Overview of Tubular Bells

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Safety Moment

DID YOU KNOW?
SLOWING DOWN ISN’T THE ONLY ADJUSTMENT YOU NEED TO MAKE WHEN DRIVING IN BAD WEATHER.

Driving at freezing temperatures make driving extremely dangerous. Layers of ice that isn’t immediately visible to drivers can be deposited.

Stay off the roads if possible. If you have to drive, in addition to slowing down and keeping a greater distance than normal between you and the car in front of you, don’t make any sudden moves with the steering wheel, breaks, or accelerator, unless absolutely necessary. And avoid bridges and overpasses if possible.

Remember, even a little rain can mix with dirt and oil that’s collected on the road, making the surface potentially slippery even in light rain, sleet, or snow.
Agenda

• Project Overview
  – Summary
  – Schedule
  – Drilling/Completions and Subsurface
  – SURF
  – Hull & Mooring
  – Topsides

• Fabrication / Installation / HUC
  – Summary
  – Hull Fabrication
  – Topsides Fabrication
  – Temporary Workdeck
  – Offshore Campaign
  – Topsides Lift Plan

• Project Focus Areas / Challenges
• Questions?
Project Overview – Summary

Lift / Operating weight: 7,500 / 8,600 tons

**PROCESS DESIGN**
- Oil Handling: 60,000 BOPD
- Gas Handling: 135 MSCFD
- Maximum Fluid: 75,000 BFPD
- Water Handling: 50,000 BWPD
- Water Injection: 60,000 BWIPD

**PROJECT MILESTONES / GENERAL INFORMATION**
- Sanction: June, 2011 (HES)
  Aug. 2011 (CVX)
- Working Interest: 57.14 Hess, 42.86 Chevron; BP withdraw Sept. 30, 2011
- Wells (Prod/Inj.): 3 - 5 / 2 – 3
- Total Project Cost: <$3B (excluding Hull and Topsides)
- Water Depth: ≈ 4,300 ft.
- Reservoir Characteristics: 15K/ 250° F
Unique Aspects of the Project

- Field first discovered by BP
- Facility Host provided by Williams (Topsides, Hull and Export system)
- Under-appraised field (subsurface)
- First floating production system in the Gulf of Mexico for Hess Corporation
- The engineering and construction of the project is being conducted almost entirely within the US
- High Pressure (15K)/ High Temperature (250° F) Reservoir
- 3 Years from Sanction to First Oil
Project Schedule

3 Year Project Duration

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Drilling/Completions and Subsurface

- Project Plan
  - 3 to 5 Producers and 2 to 3 Water Injection Wells
  - Have drilled 4 producers/ completing the fourth producer

- Sanction Development Plan
  - 2 Drill Centers, 3 Production Wells and 2 Water Injection Wells
  - Subsea Infrastructure tied back to a Williams Partners owned Floating Production System (FPS)

- Batch Set 9 top holes (22” casing point)
  - Completed drilling first, second, third and fourth wells
  - Finished the completion of the first three wells
  - Currently completing the fourth well
  - Results of first well exceeded high-side reserve estimates
  - Plan to complete drilling/completion activities in 1Q 2015. Additional exploitation wells currently being evaluated.

Stena Forth (Drill ship)
- 748’ long and 138’ wide
- Dual Derrick System (1,000 ton & 600 ton)
- Max Personnel: 180
Drilling/Completions and Subsurface (Cont.)

Current Base Case: 4 Producers (wells A, B, C & D) & 2 Water Injectors (wells E & G)

- Well C is an N1 sand west area producer added due to the upside well B N1 sand result
- Well D focus is N2 sand with a future recomplete to the J4 sand
- Well G injector optimized to support the larger N1 sand volume west of the brown fault
- Well H is a K6 sand producer opportunity that will be proposed for approval in 2015
Drilling/Completions and Subsurface (Cont.)

Typical Well – Well & Casing Design

Result of Macondo

TD of final well (~25,000 ft)
Drilling & Completions (Cont.)

