



**Net Zero
Technology
Centre**

Technology Driving Transition

**Collaboration:
Working together
towards a common
goal**

Doug Forbes
Project Manager



SSSV qualification for CCUS JIP

bp
Chevron
ebn
eni
equinor
Harbour Energy
Shell
STOREGGA
TotalEnergies

9 PARTNERS



slb
HALLIBURTON
Baker Hughes

Qualification of 2 valves each

3 1/2" | 4 1/2" | 5 1/2"

3 DEVELOPERS

The collaborative project is beneficial to the CCUS industry as

it's a forum to:

- * Agree & develop a testing scope
- * Share and peer review modelling results
- * Select metallurgy
- * Share elastomer studies
- * Select and share control fluid information and testing
- * Share lessons learned, CCUS design and operations
- * Share CO₂ contamination study results
- * Share operational case studies
- * Engage with industry & regulatory bodies



International Collab

CRIN

Clean Resource Innovation Network



A consortium of Canadian Operators have been awarded funding from CRIN for testing alternate products in place of cement for well decommissioning and remediation

01 | SELECT

02 | TESTING

03 | FIELD TRIAL

04 | DATA SHARING



CONSORTIUM MEMBERS

2 year project



Project Coordinator



International collaborator



Contract Administrator



Subject matter experts



Operator



Operator



Operator



Operator



Operator



Operator



Testing alternative products to replace cement for well decom & remediation

- ✦ Bismuth alloy
- ✦ Thermite plug
- ✦ Fusion bonded alloy
- ✦ Chemical precipitates
- ✦ Soluble glass
- ✦ Epoxy resins
- ✦ Nano sealants



Well Decom Collaboration

Scope reduction in P&A

03. P&A ENABLING TECHNOLOGY

Enabling technologies provide through tubing services to perform a wide range of tasks to support barrier placement.



01. ALTERNATIVE BARRIER MATERIALS

Alternative materials used solely or in composite barriers have potential to provide more reliable and resistant isolation compared to Portland cement.

02. INSPECTION & VERIFICATION TECHNOLOGY

Reliable barrier design and construction relies on assessment of the integrity of the existing well construction. Through tubing evaluation allows for this to be completed in advance of the abandonment programme.



Year 1: Well Decom Collab Status



SPIRIT ENERGY

Progress bar: 1/3 (Cyan, White, White)



Harbour Energy

Progress bar: 3/3 (Cyan, Green, Orange)



REPSOL SINOPEC
Resources UK

Progress bar: 3/3 (Cyan, Green, Orange)



ConocoPhillips

Progress bar: 2/3 (White, White, Orange)

