Agenda

> Who is Williams?
> Devil’s Tower vs. Gulfstar One
> Gunflint Tieback Review
> Kodiak Tieback Review
> Execution Comparison
> General Tieback Fee Structure
> Lessons Learned
> Questions and Answers
A Tradition of Excellence for More Than 100 Years

> Founded as a construction business in 1908 by brothers Miller and David Williams

> Moved to Tulsa, Oklahoma from Fort Smith, Arkansas in 1919

> Changed name to The Williams Companies from Williams Brothers in 1970's
Atlantic-Gulf Operations Span Gulf of Mexico and Eastern Seaboard

> Includes Transco, the nation’s largest volume interstate natural gas pipeline system

> Gulfstream, a 745-mile pipeline delivering natural gas across the Gulf of Mexico to Florida

> Gathering & processing facilities include processing plants, pipelines and floating production platforms along the Gulf Coast
Gulf East Asset Overview

### Processing & Fractionation

<table>
<thead>
<tr>
<th>Facility</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Bay Gas Processing Plant</td>
<td>690 MMcfd</td>
</tr>
<tr>
<td>Baton Rouge Fractionator JV (~31% ownership)</td>
<td>60,000 BPD</td>
</tr>
</tbody>
</table>

### Offshore Pipelines

<table>
<thead>
<tr>
<th>Pipeline</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canyon Chief Gas Gathering (including BF and GS1 laterals)</td>
<td>450 MMcfd</td>
</tr>
<tr>
<td>Mountaineer Oil Gathering (including BF and GS1 laterals)</td>
<td>150K-200K BPD</td>
</tr>
<tr>
<td>Carbonate Trend Gas Gathering</td>
<td>120 MMcfd</td>
</tr>
</tbody>
</table>

### Offshore Production Handling

<table>
<thead>
<tr>
<th>Asset</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulfstar One</td>
<td>80,000 BPD, 172 MMcfd</td>
</tr>
<tr>
<td>Devil’s Tower</td>
<td>60,000 BPD, 50 MMcfd</td>
</tr>
</tbody>
</table>

### Offshore Transportation (Transco Owned Gulf East Operated)

<table>
<thead>
<tr>
<th>Asset</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulfstream</td>
<td>1.2 Bcfd</td>
</tr>
<tr>
<td>Transco 4B lateral</td>
<td>357 MMcfd</td>
</tr>
</tbody>
</table>

**System Uptime: 99.8%**
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Devil’s Tower Floating Production System

> Williams owned, Eni operated
> Dry Tree Truss Spar – in service 2004
> Drilling/Workover Capability
> ANSI 1500 14”-18” gas and oil exports
> DT resident/Triton and Goldfinger producers
  – Eni 75% / Marubeni 25%
> Kodiak tieback
  – Deep Gulf 29% / Murphy 29% / LLOG 25% / Marubeni 17%
> Initial design capacities:
  – 60 MBPD Oil
  – 40 MBPD Water
  – 50 MMCFD Gas
> Additional tieback capability
  – Two riser slots and two i-tubes are available

Water Depth: 5,610 ft.
Gulfstar One Floating Production System

- JV owned, Hess operated
  - Williams 51% / Marubeni 49%
- Wet Tree Classic Spar – installed 2014
- Production Facility (No drilling)
- ANSI 1500 12” gas / oil exports
- Tubular Bells anchor producers
  - Hess 57% / Chevron 43%
- Gunflint tieback
  - Ecopetrol 31% / Noble 31% / Samson 19% / Marathon 18%
- Initial design capacities:
  - 60 MBPD Oil
  - 50 MBPD Water
  - 132 MMCFD Gas
- Additional tieback capability
  - Two j-tubes and three i-tubes are available

Water Depth: 4,300 ft.
Gulfstar One
Classic Spar

Devil’s Tower
Truss Spar
Recent Williams Tiebacks

- **CONTRACTED**
  - **Kodiak** – First production March 2016
  - **Gunflint** – First production July 2016
  - **Appomattox development (Norphlet)** – Target ISD 2019

- Pursing more near-term gas & oil tieback opportunities
- Gunflint represents a major milestone for the Gulfstar business model
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Gunflint - Total Recordable Incident Rate

Gunflint Project To Date

<table>
<thead>
<tr>
<th></th>
<th>Cumulative Hours</th>
<th>Recordable Incidents</th>
<th>TRIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Management</td>
<td>208K</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Engineering</td>
<td>241K</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Fabrication</td>
<td>116K</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Construction</td>
<td>820K</td>
<td>1</td>
<td>0.24</td>
</tr>
</tbody>
</table>