• Post Macondo Impact
  – Additional BOP tests – Increased duration and frequency
  – Pull BOP, stump test, and re-run required once per well
  – 14” scab tieback for collapse requirements for survival loads
  – Access to containment response equipment
SURF
Architectural representation of Subsea infrastructure

- Line Pipe: 8.5 mi of 8”OD x ~1.2” WT, Tenaris Italy
- Riser Pipe: ~1 mi of 8”OD x ~1.5” WT from Tenaris Italy
- Export P/L: 16 mi P/L + mi. riser of 12” OD x 0.688-in WT and tie into 18-in Williams Mountaineer (oil) and Canyon Chief (gas) pipeline systems

Major Contract Interfaces with:
- Technip
- Weatherford
- Oceaneering
- FMC
- Subsea 7
Spooling Operations
Technip’s Spoolbase Mobile, AL
Offshore Installation
Hull & Mooring

- Classic Spar Hull design
- ABS Class: Floating Offshore Installation (FOI)
- 85’ OD x 30’ Center-well x 60’ Freeboard x 524’ Draft
- Fixed and variable ballast tanks
- 17 Blocks: A (top of Spar) and Q (Keel)
- 2 access shafts (from top of spar to Block G)
- Weight ~29k kips (Structure ~20k + Outfitting ~9k)
- 5 SCRs (Riser Porch) + 1 Umbilical (Center-well)
Hull & Mooring (Cont.)

Mooring HPU

Electrical Deckhouse

Topside Supports

Centerwell

Chain Jacks (purple)

Access Shafts

Closed Drain Tank

18 Chemical Tanks + 2 Potable Water Tanks (Located inside of Hull)

4 Integral Tanks (Oil, Diesel & Methanol) Located underneath top of Hull

4 Seawater Lift Pumps

Ventilation System (2 Air Handling Units)

Strakes
Hull & Mooring (Cont.)

- Sail date of February 8, 2014
- Towed for a Distance of 515 NM
- Average speed 5 kn
- Took 5 days to tow out to Tubular Bells
- Only 1 tugboat pulled, the others were guides
Topsides

- 3-level deck structure
- 50 POB Living Quarters/ LB Capacity for 60 PB
- 3 x 50% Solar T60 Generators (~8MW normal operation)
- 3 x 2 Phase Production Separators and 1 x 3 Phase Test Separator
- 2 x 50% Solar T60 Turbine Driven Flash Gas Compressors; TEG Dehydration (2-lb H2O/ MSCFD gas)
Topsides (Cont.)

Gas Compressors

Living Quarters

MCC

SW Pumps

60 man survival crafts

Turbine Generators

Inlet Manifolds & L/R’s
Fabrication / Installation / HUC
Fabrication – Summary

• Gulf Island LLC
  – Topsides
  – Living Quarters
  – Hull Section Q

• Gulf Island Marine Fabricators
  – Hull Section A, Water Tight Flat B, Q

• Gulf Marine Fabricators
  – Hull Fabrication (85’0 x 584’ long)
  – Hull Sections M/N and O/P - subcontracted to Signal International

• Dolphin Services
  – Hull spool piping
  – Topsides Alloy Spool Piping
  – PLETs, PLEMs and ILSs (SURF)

• Intermoor
  – Suction Piles - Qty 10 (Ø 16’ x 97’)

• NRG Manufacturing
  – Subsea Manifold
  – Chemical Tanks
Fabrication – Summary (Cont.)

Location of Fabrication Yards
Hull Fabrication

- Main Contractor - Gulf Marine Fabricators, Ingleside, TX

- Major Subcontracts to Signal International, Gulf Island Marine Fabricators and Dolphin

- All Blocks were fabricated in jigs and assembled into super blocks and lowered into the Graving Dock for final assembly and fit out

Blocks A through Q
Hull Fabrication (Cont.)

Showing 13 blocks (D – P)

Super Block Tie-In of A/B

Mammoet Crane (3,200 ton)

Block C

Block Q
Hull Fabrication (Cont.)

Block “J” Assembly
Topsides Fabrication

Cellar Deck Float  Production Deck Float  Main Deck Float

Flare Boom Lift  Stabbing pin into hook  Flare Boom lifted and stab into place
Hanging boom rest for Seatrac crane

Topsides Fabrication (Cont.)

