Partners in Success: 
Standardization and the Oil & Gas Sector

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Canada’s Oil & Gas Industry

Economics

- Employment 500,000
- Invested $30 billion in 2004... the largest single private sector investor
- Industry paid $16 billion in 2003 to governments
Canada’s Oil & Gas Industry

World Positioning

- World’s 2nd largest crude oil reserves
- World’s 3rd largest natural gas producer
- World’s 13th largest crude oil producer
- Oil & Gas: 9.3% of exports
- Oil & Gas: 57% of trade surplus
- Energy: $62 billion, or 16% of exports
**Comparative Oil Reserves**

**Billions of Barrels**

- **Oil Sands Deposits:**
  - 175 billion barrels established reserves
  - 315 billion barrels ultimately recoverable with current technology
  - 2.5 trillion barrels in-place
Natural Gas Productive Capacity

CERI Alternate Case

Western Canada Sedimentary Basin
Natural gas from coal/CBM
Nova Scotia
North
Newfoundland
BC Offshore

Source: Canadian Energy Research Institute
Canadian Oil Production

Oil Sands Outlook

Actual Forecast

Offshore

Oil Sands

Conventional Oil

Oil Sands Outlook:
2004 YTD = 1.2 mmb/d
2015 Forecast = 2.6 mmb/d
Canada’s Oil & Gas Industry
Scope of the Pipeline Industry

- One of the largest and safest pipeline systems in the world
- 700,000 km of pipelines in Canada
- 95% of Canada’s oil and natural gas moves through these pipelines
Partners in the Oil & Gas Industry

- Active and Engaged:
  - Standards Council of Canada (SCC)
  - Private Sector
  - Trade Associations
  - Stakeholders
  - Governments

- NGOs
- Canadian Standards Association (CSA)
- Customers
- Developing Countries
- The Public
Partners in the Oil & Gas Industry

- Standards contribute to:
  - Industry growth
  - Safety for the industry
  - Environmental stewardship

- CSA Members
  - 500 volunteer members in the Oil & Gas program:
    - 300 in pipelines and systems,
    - 200 in offshore structures

- CSA Staff
  - Facilitate this process
Partners in the Oil & Gas Industry

- Influence standard content
- Permit industry consensus
- Complement regulations
- Reduce costs
- Provide common technology base
- Drive industry best practices
- Enhance safety
Strategies for the Industry

- System Performance
- Safety and System Integrity
- Environment and Sustainability
- Stakeholder Relations
- New Markets
Strategies
System Performance

- **Pipeline**
  - Pipeline transportation system – safest in Canada
  - Declining failure rates over the last five years: from 3.2 to 2.5 per 1,000 km despite increase in pipeline installations from 256,000 to 317,000 km

- **Offshore**
  - Operate successfully in harsh off-shore environment
  - Sub-sea flowline, risers and well components provide safe operations
Strategies

Critical Issues for System Integrity

- Pipeline & Offshore
  - Emergency Shutdown Procedures (ESD)
  - Operations and Maintenance Systems
  - Integrity Management Systems
  - Sour Service Safety Management
  - Operator Training and Competency Standards
  - Safety Management Systems
  - Unique Operating Conditions
Strategies
Environment & Sustainability

• Pipeline & Offshore
  – CSA drives responsible environmental practices
  – ISO 14000 series on Environmental Management Systems (EMS)
  – Incorporating environmental references in standards to protect environment during construction and operation
Strategies
Stakeholder Relations

• Plus 663: Land Use Planning With Respect To Pipelines – A Guideline for Local Authorities, Developers and Pipeline Operators

• CSA standards set ground cover requirements for buried lines

• CSA standard on public involvement – Z764

• Industry invests in community-based consultations
Strategies

New Markets

- Growth Opportunities
  - Atlantic Canada
  - Arctic

- Approaches
  - Limit state design
  - Harsh environment standards
  - Offshore structures
Delivering Standards Solutions