TRIR = 0.14
LTIR = 0
Gunflint Project – Safety Statistics
First Aids and Recordables Injured Person (2015-16)

2. FAC (08-26-15): Minor cut to left index finger during grinding operations.
5. FAC (11-06-15): Foreign object in eye.
6. FAC (11-11-15): Worker stepped into low spot on uneven terrain and twisted right ankle.
7. FAC (11-11-15): Minor cut to left little finger when cleaning slag material from I-beam.
8. MTI* (11-29-15): Laceration to right hand resulting in three sutures (non-stewardable injury).
11. FAC (01-29-16): Scrape on left ring finger when hand slipped and struck valve.
12. FAC (02-02-16): Minor cut to left forefinger while using impact wrench.
13. FAC (02-11-16): Pinched right little finger between I-beam lip and end of hammer wrench.
14. FAC (03-04-16): Minor abrasion to cheek when worker lost balance inside PWE.
15. FAC (4-4-16): Minor burn to hands and wrist from coffee spillage.
16. FAC (4-11-16): Right arm abrasion when tool box lid closed on arm.
17. FAC (4-24-16): Soreness in left elbow after conducting task i.e., tube bending.
18. FAC (4-27-16): Foreign object in eye.
19. FAC (5-21-16): Strain to lower back while moving a bumper guide.
20. FAC (7-6-16): Shoulder pain resulting from loss of footing (slip).
21. FAC (7-17-16): Finger laceration while push - pulling a toolbox.
22. RWC (9-22-16): Blunt force trauma to left pinky finger while using a hammer.
23. FAC (9-30-16): Chemical exposure to hand (35% HP).

1 OSHA Recordable Injury – Restricted Work Case
Gunflint Project Overview

- Noble Energy’s “Gunflint” development ties back to GS-1 FPS in MC 724
- 23 mile – 12” x 8” PIP flowline loop (46 mile round trip) and Control Umbilical
- 15 ksi flowline system
- Nameplate Production:

<table>
<thead>
<tr>
<th></th>
<th>Gunflint</th>
<th>Tubular Bells</th>
<th>Total GS1 Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (bbl/d)</td>
<td>20,000</td>
<td>60,000</td>
<td>80,000</td>
</tr>
<tr>
<td>Gas (MMcf/d)</td>
<td>40</td>
<td>135</td>
<td>175</td>
</tr>
</tbody>
</table>

- Major Topsides Equipment:

<table>
<thead>
<tr>
<th>Equipment</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding SDVs</td>
<td>Subsea HPU</td>
<td></td>
</tr>
<tr>
<td>Launcher / Receivers</td>
<td>Chemical Injection</td>
<td></td>
</tr>
<tr>
<td>Manifold Extension</td>
<td>Hydraulic Valve Panel</td>
<td></td>
</tr>
<tr>
<td>Bulk Oil Treater</td>
<td>Flash Gas Compression</td>
<td></td>
</tr>
<tr>
<td>VRU</td>
<td>Glycol Contactor</td>
<td></td>
</tr>
<tr>
<td>HP Gas Cooler</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Phase 1 - Interruptible Access
Phase 2 - Full Expansion
Gunflint Topsides Expansion Overview

- Noble subsea tie-back to Williams’ GS1
- Increasing GS1 producing and exporting capability by 20,000 BOPD and 40,000 MMSCFD
- Installation of a 3rd lifeboat to increase platform workforce
- Floatel in field for construction team
- Installation of
  - Flash Gas Compressor
  - Vapor Recovery Unit
  - 2 each deck extensions
  - Pigging and Flushing equipment
  - Bulk Oil Treater
- Phase 1 Ready For Operation (interruptible capacity): July 19, 2016
- Phase 2 Ready For Operation (full expansion complete): Dec. 15, 2016
Gunflint Project – Major Topsides Equipment (Looking Southeast)

- Completed Scope
- Phase 1
  - Interruptible Access
- Phase 2
  - Full Expansion

- Additional Living Quarters
- Flash Gas Compressor “3”
- Bulk Oil Treater “2”
- Bulk Heat Exchanger “2”
- Launcher/Receivers
- Manifold Extension
- Hydraulic Valve Panel
- Subsea HPU
Gunflint Project – Major Topsides Equipment (Looking Southwest)

