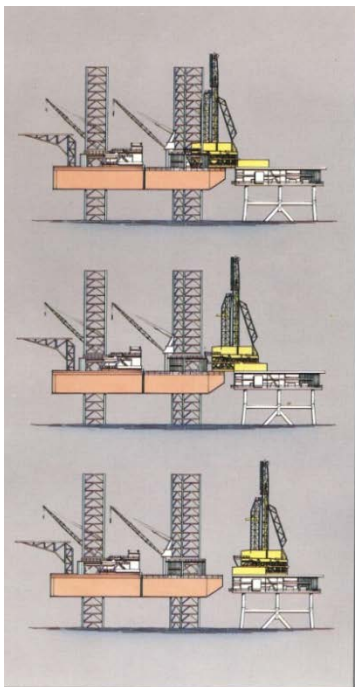




Spirit Energy Input to Collaboration and Innovation in Decommissioning Event

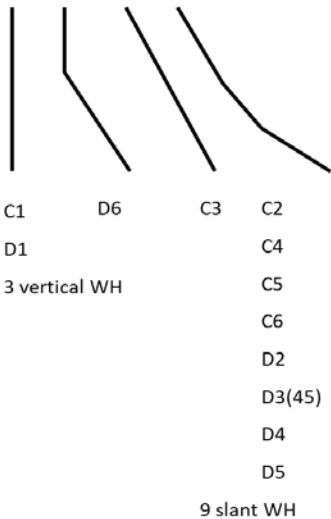
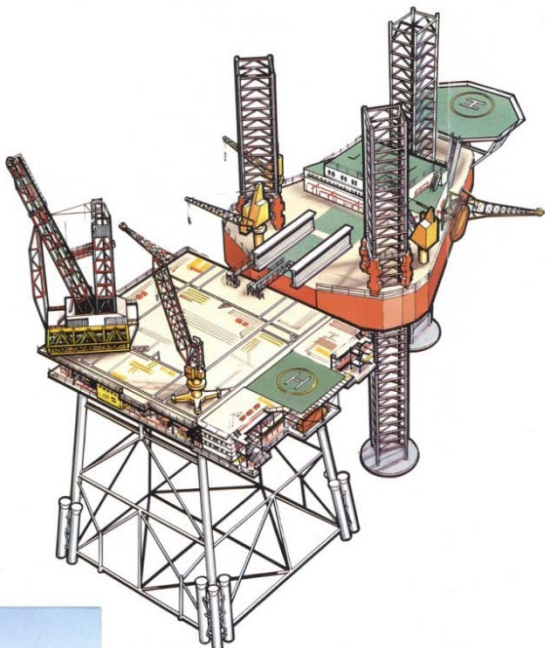
Donald Martin

Morecambe development drilling history



Drilling Operation

The Slant Drill Rig (SDR) is 'portable', travelling to location by jack up rig. At the drilling platform the SDR is skidded from the jack up on cantilevered rails using large hydraulic rams. Transfer to the platform takes about eight hours. On the drilling platform, rails enable the SDR to travel around the perimeter of the platform to the drilling position.



