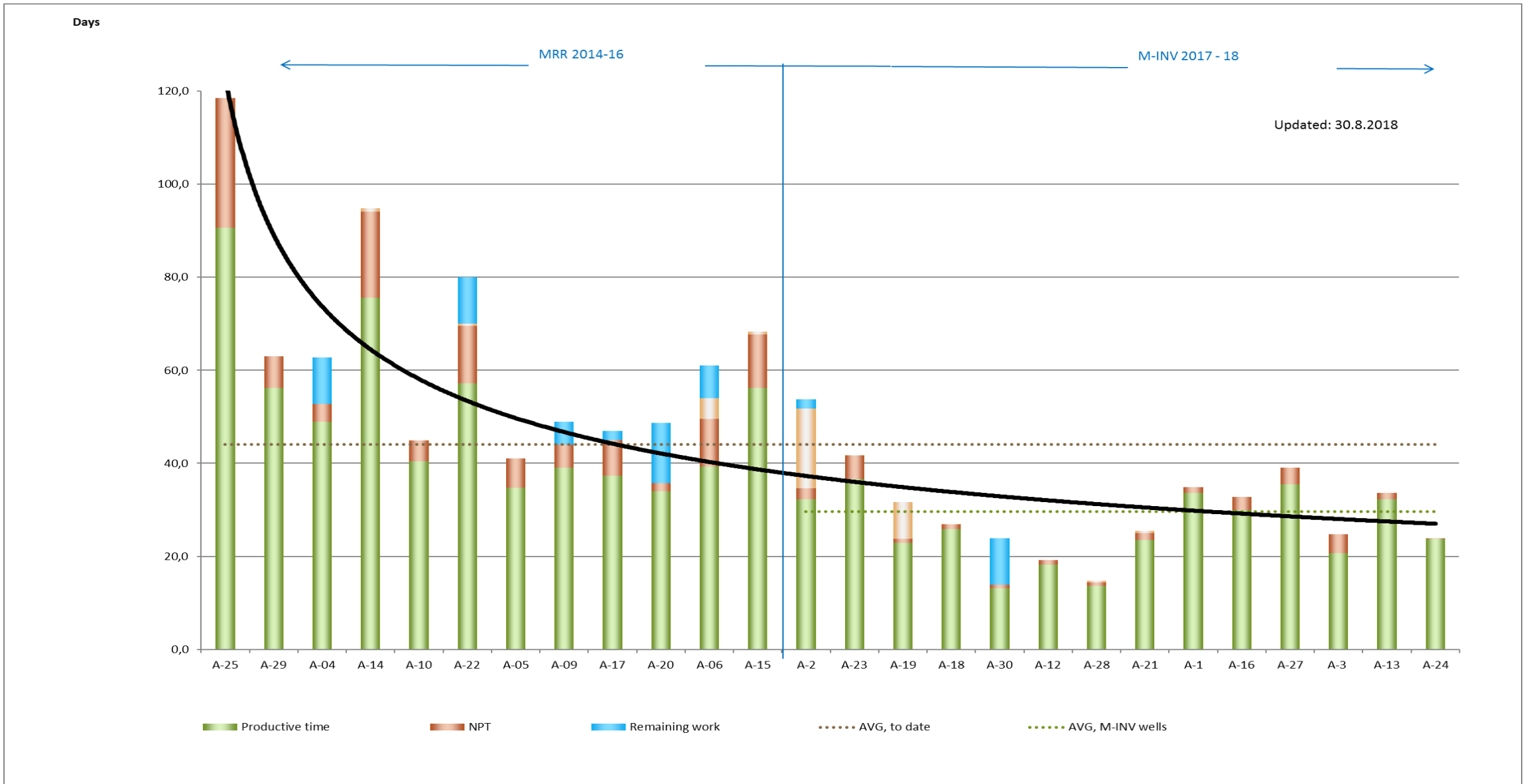
# Content

- Performance
- Work at 3 levels – Safety
- Daily Communication
- Ways of increasing efficiency
- Seeking new P&A technology
- Desired industry direction of P&A

