The Next Generation of Reeled Pipe Lay Vessels: for Ultra Deep Water Field Developments in Remote Locations

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Lewek Constellation

Globally deployed flagship and class leading asset

**Ice class deep water subsea multi-lay vessel**

- Capable of global deployment for integrated subsea construction projects, including pipe lay, flex lay and heavy lift
- Among most advanced subsea construction vessels of its class

**Key features include:**

- DP3 capability
- Multi-lay system, capable for rigid and non-rigid pipelines
- 3000mT heavy-lift crane
- L: 178m, B: 46m, Max draft: 10.5m
- Design speed 12 knots
Lewek Constellation
- Power and Class

### Power generators
- Two (2) x 5,760kW – main
- Six (6) x 2,880kW – auxiliary
- Four (4) x 2,565kW – auxiliary

Total: 39,060kW

### Thrusters
- Three (3) x Tunnel Thrusters on bow
- Two (2) x Azimuth Thrusters Forward
- Four (4) x Azimuth Thrusters

### Notations
- DNV 1A1 Ship Shape Pipe Lay Vessel
- DP3 – DYNPOS AUTRO
- Ice Class Pipe Lay Vessel
Lewek Constellation - Key Milestones

- November 2012: Vessel Launch
- April 2013: Harbour Acceptance
- May 2013: Sea Acceptance
- May 2013: Vessel Delivery
- October 2013: Crane Installed
- May 2014: Multi Lay System Installed
- June 2014: Lay Trials & Operational
Lewek Constellation
- Construction – May / September 2012

May 2012

September 2012
Multi-Lay System Capacity

- Max pipe size (Rigid Reel Lay) = 16in nom.
- Max pipe size (Flexible Pipe) = 24in OD
- Max Flexible Pipe Lay tension = 520mT
- Max J-Lay Pipe Lay tension = 400mT
- Max Rigid Reel Lay tension = 800mT
- Max weight of PLET = 60mT
- Reel flange diameter is = 22m
- Reel core diameter is = 16m
- Reel weight without product = ~850mT
Lewek Constellation PLET Handling System

- **PLET handling system:**
  - Upend and position PLET and ILTs in the workstation
  - PLET is aligned in the handling frame to line up with the pipeline or SCRs
  - PLET handling 8m x 4.3m x 5m
  - Available length 35m
Umbilical / Flexible Lay

• Lay System
  – Two (2) x 1250mT carousels (below deck)
  – 6m radius chutes for routing

• A&R system
  – Two (2) x 600mT Traction Winches
  – Two (2) x 20mT Storage Winches
  – 137.5mT A&R Winch
Lewek Constellation Carousels
Lewek Constellation
- Work Class ROV’s

- 2 x Schilling Heavy-Duty WROVs
  - Two (2) x dedicated ROV moon-pools
  - 4,000msw rated
  - 4,500m main lift wire
  - 150shp HPU
  - TMS with 1600m of tether

- WROV Intervention
- Touch Down Monitoring
The *Lewek Constellation*

Ice Class, Multi-Lay and Heavy Lift Vessel
Pipe Spooling & Transportation Barge
Pipe Spooling

1. Initiate & Spooling Reel #1
2. Complete Spooling Reel #1
3. Initiate & Spooling Reel #2
4. Complete Spooling Reel #2
Pipe Spooling Barge for Two (2) Reels Ready for Transportation
Pipe Spooling Barge for Four (4) Reels Ready for Transportation
Reel Load-outs

1. Barge alongside LC & lift full reel.
Reel Load-outs

Skid reels on board LC & lift consecutive reels
Lewek Constellation
Reeling Capacity

- ~ 64km (~40 miles) of 8” pipe with 3LPP (4 reels)
- ~ 48km (~30 miles) of 10” pipe with 3LPP (4 reels)
- ~ 36km (~22 miles) of 12” pipe with 3LPP (4 reels)
- ~ 24km (~15 miles) of 14” pipe with 3 LPP (4 reels)
- ~ 16km (~10 miles) of 16” pipe with 3 LPP (4 reels)
Limiting Water Depth for the Lewek Constellation

- The *Lewek Constellation* can install pipe in ultra deep water field developments with allowable top tensions of 800 tons dynamic.
Example: Traditional Reel lay Vessel Vs Lewek Constellation (Fav Cond’s)

- 10 inch flow line in deepwater with 3LPP
- Four (4) trips equal pipe length
- > 12 days saving excluding WOW
Typical Pre-Salt Field Developments that can utilise the **Lewek Constellation**

**Opportunity:**
- Spooling pressurised CRA pipe off critical path
- Reduce reel lay logistical interfaces
- Reduce potential WOW for the **Lewek Constellation**
- **Mitigating fabrication and spooling risk to guarantee schedule**
Traditional Reel lay with the **Lewek Constellation**

**Conclusions:**
- The effective rigid pipeline spooling time is off critical path for the **Lewek Constellation**
- Spooling pipeline stalks off critical path (removing the effect of critical tie-in welds, NDE including field joint coating systems for the **Lewek Constellation**)
- Pipe lay vessel transit time is reduced considerably compared to traditional reel lay vessel as the **Lewek Constellation** does not have to return to the spool base to spool pipe
- **Lewek Constellation** is an enabler that can lay multiple products, umbilicals (with large UTAs), DEH, flexible (large bending stiffeners), Pipe-in-Pipe and rigid flow lines (with PLETs & ILTs) and SCRs in one trip
- **Lewek Constellation** is ideal for remote locations with a high weather sensitivity such as in the Arctic, Barent Sea, East India and many more remote locations with limited working weather or no offshore support services
Thank You!

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