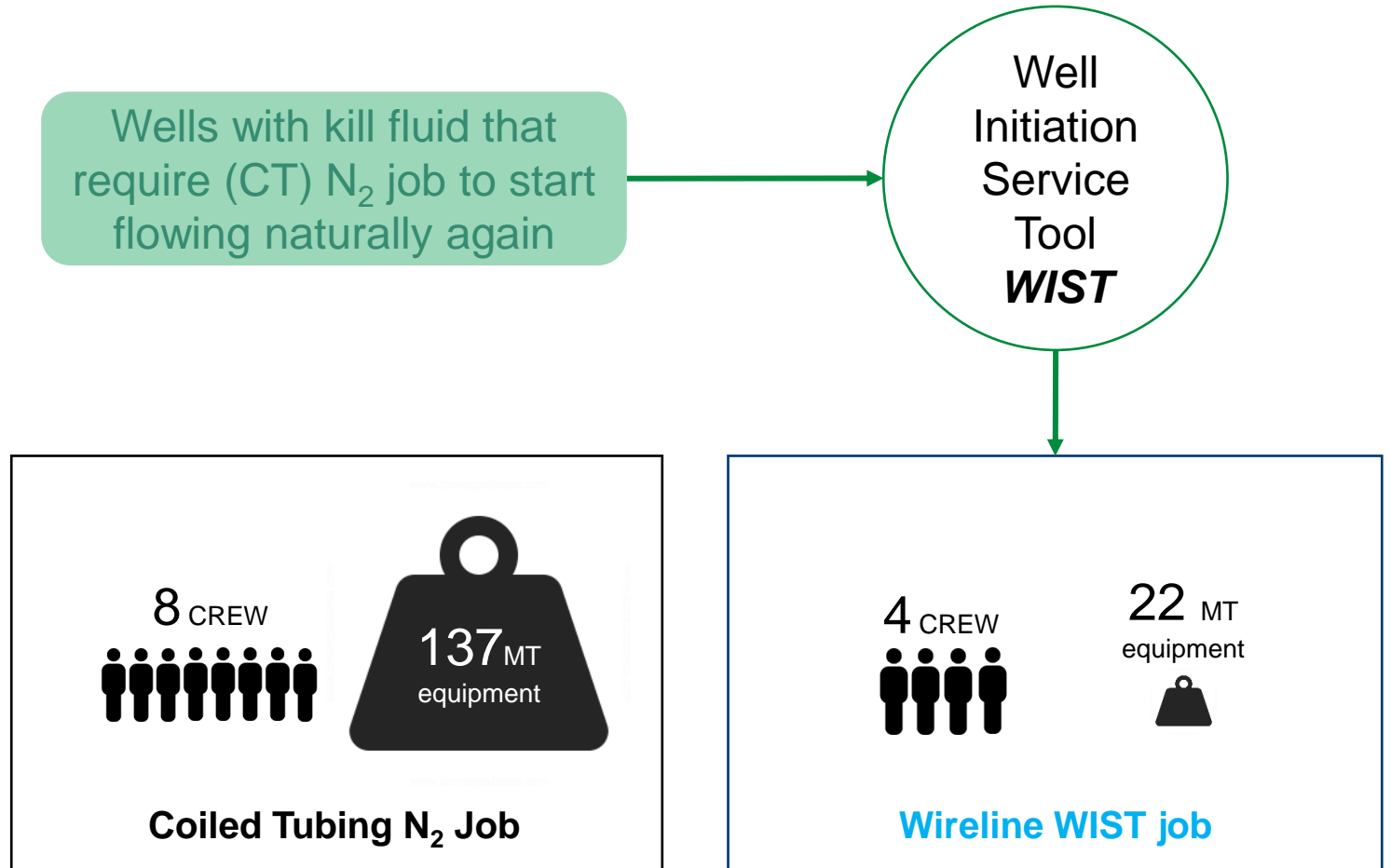


A novel isolation packer for a cable deployed pumping system

**Christopher Wrighton, JJ Xiao; Aramco Overseas Company
Jamie Cochran, Richard McCann; Zilift**

Reviving killed wells back into production

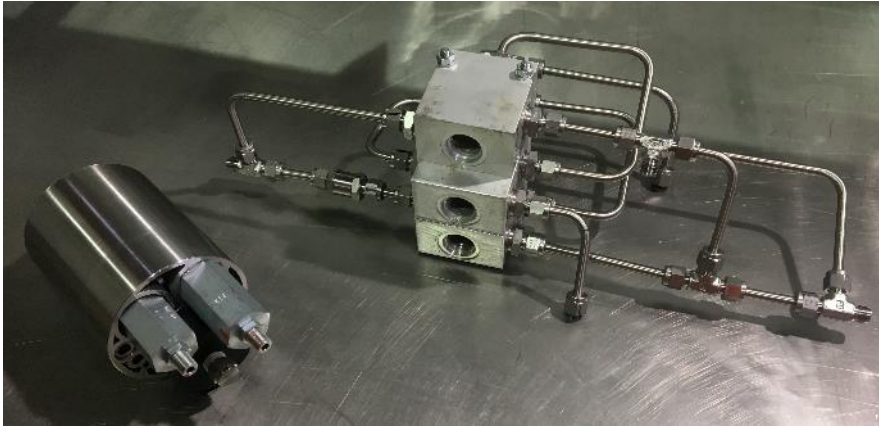
- i. Deploy pump on wireline into well
- ii. Set isolation Packer
- iii. Pump fluids out of well
- iv. Fluids moved through pump get replaced by lighter fluids
- v. Well starts flowing unassisted, pump no longer required
- vi. Pump and packer retrieved from well



EFFICIENCY: Replace N₂ job with Wireline Job

Technical Challenge Isolating the intake and the discharge of the pumping system within the wellbore

Development of a multi resettable packer assembly



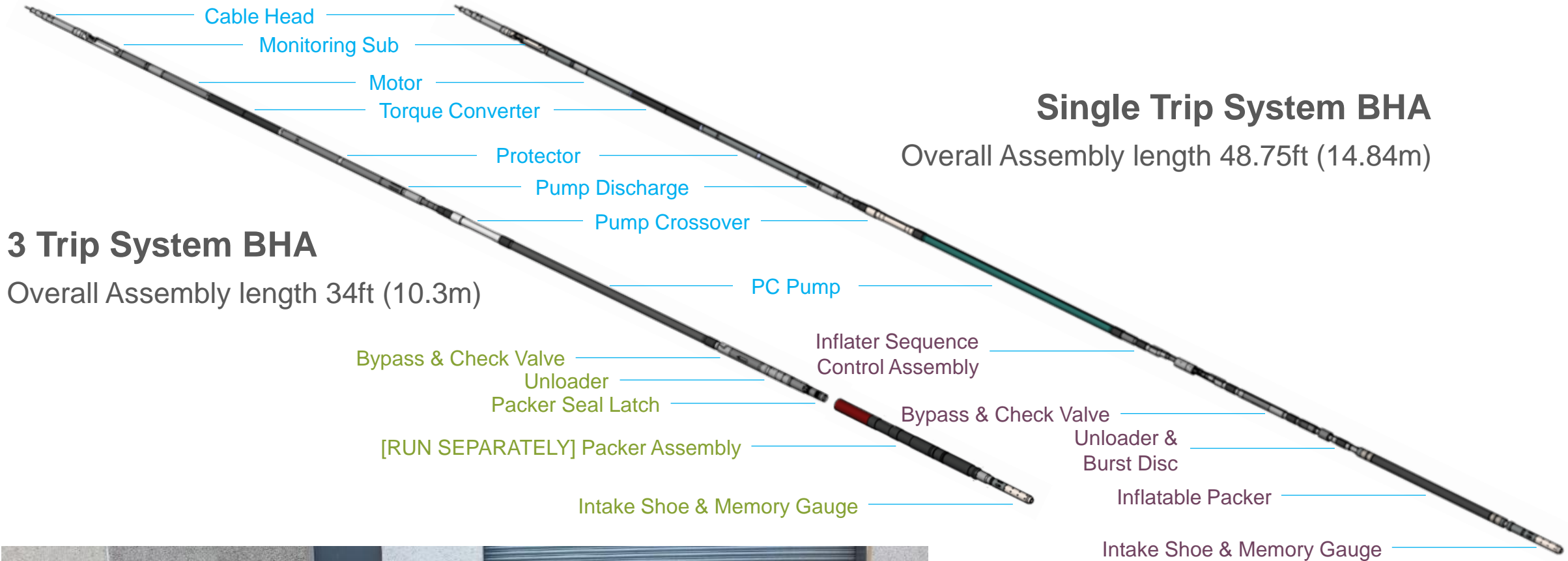
Complex manifold enabled with 3D printing
(Left) shows 3D printed part (3.5" OD)
(Right) shows bench test prototype manifold



Final Field Test Sequencing Control Valve
Assembly

- Could not use rotation, mechanisms with shear stock or dropping balls to activate packer multiple times
- Selected an inflatable packer system
 - Can be inflated and deflated multiple times without redress
 - No high setting forces required
 - Able to use existing electric submersible pump to inflate packer with well fluid
- Engineered an *Inflater Assembly* to select flow path from pump to inflater or from pump to annulus
 - 5 x design and test iterations within 8 months before success using a sequence control logic circuit

Downhole Assemblies



Conclusions and Next Steps



- A thru tubing cable deployed pumping system with a multi resettable packer assembly has been successfully developed and tested
- All WIST equipment has been deemed qualified for field trials
- 2 sets of equipment have been shipped to Saudi Arabia for trials in the two oilfields