Well P&A spread and interfaces



**SPIRIT
ENERGY**

Petrofac 



Slant Unit Provider

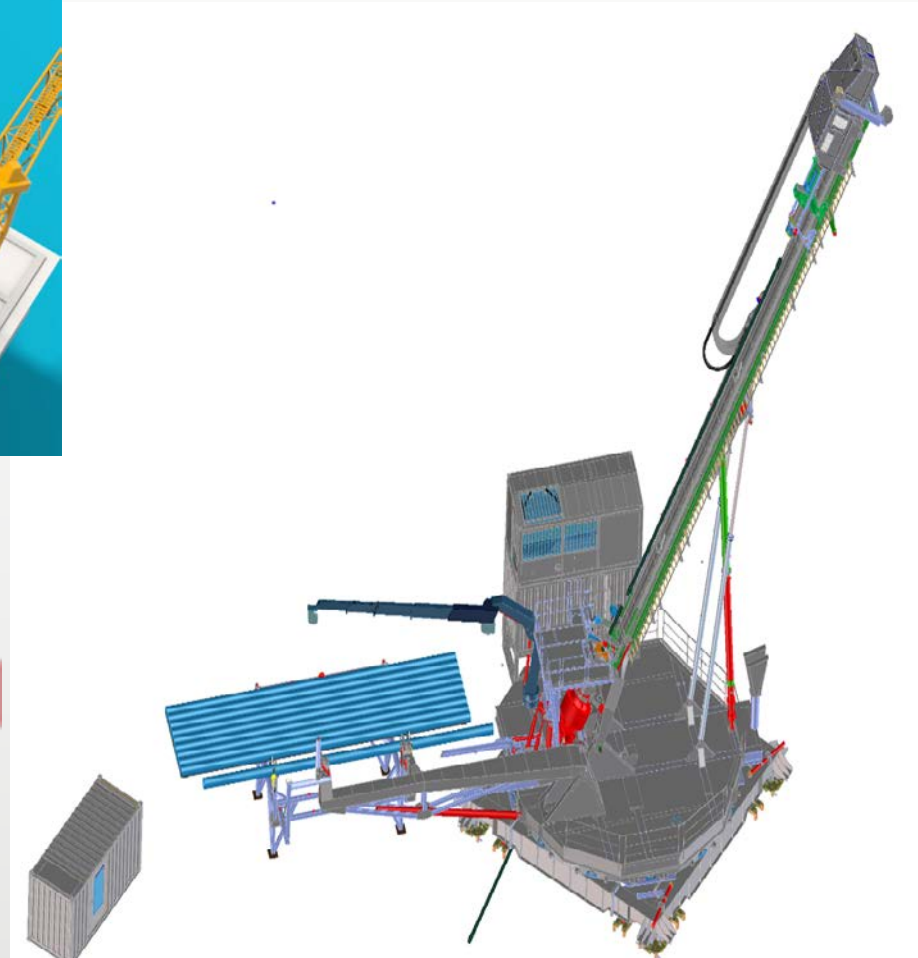
- Slant Unit
- Skidding Sub-structure
 - Control Cab
 - Power Pack
 - Standpipe
 - Bell Nipple
- Technical Support