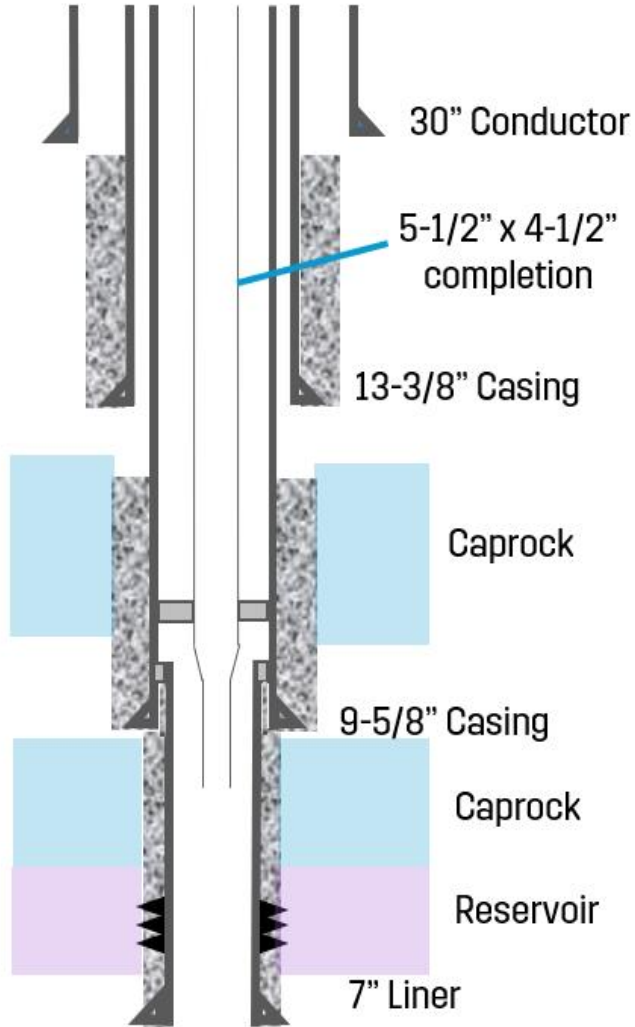


PETROBRAS

Progress bar: 3/3 (Cyan, Green, Orange)

5 OPERATORS + 1 in contract discussions

Scope Reduction P&A Technical Challenges



* Inspection and verification:

Muti-string and acoustic logging

* Enabling:

Cut tubing and retrieve & control line.

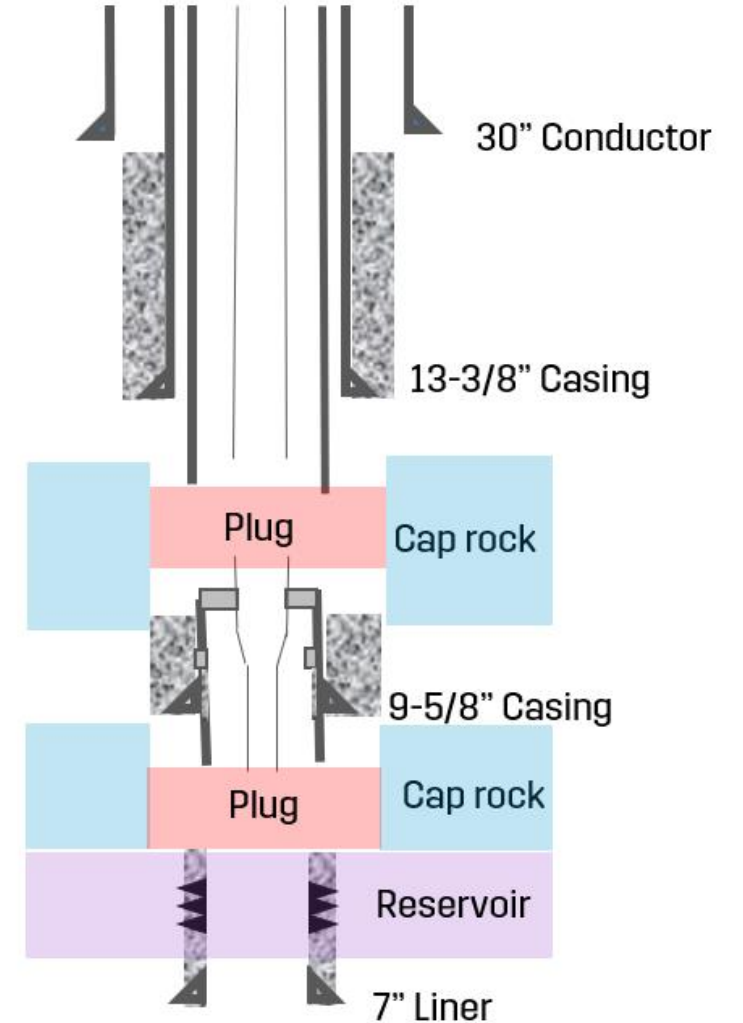
Melt, corrode, explode

* Alternative Barriers:

Bismuth, Thermite, Fusion bonded alloy.

Repair cement:

Chemical precipitants, soluble glass, epoxy resins, nano sealants





Challenges

- ✦ How to gain access to casing cement?
- ✦ Develop running tools & techniques to place plugs in casing below tubing
- ✦ Tools and techniques to remediate poor cement jobs behind casing



More Partners, Technologies & Solutions



Brains



Wells



Cash



Conclusion

- ✦ Co-ordinated and support R&D
- ✦ Accelerate technologies out of universities, to trial & to commercialisation
- ✦ Engage with developers – for solutions
- ✦ Co-ordinate field trials
- ✦ Share data & analyse results
- ✦ Recommend: industry best practices
- ✦ Engage with regulators as one voice