- 1st and 2nd Stage Gas Coolers
- Flash Gas Compressor “3”
- Bulk Heat Exchanger “2”
- Bulk Oil Treater “2”
- Glycol Contactor “2”
- Vapor Recovery Unit “2”
- H.P. Gas Cooler
- 30’ x 50’ Deck Extension
- FCG “3” 1st Stage Suction Scrubber

Phase 2 Full Expansion
Gulfstar - Addition of 3\textsuperscript{rd} Lifeboat

- Original POB: 50
- POB w/temp. quarters: 58
- POB w/3\textsuperscript{rd} lifeboat: 110
- POB w/shut-in and flotel: 150
Gunflint Offshore Construction Crew
Gulfstar Deck Extension Installation
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Kodiak - Total Recordable Incident Rate

396,370 total man-hours for facilities.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and Development</td>
<td>6,297</td>
</tr>
<tr>
<td>Drilling Operations</td>
<td>342,256</td>
</tr>
<tr>
<td>Tree Installation</td>
<td>2,748</td>
</tr>
<tr>
<td>Subsea Construction</td>
<td>80,370</td>
</tr>
<tr>
<td>Topsides Construction</td>
<td>276,718</td>
</tr>
<tr>
<td>Buoy Installation</td>
<td>11,976</td>
</tr>
<tr>
<td>Support Vessels</td>
<td>40,464</td>
</tr>
<tr>
<td>Flow back Vessel</td>
<td>9,936</td>
</tr>
<tr>
<td>Production Operator Support</td>
<td>16,900</td>
</tr>
<tr>
<td><strong>Total Project Exposure Hours</strong></td>
<td><strong>787,665</strong></td>
</tr>
</tbody>
</table>

**LTIR: 0.0!**

**TRIR: 0.0!**
Kodiak Project Overview

- Deep Gulf Energy’s “Kodiak” development ties back to Devil’s Tower in MC 773
- 7 mile – 5” ID, CRA Insulated flowline and Control Umbilical
- Mooring Modifications
- 15 ksi flowline system
- Nameplate Capacity:

<table>
<thead>
<tr>
<th></th>
<th>Kodiak</th>
<th>Devil's Tower</th>
<th>Total Devil's Tower Prod.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil (bbl/d)</td>
<td>30,000</td>
<td>60,000</td>
<td>90,000</td>
</tr>
<tr>
<td>Gas (MMcf/d)</td>
<td>0</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

- Major Topsides Equipment:
  - Boarding SDVs
  - Launcher / Receivers
  - Production Module
  - MCC Module
  - Chemical Injection
  - Filter Separator
Mooring System with Buoys
Devil’s Tower - Draft After Mooring Modifications (+10ft)
Kodiak Riser and Umbilical Pull Tubes
Kodiak Process Module Installation
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## Execution Strategy – Various Options

<table>
<thead>
<tr>
<th>Scope</th>
<th>Gunflint</th>
<th>Kodiak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Noble</td>
<td>Williams (DGE)</td>
</tr>
<tr>
<td>Pipelay</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Riser Pull-in</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Flowline Commissioning</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Platform Modifications</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Topsides Commissioning</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Platform Operator</td>
<td>Hess</td>
<td>Eni</td>
</tr>
<tr>
<td>Primary Challenges</td>
<td>Competing SWIM construction scope with Gulfstar Spar and agreement on POB/access for tieback execution</td>
<td>Platform weight capacity, control system integration and POB/access for tieback execution</td>
</tr>
<tr>
<td>15 KSI Wells</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
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Factors Affecting Fees

> Reservoir size and quality
> Certainty and timing of production
> Execution/Capex Strategy – Who performs the work?
> Existing Capacity on FPS/pipeline
> Competition
> Invasiveness of the work scope
GS1 and Gunflint Support Vessels
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Lessons Learned

> Focus on safety and efficiency pays the biggest dividends
> Organize and agree on access plan in advance (Producer to Owner and Producer to Producer relationships very important)
> Minimize welding habitats by minimizing hot work – Hilti Studs, Bolted Connections, and Belzona
> Prefab of spools using laser measurement – high success rate
> Review and streamline (if needed) the Permit to Work Process
> Cooperation is Key – Owner / Producer / Operator relationship is paramount!
Acknowledgements
Contact Information

Mark Cizek
markcizek@williams.com
Vice President and General Manager, Eastern GOM
The Williams Companies