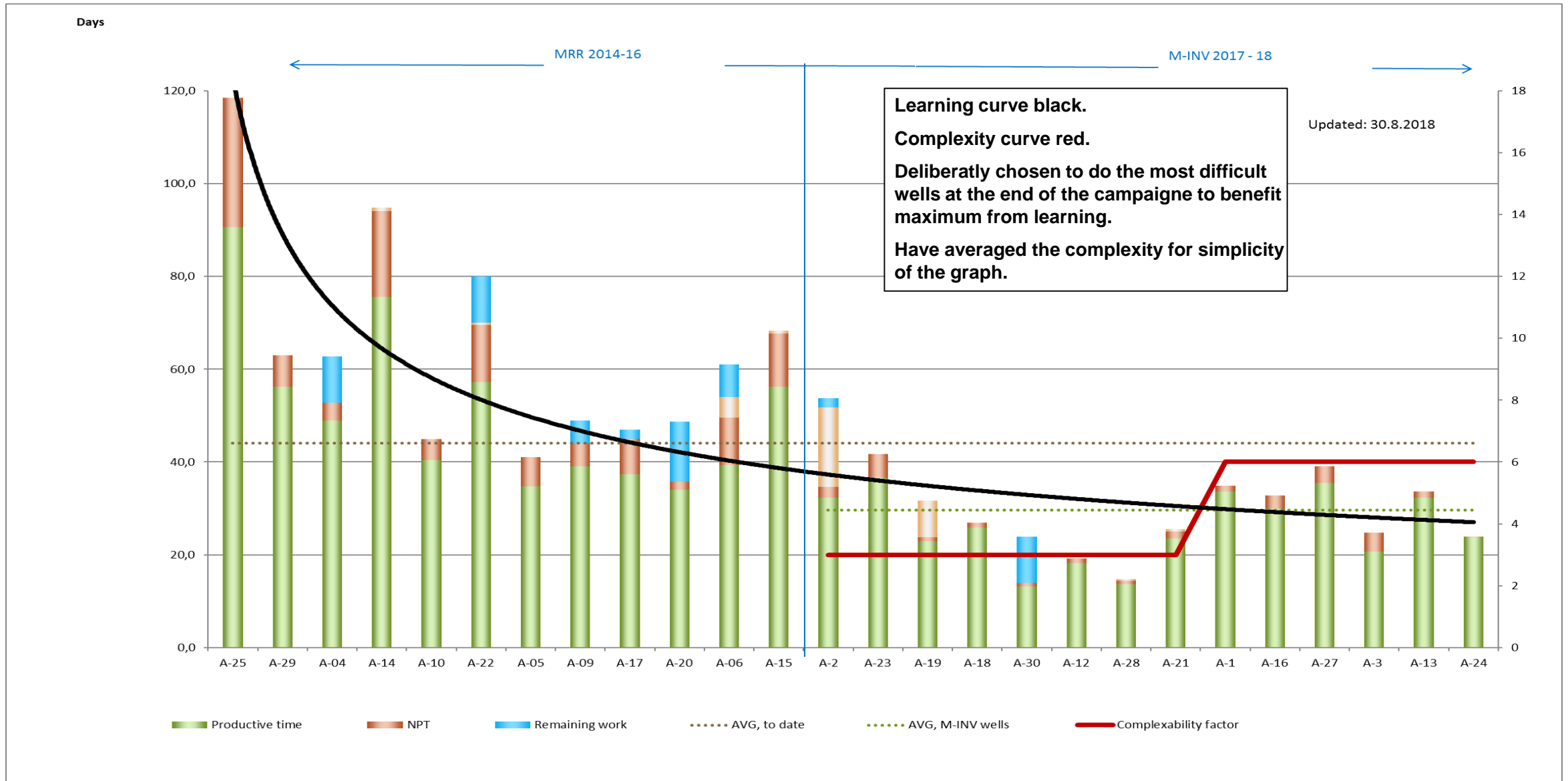
# Valhall Field – Overburden



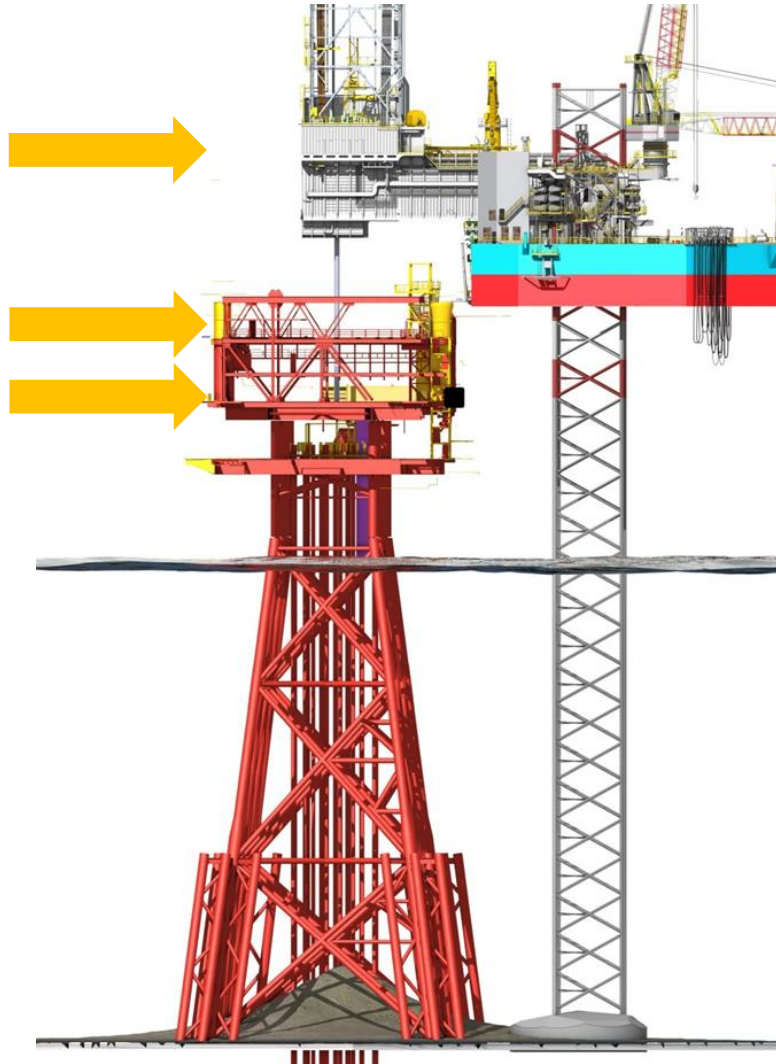
# VALHALL DP P&A PERFORMANCE



# WELL ORDER VS. COMPLEXITY



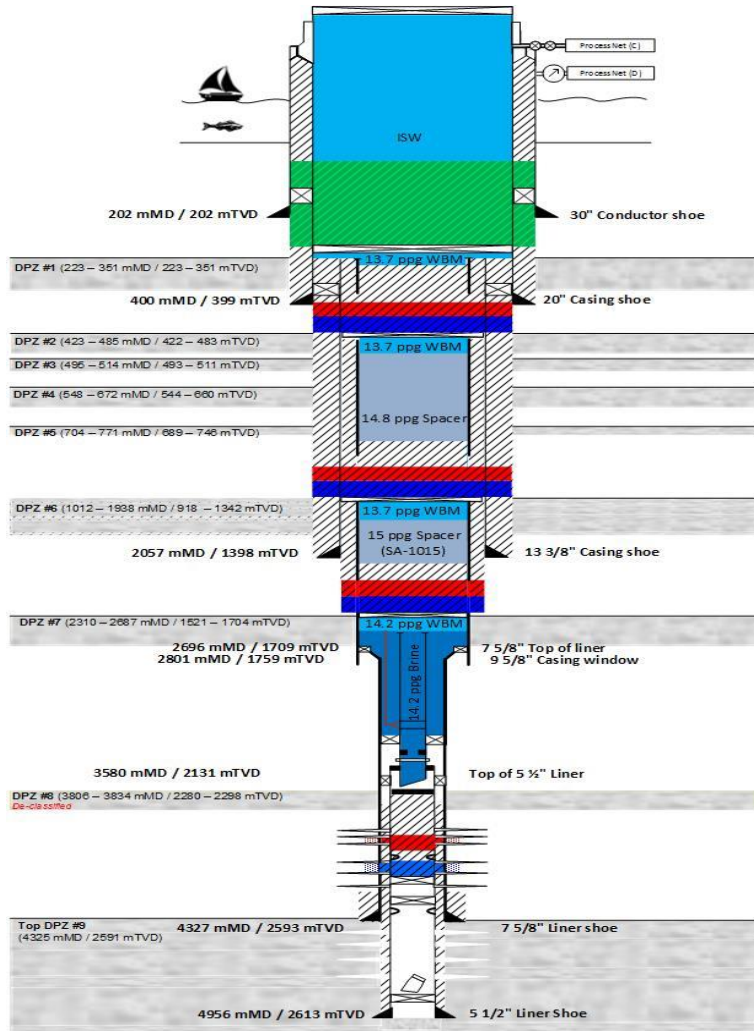
# Work at 3 levels



# Safety increases efficiency



# Daily Communication – Education - Verification



VERIFICATION OF BARRIERS SEAL 8/9					
Date	Operation	Top	Btm	Mud	Comment

VERIFICATION OF BARRIERS SEAL 7					
Date	Operation	Top	Btm	Mud	Comment

VERIFICATION OF BARRIERS SEAL 6					
Date	Operation	Top	Btm	Mud	Comment

VERIFICATION OF BARRIERS SEAL 2					
Date	Operation	Top	Btm	Mud	Comment

ENVIRONMENTAL PLUG					
Date	Operation	Top	Btm	Mud	Comment

# Some Statistics – Enabled increased efficiency

- Plugged 14 wells in 13 months
- P&A Time on each well reduced by 50%
- Installed 125 well barriers
- Pulled 49 km tubing/casing out of the wells – Rig enabled pulling in stands & L/D off critical time (AUX)
- 2100 tons of steel removed
- Pulled sandwich casing for the first time in AkerBP
- Set world record in section milling inside casing – 110m in one run. This included Underreamer to clean milled window.
- Finally and most important: No harm to people, equipment & environment.



