Goliat FPSO Marine Installation – Execution Highlights and Learnings

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Hammerfest Site
Field Lay-Out

- 14 Anchors in 4 + 4 +6 clusters
- Unsymmetrical line/cluster configurations – Chain, Fibre, Buoyancy elements
- Existing Infrastructure
Main Achievements

- Offshore Towing: Start 07.05 @ 04:50, at target: 08.05 @ 01:30
- Safe Mooring: Start 08.05 @ 01:30, 6 lines on: 10.05 @ 18:35
- All lines connected: Start 08.05 @ 01:30 all lines on: 16.05 @ 09:59
- Tensioning: Start 12.06 @ 09:08 competed: 14.06 @ 22:10
Philosophies and Basis

- DNV RP H101 – Risk Management in Marine- and Subsea Operations
  - Minimize Manual Handling
  - Proven and robust methods and design
  - ALARP Principle
  - Clear “Safe Hold Conditions”
  - Avoid parallel operational activity

- “One Team Approach”
  - Target ownership, relations and commitment;
    - Client
    - Contractors
    - SubContractors
    - Third Parties
  - All involved early

- HSE Focus
  - Continuously focused from day one
  - Always on the agenda
  - Allocated resources
Testing and Training

- Testing, training and verifications
  - Visit and Inspect equipment and sites
  - Verify and test properties and functionality
  - Training and familiarisations
DSNO Marine Installation Scope

WP 00
- 2012
- Fabrication Start; 14 Suction Anchors

WP01
- 2013
- Transport and Handling of all Anchors, chain and shackles
- Anchor and Bottom Chain Pre-Inst.

WP02
- 2014
- Transport and Handling of fibre reels and buoyancy elements
- Fibre, Buoyancy Element, Top Chain Pre. Inst. (Korea)

In Shore - 2015
- Spring 2015
- FPSO Receipt and tow in
- Tug Assisted Mooring

Offshore - 2015
- Spring/Summer 2015
- FPSO Tow Out and Installation
- FPSO Mooring - Tensioning
WP01

- Summer / Autumn 2012
- Anchor Fabrication (Finland)
WP01

- Spring 2013
- Anchor and Bottom Chain Pre-Inst.
• Summer 2014
• Fiber, Buoyancy Element, Top Chain Pre. Inst.
• Spring 2015 – FPSO Receipt
• Inshore Tug Assisted Mooring
• Offshore Towing and Installation

- Pre – Installation of Inshore Mooring in Hammerfest
- Preparations of FPSO on Vanguard
- FPSO Tow In
- Install and Maintain FPSO in Inshore Mooring
- Release and Tow Out of FPSO
• Preparations on DW Vanguard
• FPSO Installation in Offshore Moorings

- Two Installation Vessels
- Four Vessels for station keeping
- 3 Teams each shift for operating winches
Success Criteria

- One Team Approach
- Attention to details
- Testing, Training and inspection/involvement
- Robust Design and Contingency philosophy
- Robust manning
Client Relations - Experiences

- Excellent through four WP’s and three Offshore Campaigns
- Genuine “One Team Approach”
- Excellent relationship characterised by;
  - Mutual trust and support
  - Honest and without any hidden agenda
  - Open communication
  - Benefitted both Eni and DSNO
SubContracting - References

Sub-Contractors nominated and selected based on;
- Recognized and proven records
- Compatible HSEQ policies and system
- Committed and proactive and involved
- Commercially competitive
- Continuity and key personnel flagged as important

SubContracting - Experiences

- “One Team Approach” conveyed towards Contractor
- Schedule, progress and marked monitored
- Involved early (enough) for;
  - DSNO to familiarise with Contractor
  - introduction, familiarisation and testing

- All Sub-Contractors performed well (exceptionally), all in a proactive and positive manner.
- No HSEQ issues
- All flexible (under challenging conditions)
Happy times!
Thank you!