Topsides (South side)

Helideck (South side) lights turned on for the 1st time

Helideck lights

Hanging boom rest for Seatrac crane
Temporary Workdeck Fabrication

- Multipurpose design for
  - Hull mooring system
  - Riser pull-in’s
  - Tie-in spool installation assistance
  - Flowline and export pipeline hydrotesting
  - Umbilical pull-in
  - Hull Carry-over work / Commissioning of Hull

- 120 ft x 90 ft plated deck area with Helideck for light twin engine helicopters

- Crane with 100 ft boom and 35 ton off-boarding capacity; Seattrax rental crane
Offshore Campaign

Phase I

- Suction Piles installation, Mooring lines pre-layed
- Trip 1A/1B – SCR’s and flow-lines out to 17,000 ft.
- Production Manifold installed, Main and Infield Umbilical wet parked

Suction Pile

Manifold

Umbilical Reeling Operations in Panama City
Field Layout – SCR & FL Installation
Hull UpEnding

Phase II
Riser Pull-In: SURF & Exports

- Steering winches supported from TWD
- Three steering sheaves to control horizontal pull-in
- SCRs to be recovered and hung-off
Tie-in Spool Installation

SCR Hang- Off
Topsides Load Out onto Cargo Barge
Plan of Topsides Lift from Cargo Barge

- Tandem lift of TWD – Port side lift with Aux blocks (900 mT)
- TWD to be placed on Barge Starboard side
- Tandem lift of Topsides – Bow side
- Move S7000 toward Hull and lower Topsides onto Hull
Temporary Work Deck Removal
Topsides Lift from Cargo Barge
Project Focus Areas / Challenges

• Managing interfaces and ensuring communication across all work groups
  – Due to the unique nature of the contract, there are more interfaces than would typically be expected (company-company-regulatory entities, company-contractor and contractor-contractor)

• Ensuring compliance and enhanced reporting requirements in the GOM

• SIMOPs; Coordinating multiple vessels during the Offshore Campaign

• Mitigating risk and minimizing the effects of schedule delays

• Accommodating additional work scope in the already aggressive project schedule
  – Due to the positive results of the first well, the project incorporated additional design scope to allow for future expansion of the subsea and topsides facilities

• Supporting Williams and managing work scope associated with future Gunflint tie-in to minimize impact to production

• Managing and aligning drivers between Hess and Williams

• Assuring an adequate hand-over to operations while building/assembling the operations expertise and experience.
Tubular Bells First Oil

First Oil
November 13, 2014

As of January 19, 2015
TBells is Producing with Three Wells:

37,000+ BOPD

85+ MMSCFD

51,500+ BOEPD
QUESTIONS?
Contact Information

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BACK-UP
Project Overview

MAJOR CONTRACTS

- Williams Field Services owned facility operated by Hess with exclusive production rights for first 5 years
- Topsides Engineering & Procurement – Woodgroup Mustang (WGM), Houston, TX (SystemPacs – EDG, Metairie, LA)
- Topsides Fabrication – Gulf Island Fabrication (GIF), Houma, LA
- Hull Engineering & Procurement – Houston Offshore Engineering, Houston, TX
- Hull Fabrication – Gulf Marine Fabricators (GMF), Ingleside, TX – Gulf Island Marine, Houma, LA
- SURF Engineering & Procurement – IntecSEA, Houston, TX
- E&I Installation – MMR Group
- Offshore Installation (Topsides) – Saipem 7000
- Offshore Installation (Hull & Mooring and SCR Recovery/Hang-off) – Heerema Marine Contractors, Balder
- Offshore HU&C – PES (Performance Energy Services)
- Temporary WorkDeck Fabrication – Allison-Marine, Morgan City, LA
Field discovered by TB-1 in 2003; Hess earned 20% WI in TBells leases

UOA signed - MC 725 unit in 2006

Acquired add'l 20% WI and operatorship from BP; Hess WI share = 40%

Acquired add'l 17.14% WI due to BP unit withdrawal; Hess WI share = 57.14%

Batch program completed 9 top holes

Add C producer to development plan

'B' well TD'd Oct. 12

'S' well TD'd Apr. 21

'S' well TD'd Sept. 22

1st oil production 3rd Quarter 2014
Topsides Fabrication (Cont.)

Skid ways progress preparing for load out