IKMs adaption to a new cost regime

Arne Vervik EVP IKM Gruppen
Haugesund 10.08 2016
The IKM Group - Subsea Capability

- IKM Technology as
  - Subsea Products and Solutions

- IKM Subsea as
  - ROV and Subsea Operations

- IKM Elektro as
  - Subsea motors

- IKM Ocean Design as
  - Pipeline –SURF-EPC

- IKM Testing as
  - RFO for Pipelines and Umbilicals

- IKM Hydraulic Services as
  - Hydraulic Systems

- IKM Fabrication Division
  - Our Manufacturing Capability

- IKM Consultants as
  - Resources

Zero injuries - an overall objective!
IKM – HOT TAP EPC PRODUCT

Zeepipe IIA Gooseneck Spool and Retrofit Tee
Before and after!
The IKM Group

ELECTRICAL/ INSTRUMENT/ AUTOMATION

IKM Elektro AS (Sola)
IKM Instrutek AS (Larvik), Dept. Sola, Bergen
IKM Laboratorium AS (Tananger), Dept. Bergen, Bryne, Forus, Oslo
IKM Measurement Services Ltd. (Aberdeen)
IKM Measurement Services Australia Pty. Ltd. (Perth)
IKM Hydraulic Services AS (Tananger)
IKM Technology AS (Bryne)

SUBSEA/COMPLETION COMMISSIONING

IKM Testing AS (Sola), Dept. Bergen, Kristiansund, Hammerfest
IKM Testing Asia Pte. Ltd. (Singapore)
IKM Testing Australia Pty. Ltd. (Perth), Dept. Gladstone
IKM Testing Brasil LTDA (Rio de Janeiro), Avd. Bangu
IKM Testing Canada Ltd. (St. Johns), Dept. - Halifax, Alberta
IKM Testing Korea LLC (Busan)
IKM Testing Malaysia Sdn. Bhd (Kuala Lumpur)
IKM Testing Mexico S. de R.L. (Ciudad del Carmen)
IKM Testing Poland Sp. z o.o. (Gdansk)
IKM Testing Spain SL (Cadiiz)
IKM Testing Thailand Co. Ltd. (Rayong)
IKM Testing UK Ltd. (Newcastle), Avd. Aberdeen
IKM OMC (Sola)
PT IKM Indonesia (Batam)

FABRICATION/ INSPECTION

IKM Euroheat AS (Stavanger)
IKM Haaland AS (Vigrestad)
IKM Industrigraverøren AS (Vigrestad)
IKM HVAC AS (Stavanger) (51%)
IKM Inspection AS (Stavorn), Dept. Arendal, Brevik, Drammen, Fredrikstad, Grimstad, Kristiansand, Tønsberg, Sandnes
IKM Maskinering AS (Tau), Dept. - Sola
IKM Mekaniske AS (Stavanger)
IKM Stainless Technology (Nærbø)

ENGINEERING/ OPERATIONS

IKM Consultants AS (Sola), Dept. Oslo
IKM Consultants UK Ltd (Aberdeen)
IKM DSC Engineering AS (Trondheim)
IKM Kran og Løfteteknikk AS (Tananger)
IKM Offshore Service AS (Tananger)
IKM Ocean Design AS (Stavanger) (88%), Dept. Trondheim, Oslo
IKM Operations AS (Sola)

RIG/DOWNHOLE SERVICES

IKM Cleandrill AS (Straume) (67%)
IKM Cleandrill Australia Pty. Ltd (Pearth) (67%)
IKM Mooring Services AS (Sola), Dept. Skapa / Mongstad
IKM Pressure Control AS (Sandnes)
IKM Production Technology AS (Sola)
IKM Production Technology Sdn. Bhd (Kuala Lumpur)

IKM Invest

IKM EIENDOM AS
Commercial property
97 tenants (90,000 sq.m.)

Development projects
Commercial real estate (120,000 sq.m.)
Residential (20,000 sq.m.)
Recreational residences (80 units)

Apartments / housing
9 rental units for sale

Company investments
Skagen Eiendomforvaltning AS (100 %)
- Property management (460,000 sq.m.)

IKM INDUSTRI-INVEST AS
Company investments
Noreco ASA (1,3%)
North Energy ASA (1,0%)
Smaken av Grimstad AS (60%)
Newfarm AS (64%)
Agast Holding ASA (3,8%)
Uniteam Holding AS (80%)
Stål & Fasade AS (100%)
Future Homes (12%)

Funds
Energy Ventures III
Energy Ventures IV

Zero injuries - an overall objective!
Calibrate the price according to the VARIABLE market
- Adjust selfcost continuos!
Technical Development investment to meet new Cost Regime

1. Detailed Trawl pullover analysis models
2. Residual curvature method for 1) thermal buckling, 2) Free spans and 3) Direct tie-in
3. Dropped object and protection design
4. Parametric modelling of spools to allow efficient running of several cases
5. Detailed geotechnical analysis
6. Detailed reeling analysis to simulate various effects
7. 3D On-bottom stability inplace tool
IKM Ocean Design – Main Ongoing Projects (1)

- Johan Sverdrup SURF Detail Design, Phase 1 - Statoil
- Johan Sverdrup SURF Concept Design, Future Phases - Statoil
- Johan Castberg SURF Pre-FEED/FEED - Statoil
- Trestakk SURF FEED - FORSYS / Technip
IKM Ocean Design – Main Ongoing Projects (2)

- Gina Krog PLEM Detail Design - Statoil
- Gina Krog Detail Design Tie-in Spools and SSIV - Statoil
- Zeepipe IIA and Johan Sverdrup Hot-tap EPC’s - Statoil

Gina Krog PLEM
Technology Development – Residual Curvature Method

- Thermal buckling and expansion control
- **Free span reduction**
- Direct tie-in of pipelines

Endal, Nystrøm & Lyngsaunet, ISOPE 2015, “Lay Method to make pipelines conform to uneven seabed topography”


Typical iceberg scouring seabed on Haltenbanken & Barents Sea
Technology Development – Residual Curvature Method

- Thermal buckling and expansion control
- Free span reduction
- Direct tie-in of pipelines

The Residual Curvature Method is planned used for the Phase 1 Flowlines on Johan Sverdrup and is considered for several other projects.

Several Master Thesis works supported in order to develop new trawl pullover simulation tools (and reduce conservatism in design).

Based on MARINTEK SIMLA FE program
Trawl pullover animation (Clump Weight on Two pipelines)
Effect of Detailed Trawl Analyses

- Calibrations have been published in several MSc Thesis works
- Odd M. Lyngsaunet (IKM), Svein Sævik (Sintef) and Pål Foss (IKM), ISOPE 2015.
More than 50 fields are candidates to be developed and put on-stream on the NCS 2016-2024

Rystad Energy has identified more than possible field development projects at the NCS for the period 2016-2024. This includes up to 13 fixed platforms, up to 6 new floaters and 35 subsea tie-in candidates.

The Johan Sverdrup PDO was approved in August 2015 and represents four fixed platforms. Vette (previously known as Bream) PDO was expected submitted in January 2015, but the investment decision has been postponed indefinitely. Marla PDO was approved in September 2015.

Based on historical exploration success - Even though 2015 was a disappointing exploration year - one can expect at least one stand-alone development and up to eight new subsea tie-backs to be developed within 10 years from each new exploration year going forward.

Since the last release we have done a revision of start-up year for discoveries on the NCS. This has pushed many of the subsea candidates out of the 2024-window.
Thanks for your attention!

A pessimist sees the difficulty in every opportunity – an optimist sees the opportunity in every difficulty.

- Sir Winston Churchill