Jack Up Contractor

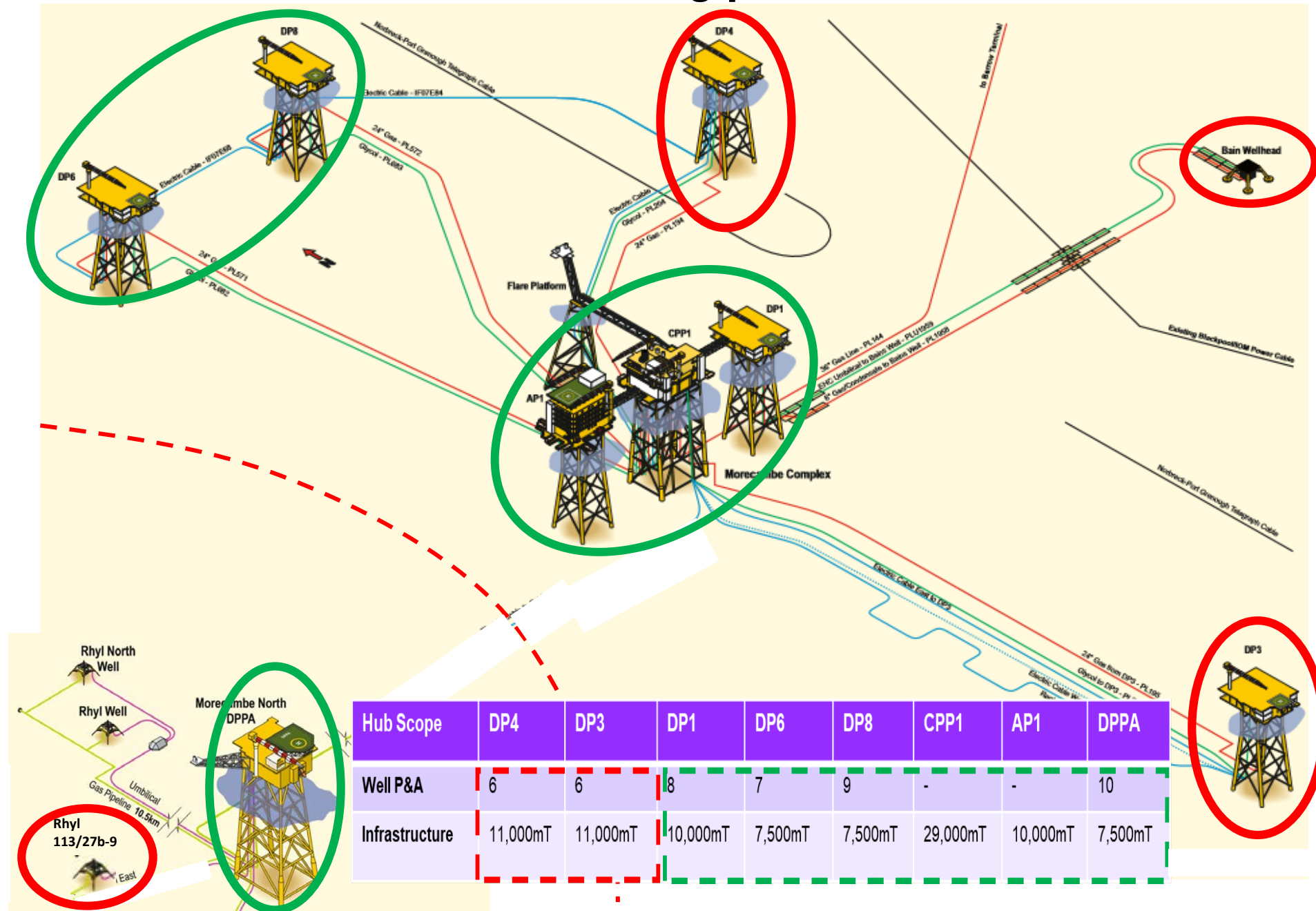
- Personnel
- Mud Pumps
- Standpipe Manifold
 - Mud Return
 - Cement Unit
- Well Control Equipment
- Rig Crane

