



# Thermaset Application on the Hod Field

30.10.14  
Stavanger, Norway

# The Hod Field



- Norway's first unmanned satellite operated field, POP 1991
- Oil pipeline to Valhall for processing, gas lift pipeline to Hod
- 8 well slots
- Interventions are performed via shuttling to Valhall central complex
- Limited deck space, no mixing or pit facilities, limited crew size



# Thermaset Properties



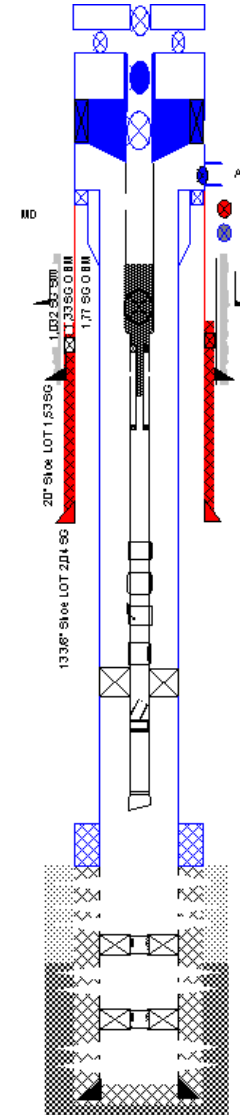
- Transparent, particle-free Newtonian liquid, right angle set material
  - Density can be designed between 0.75 – 2.5 sg, viscosity is 25 cP at standard condition
- Temperature activated exothermic reaction
- Set-up time curing tests performed offshore
- Solid state after set up, with compressive strength 77 Mpa, Flexural strength 45 Mpa, E-modulus 2.2 Gpa
- Meets or exceeds the same requirements as cement to be qualified as a permanent well barrier element (SINTEF documentation available)



# Well A-2



- Re-completed with gas lift string
- 400 m 2-7/8" CT straddle section installed below DHSV
- Insert DHSV installed
- TTAC above and below WRSCSSV.
- Well wouldn't support a water column
- Three Thermatek pills
- Three CaCO<sub>3</sub> pills followed by Sealbond.

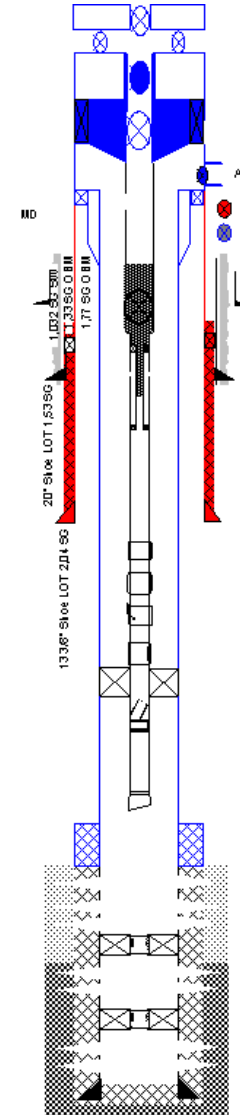


# Placement Operations



- **Well A-2**

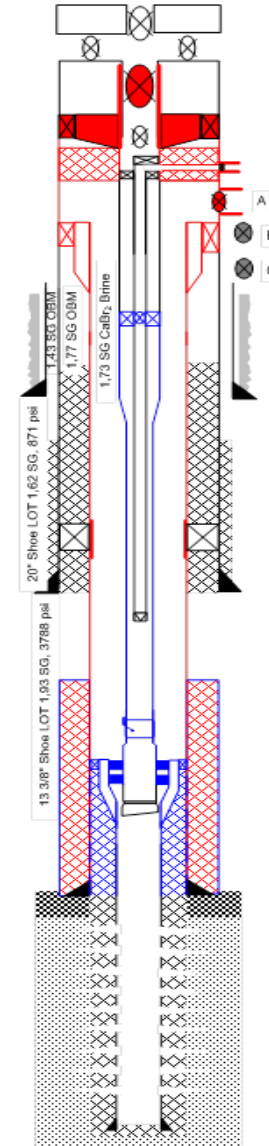
- 30 minutes set up at SPM depth and 10 minutes at reservoir.
- First 15 m<sup>3</sup> pill was over-displaced through perforations
- Echometer A-annulus
- Second 15 m<sup>3</sup> pill spotted successfully
- Topped up well, bled-down: no pressure build up



# Well A-8



- Horizontal oil producer, 38% porosity and abundant natural fractures
- 1-3/4" Inverse gas lift system
- Concentric Safety Valve
- Confirmed TTAC
- Well would not support a water column

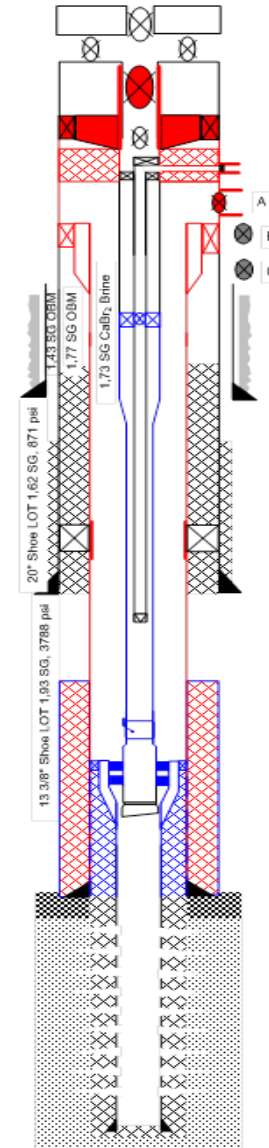


# Placement Operations



- **Well A-8**

- 55 minute set up at perforations (95°C) and 20 minutes at 100°C.
- Echometer in tubing and A-annulus
- 14 m<sup>3</sup> pill placed at perforations
- Bled down tubing: no pressure build up.
- Bled down A-annulus in steps: no pressure build up



# Questions?

