## Modular Subsea Export and Storage System for Remote Marginal Fields

Hans Eikeland Engum Project Engineer, Subsea Products



#### **Technology Overview**

#### - PLATFORM





#### Scenarios



Deep Water Solutions w/Semi or Spar



Shallow Water Solutions w/Fixed Platform



Gas/Condensate Solutions

### Operation

- Storage at ambient (hydrostatic) pressure by utilization of a flexible membrane
- The SSUs in a cluster are operated as one hydraulic unit
- Filling from the bottom of the SSU through the center pipe

- Typical six days for filling, maximum
   24 hours for offloading
- Continuous level monitoring and leakage detection
- Process shut-down (PSD) included for over and under pressure protection



# Emulsions and Comparison with other Subsea Storage Solutions

- Flexible membrane integrated in structure
- Avoid emulsions between oil and seawater
- No handling needed to remove emulsion layer



- 20-30 % smaller tanks
- Light weight composite structures compared to existing steel and concrete tanks
- Credible decommissioning



## Technical Qualification Program (TQP)



- OGTC (UK Oil & Gas Technology Centre)
- Equinor
- NOV



#### Thank you for your time!

Hans Eikeland Engum
NOV Subsea Products
□ HansEikeland.Engum@nov.com
+47 97957745