Platform

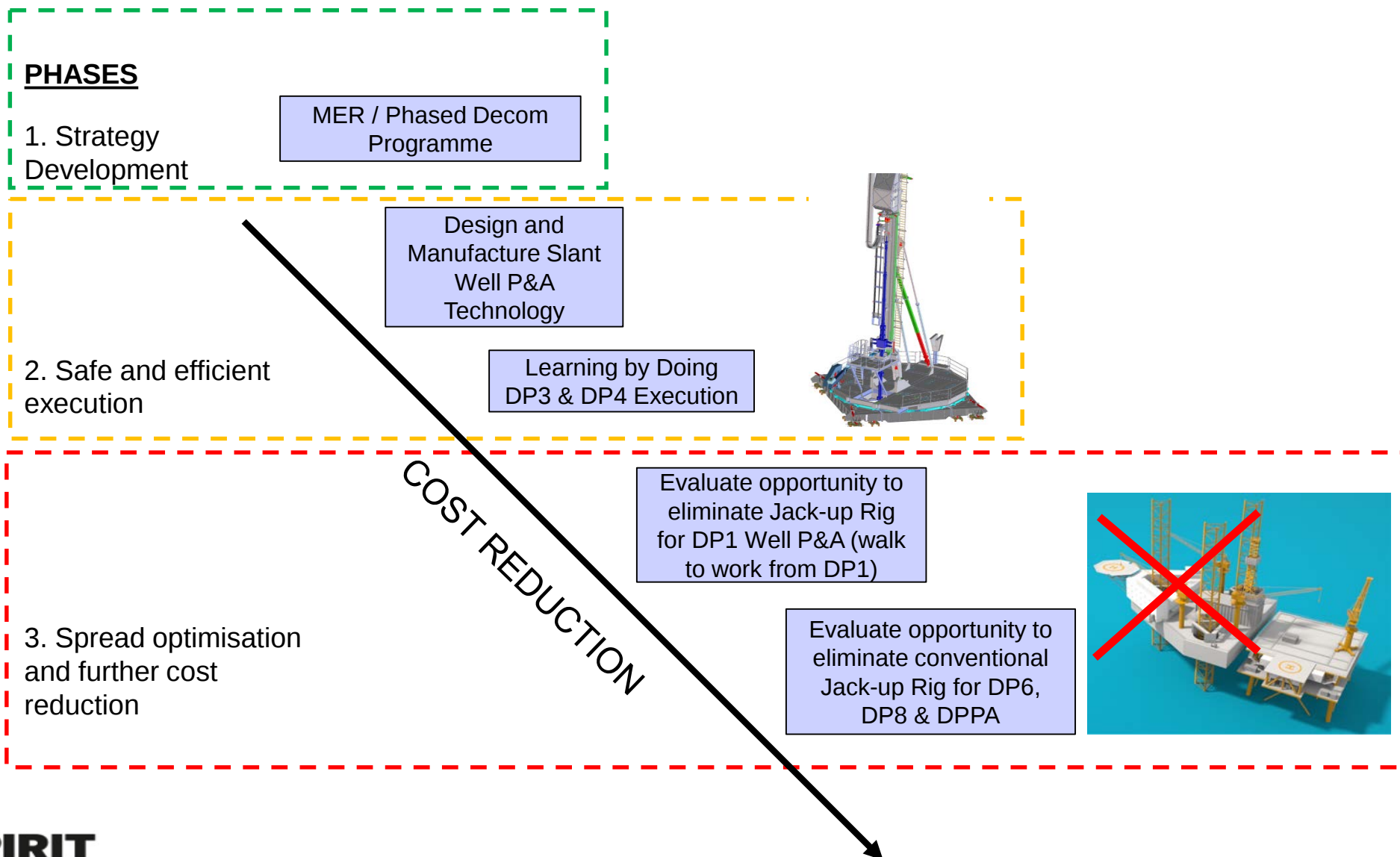
- Slant Unit Support
- Crane Support
- Well Support
- Laydown area
- Destruct of flow lines and support structures
- Support of wellhead & Trees
- Jacket integrity for conductor removal