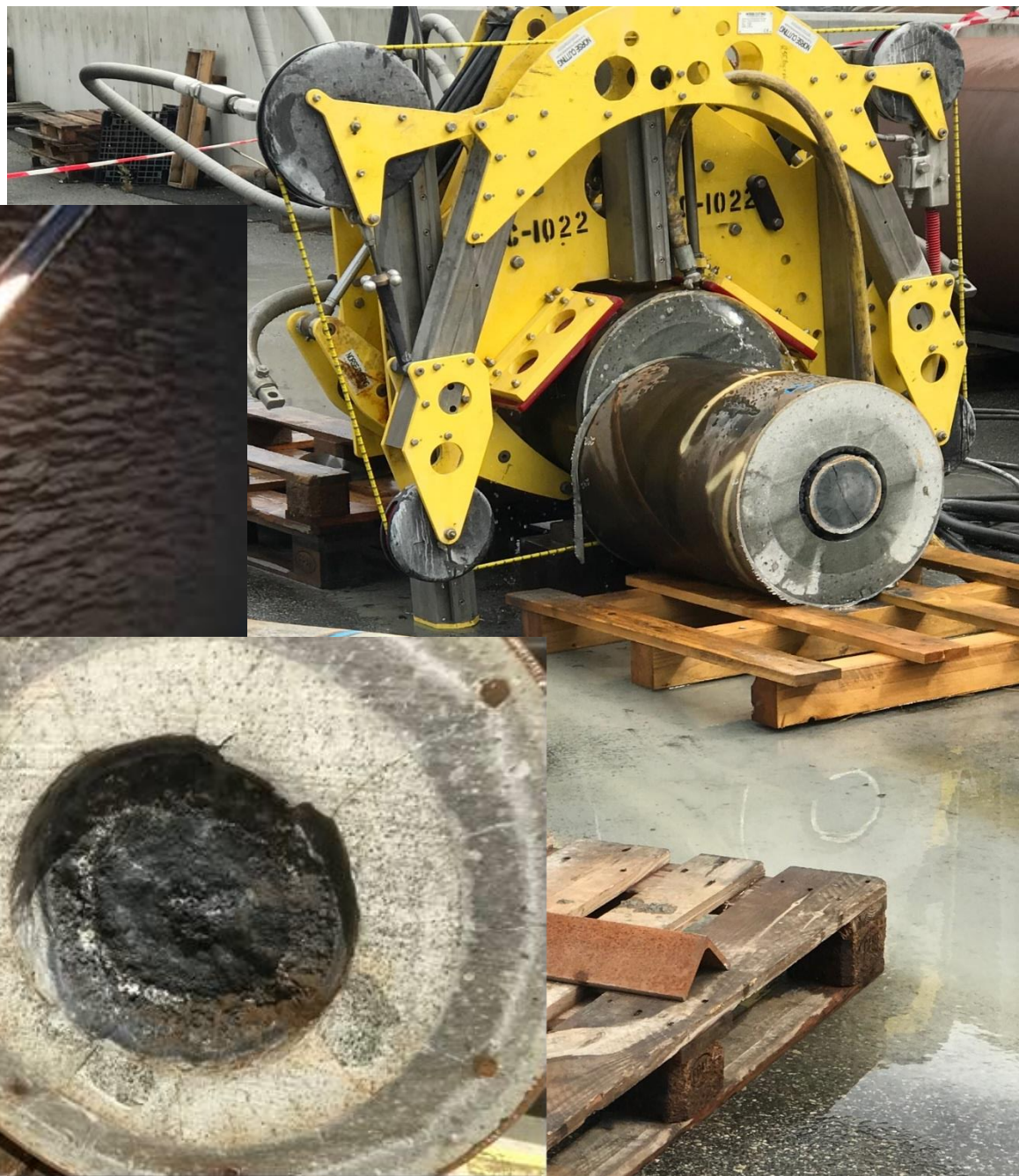
# Roadmap for New P&A Technologies



Optimize Perf Wash & Cement	Alternatives to cement - Creeping shale / Formation effects - Sand/Rock/Natural materials - Chemical materials - Steel	Rigless P&A - High Capacity CT System - High Energy Solutions (Melt/Burn)/Extreme Concept
Optimize Milling		
Tubing left in hole		
LIV CT Pilothole drilling/cementing	Well Intervention technology for P&A	Wireless technology (subsea wellheads)
Rig/Process optimization	Improved Verification / Logging methods	
