Design of marine concrete structures

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Loading

- PAYLOAD
- 33 m (maximum draft)
- 28 m
- Range for offshore lift
- 18 m
Structural testing

Full scale joint test
Field trials
Comparison with ABAQUS

- Uneven distribution of reinforcement in x- and y- directions

Accurate prediction of moment redistribution due to uneven reinforcement

Cylinder subjected to ice load
- UR outer vertical reinforcement

3D figuren viser UR for vertikalarming for en sylinder med islast, hhv lineær og ikke-lineær

Omfordeling av moment i x- og y-retning når armeringen økes til 10-gangem i den ene retningen. SD og Abaqus er sammenfallende, den blå kurven er lineærelastisk, som ikke tar hensyn til faktisk armeringsmengde.

Linear, outer Z-reinforcement, Max UR=1,2
Non-Linear, outer Z-reinforcement, Max UR=0,968
Tow 960 not. miles to Sakhalin II Field location in 18 Days at 2.5 knots

Sakhalin II Phase 2 Reservoir
- 4 billion barrels Oil
- 20 trillion c.f. Gas
- PA-B is Oil Field
- LUN-A is Gas Field w/ ass. Condensate & multiphase to OPF.

Water depth
- PA-B = 30.8 m
- LUN-A = 48.2 m
Concrete structures for oil and gas fields in hostile marine environments
NANSEN MONUMENT

ALTERNATIV
FLYTTEBRO MONUMENT MED ÅDEMÅL VIA DUNKET GLASSGRIPSBRO

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Submerged Floating Tunnel
Pontoon support

Bergsøysundet floating bridge

Nordhordaland floating bridge
"Sometimes it is best if the bridge is not there..."

The invisible bridge

The Submerged Floating Tunnel (SFT) is a transportation concept for crossing straits, fjords, sounds and lakes.

It is a tube-like structure floating at some depth in the water and held in place by tethers, pontoons or columns.

The tube is large enough to carry road and rail traffic with no interference to shipping.
The SFT concept

Basic principles

- Buoyant, load carrying superstructure
- Elevation independent of seabed profile
- Flexible wrt. length, cross section and depth
- Structural components
  - The tube
  - Supports
  - Shore connections
The past...

The future...