



Is EOR feasible for subsea fields?

A “Plug and play” approach to EOR/IOR in subsea fields

Sum up of breakout sessions from FORCE ART
WS in 30th of May 2011



Why EOR Subsea?

- ◆ Business Drivers?
 - ◆ Subsea is the primary solution for new marginal fields
 - ◆ Lower RF means higher remaining potential
 - ◆ EOR technology may be necessary to make a subsea development economically feasible
 - ◆ Part of an area solution
- ◆ Why lower RF for subsea fields
 - ◆ Lower well density
 - ◆ Modification costs
 - ◆ Reservoir management availability
 - ◆ Lower production/injection regularity
 - ◆ Few subsea fields with water injection
 - ◆ High cost of drilling new wells and high cost of well intervention



Current status; Challenges

- ◆ Subsea solutions in general
 - ◆ Subsea production currently exceeding platform production
 - ◆ Simple functionality, comingling, accessibility to wells, perforations
 - ◆ Data acquisition and monitoring less frequent and costly
 - ◆ Dependant on being a part of a larger EOR deployment
 - ◆ Environmental issues – reinjection of produced water is required
 - ◆ Regularity – maintenance (membrane unit, ion removal, different process)

- ◆ Additional challenges with EOR
 - ◆ Water injection necessary
 - ◆ Small fields marginal economy, focus on cost
 - ◆ No currently EOR plug – in available for dry wellheads yet
 - ◆ Lack of EOR competencies in subsea environments
 - ◆ Existing well stock incompatible with EOR requirements
 - ◆ Functional spec (integrated design requirements, water quality spec, mitigate scale)
 - ◆ Lack of direct well access
 - ◆ Assessment/ modeling of EOR potential and value



Vision for future subsea developments - plug and play EOR

- ◆ Is EOR plug and play possible?
 - ◆ Need to define EOR plug and play design basis (industry standard)
- ◆ How to increase RF for SS fields – RF vision
 - ◆ The future includes subsea fields ready for plug and play EOR
 - ◆ Cheaper wells and increased well density – standardization
 - ◆ Subsea desalination plants
 - ◆ Improved reservoir modeling/monitoring and reservoir management
 - ◆ PDO must include EOR thinking – evaluate EOR from day one
 - ◆ Synergy from combination of methods
 - ◆ Area synergies
- ◆ JIP projects
 - ◆ Necessary! Integration challenge; Subsurface – Surface – Service providers