Ctrl line left in hole	Dual string: Cement bond logging Perf, Wash & Cement, Milling	
	Tender Support P&A rigs/Modular Rigs	

Focus areas for 2015 - 2016
  Futuristic Technologies

# Thermite full scale testing Aug 2018



# Video of running Bismuth Plug

- [The video can be seen on the LinkedIn page to Altus Intervention](#)



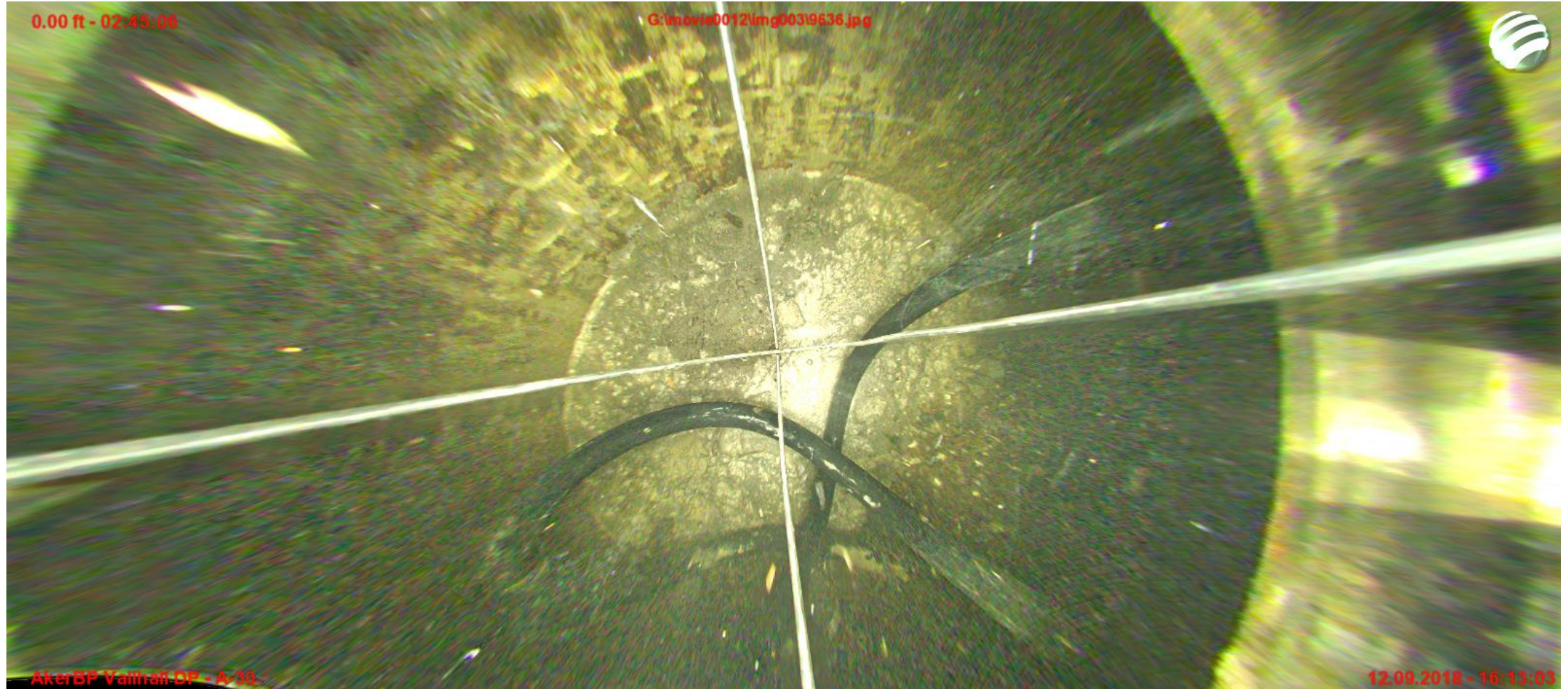
Together with **Aker BP** and **BiSN** we have achieved a world first through the successful deployment of the largest ever bismuth plug.

