Sustainability Through the Supply Chain

Jennifer M. Bell
Purpose

• Define Sustainability
• Discuss What a Socially Responsible Investment Looks Like
• Corporate Sustainability Leaders
• Stages of Sustainability Commitment
How do you define sustainability?

• Sustainability has been called one of the least meaningful and most overused word in the English language. David Owen, The Conundrum: How Scientific Innovation, Increased Efficiency and Good Intentions Can Make Our Energy and Climate Problems Worse

• Corporate Sustainability is a business approach that creates long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments. Dow Jones Sustainability Indices

• Sustainability has been defined as economic development that meets the needs of the present generations without compromising the ability of future generations to meet their own needs. Gro Brutland

• Sustainability Performance is the social, environmental and economic performance of a company and relates to the objectives that are important to the internal and external stakeholders. Marc Epstein
Triple Bottom Line

- Socially Responsible Investment
- Business Drivers
- Game Changing Challenges
Energy Producers

- Social Performance
- Economic Performance
- Environmental Performance

Performance Indicators

HSE
Supply Chain

- Performance Indicators
- Requirements
- Specifications
- Safe Operating Limits
- Design Codes
Where does Sustainability begin?

Design
Construction
Start Up
Operations
Inspection
Maintenance/Repair
Game Changing Challenges Sustainable Innovation

Precise Drilling Concepts
• Environmental – OSHA
• Social – Respect for the Individual
• Socio-Environmental – Reusable
• Economic – Risk Management
• Eco-Economy – Resource Efficiency
• Socio-Economic – Local Economy
Game Changing Challenges Sustainable Innovation

Drill-Gen Inc
- Environmental – EPA Regulation
- Social – Respect for the Individual
- Socio-Environmental – HSE
- Economic – Risk Management
- Eco-Economy – Energy Efficiency
- Socio-Economic – Local Economy
Game Changing Challenges Sustainable Innovation

Wellhead System
- **Assembly:**
  - Wellhead Connector
  - Low Pressure Housing
  - High Pressure Housing
- **Process:**
  - Preloaded System
  - 6MM lbf. Casing Weight
  - Apply Loads per Capacity Chart
  - Results Comparison
  - Inspection
  - Third Party Witness

Horizontal Test Machine Load Capacity
- $20 \times 10^6$ ft•lbf (27 $\times 10^6$N•m) Bending
- $13 \times 10^6$ lbf (57.8 $\times 10^6$N) Tension/Compression
- $6 \times 10^6$ lbf (26.7 $\times 10^6$ N) Simulated Casing Loads
- Combined Loads
Game Changing Challenges Sustainable Innovation

Dril-Quip Vertical Integration

- Purchase Raw Materials
- FORGE
- HEAT TREAT
- ROUGH MACHINE
- Finishing Operations
  - Houston
  - Aberdeen
  - Singapore
  - Brazil

Dril-Quip

- Environmental – EPA Regulation
- Socio-Environmental – HSE
- Economic – Risk Management
- Eco-Economy – Energy Efficiency
- Socio-Economic – Local Economy
The Last 20 years and The Future

• Reducing Cycle Time and Accelerating First Production
• Willing to Employ New Technology
• Future of Fossil Fuels Evolution or Revolution
• How the Industry Deals with Soft issues
• Developments for Unconventional Fields
References

Next Generation HPHT Subsea Wellhead Systems Design Challenges and Opportunities
Jim Kaculi, D.Eng., P.E., Dril-Quip, Inc.

Interlinking Engineering and Social Performance into Sustainability Using the Triple Bottom Line Principle: J. Bell, BSc Eng, MBA, Elements Offshore
THANK YOU
BACK UP SLIDES
GAME CHANGING CHALLENGES
Patents & Intellectual Property

• Patents are government acknowledgement of innovative leaps which are recognized by the public as improvements of society.

• Intellectual property allows smaller companies to invest R&D into sustainable solutions knowing they are in a position to recover such investments.

• ASME Silver Patent Award
  • Colby Ross, Halliburton – 2014
  • Tom Bailey, Weatherford - 2012
  • Jon Khachaturian, Versabar - 2011
  • Ray Ayers, Stress Engineering - 2009
  • Mike Williams - 2008
  • Joe Pallini - 2007
  • Dan Scott - 2006
  • Jack Miller - 2005
  • Gerald Baker - 2004
  • Charlie Bridges - 2002
  • Rolf Pessier - 2001
  • Carl G. Langner - 2000
Game changing challenges WorkForce Development
Houston Community College