Morecambe decommissioning phases



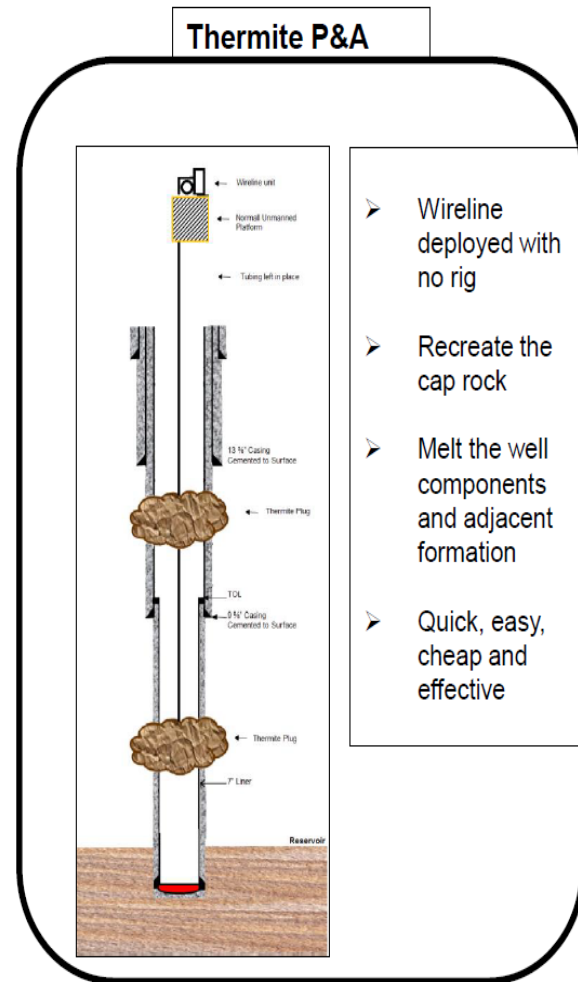
Phased development to minimize ABEX



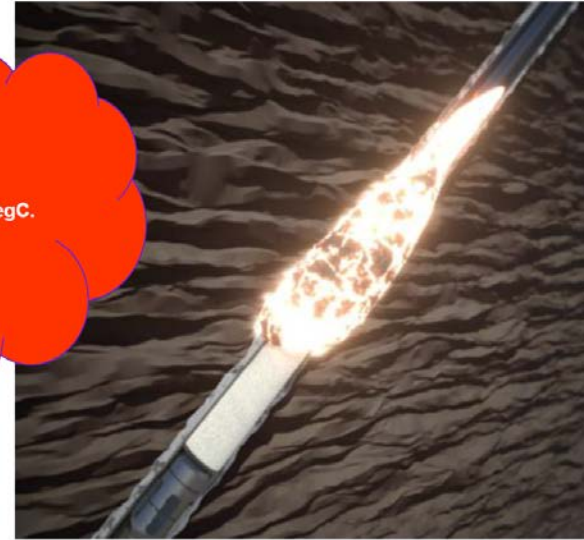
Alternative (to cement) well plugging technologies

- Shared need to improve P&A cost efficiency.
- Concept of alternative plugs is to simplify downhole operations, reducing well P&A spreads and ultimately costs.
- Value can only be realised if new technologies are recognised as safe and acceptable to industry and regulators.
- One key challenge is verification – ensuring consistent and reliable approach to assess effectiveness.
- Sharing plans and experience can have a dramatic effect on the speed of product maturation.

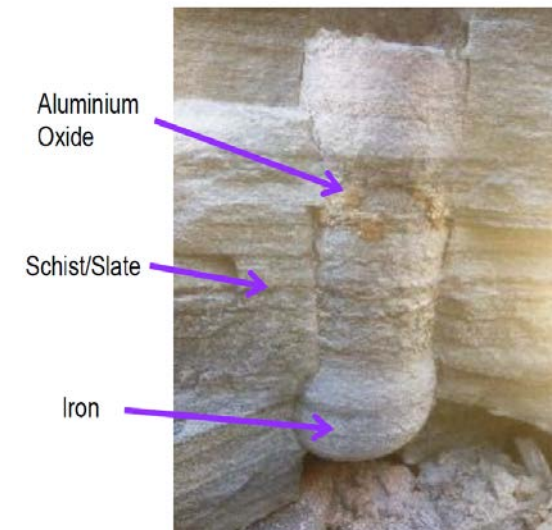
Example alternative – Thermite JIP



- Non explosive
- Exothermic reaction
- Creates $\approx 2500-3000$ degC.
- Melts wellbore components and surrounding rock



- Thermite generates intense heat
- The heat creates molten magma
- The magma solidifies bonded to the formation
- The cooled magma creates a pressure barrier



Reference Interwell P&A

Recap challenges to industry

1) Well P&A support packages for platforms with no drilling facilities.

How can we remove a jack-up from well P&A operations and develop an innovative and reliable technical solution with minimal lay down requirements?

2) Collaboration to enable live testing and monitoring of alternative (to cement) well plugging technologies.

How can we work together more effectively to accelerate acceptance of alternative plugging technologies?