Watch the video to hear more about this fantastic success story:

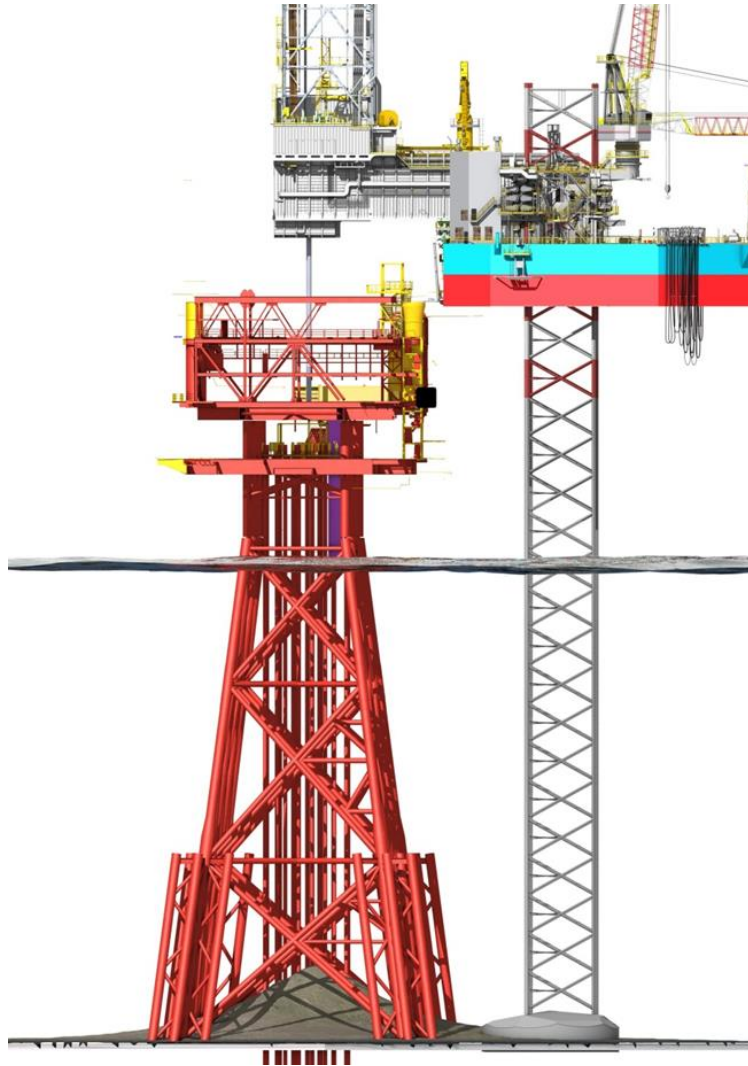


Watch the video

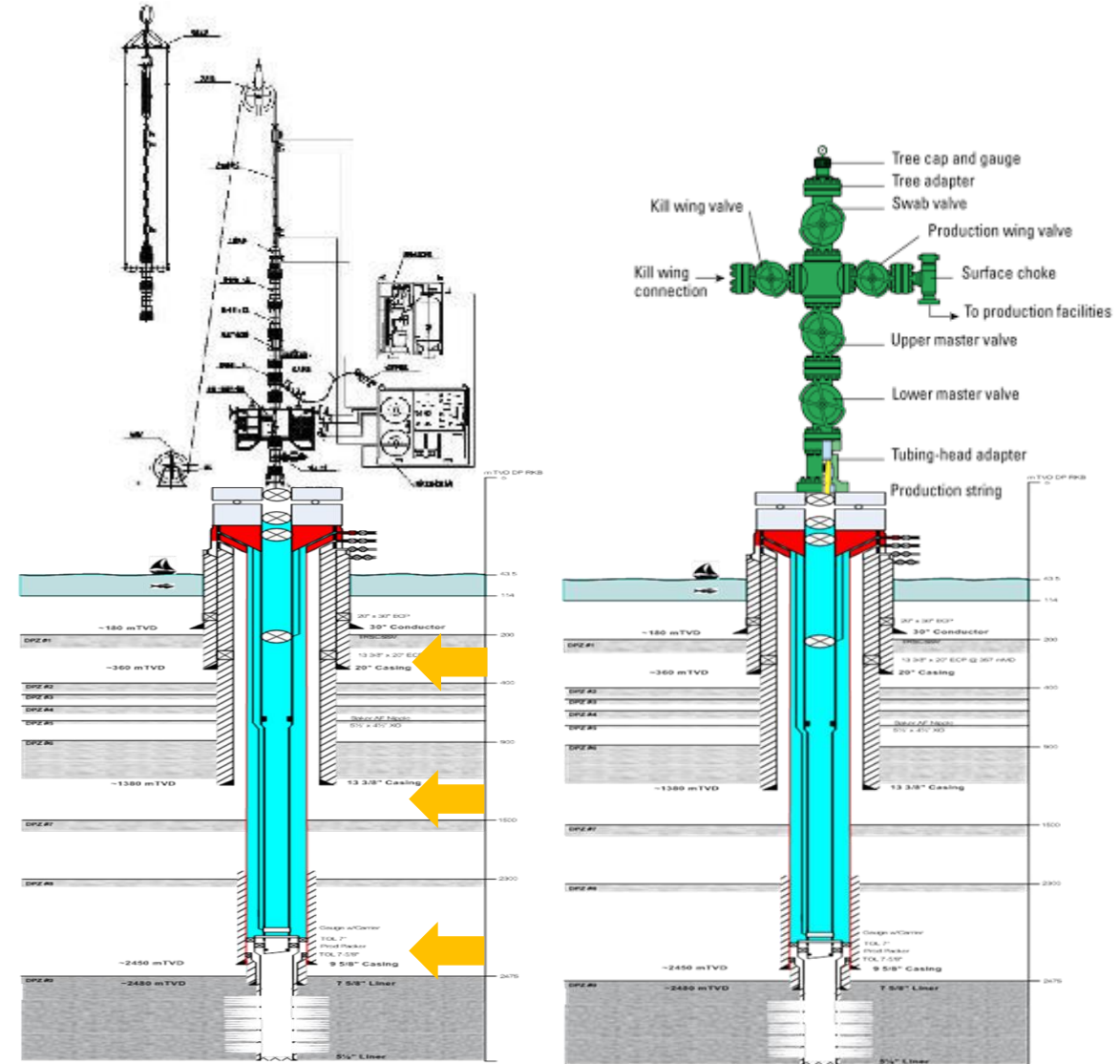
# Installed Bismuth Plug at 380m MD



# P&A today



# P&A tomorrow



# Summary

- Performance
- Work at 3 levels – Safety
- Daily Communication
- Ways of increasing efficiency
- Seeking new P&A technology
- Desired industry direction of P&A



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