Consensus

General Interest
Owner/Operator/Producer
Fabricator/Contractor/Supplier
Regulatory Authorities

Chair
Associate Members
CSA Project Manager
Public Review

Typical Oil & Gas Committee Voting Matrix
Importance of National Standards

- Standards are mission critical to the Oil & Gas industry
- Leadership role in addressing the need for harmonized standards
- A window for Canadians influencing regional/international standards
Making a Difference

- CSA has been making a difference in the Oil & Gas industry for over 40 years.
- Standards address safety and efficiency from start to finish – from well head to burner tip, to the point of use by consumers.
- Hundreds of standards supporting the Oil & Gas industry.
New Markets, Best Practices

• **Pipeline**
  - CSA coating standards are being used internationally
  - CSA standards are being used globally as basis for underground storage

• **Offshore**
  - CSA’s S471 was used in Northern Russia
  - Canada now leads ISO Arctic Offshore Structures Work Group
Globalization

- Key drivers toward globalization:
  - Multi-national Oil & Gas consortia share the risks for ‘mega-projects’
  - Streamlining local (national) regulatory processes
  - Enhance competitiveness and attractiveness to investors
  - Transfer world-wide industry best practices
Globalization

- Key benefits of globalization:
  - Efficiencies for Oil & Gas companies
  - Effective deployment of engineering resources
  - Global participation
  - Common international standards reduce trade barriers
Globalization

- ISO / IEC Standards
  - Facilitate trade
  - International best practices
  - Global networking
  - Open and transparent
Globalization

• ISO / IEC Standards and Organizations
  – ISO, 148 countries
  – IEC, 62 countries
  – Market driven
  – Worldwide application
  – SCC represents Canada
Globalization

- ISO Network, by the numbers…
  - 14,251 ISO standards
  - 188 TCs, 531 SCs, 2,224 WGs
  - 4,169 active projects
  - 35,000 experts
  - 714 secretariats from 37 countries
  - Member bodies in 97 countries
Globalization

- ISO TC 67: Materials, equipment and offshore structures for petroleum, petrochemicals and natural gas industries
  - Established in 1947
  - 24 participating members, 23 observing members
  - 148 standards in current suite
  - 70 published standards
Globalization

- ISO TC 67 Vision
  - Global participation
  - Global adoption
  - Co-branded
Globalization

- ISO TC 67 Objectives
  - Required by the industry
  - Worldwide adoption
  - Minimize specifications for companies
Globalization

- **Oil & Gas Producers: position on standards**
  - Promote standards within company
  - Access to international expertise and best practices
  - Influence use of resources
  - Representation on standards WGs
  - Save time and resources
Globalization

*Do it once. Do it right. Do it internationally.*

- **Harmonization & ISO**
  - Harmonize with international standards: ISO, IEC
  - Consider alternatives: tri-national, bi-national or regional
  - Create a national standard

- **4,000 Canadians involved on 476 CACs involved internationally (ISO, IEC, JTC1)**
Globalization
Case Study - Offshore

• Offshore Structures
  – Adopt international standards
  – Canada’s advancements reflected
  – Adoption of ISO 19900 series of Offshore Structure Standards as they become available
Globalization

Canada’s Participation  ISO TC 67

- ISO/TC67/SC2: Pipeline transportation systems
- ISO/TC67/SC5: Casing, tubing and drill pipe
- ISO/TC67/SC7: Offshore structures
Globalization

Value of Standardization

- 8 to 1 ROI from standards participation
- 1 to 5 manpower ratio, standards vs company only
- 50% savings, new projects
- 25% savings, operating costs
The Future

- What will be the role of local SDOs?
  - Get into the business of offering solutions to international standards.
The Future

What is Smart Regulation?

Governments, citizens and business will work together to build a national regulatory system that enables Canadians to take advantage of new knowledge and supports Canada’s participation in an international economy.

Key Characteristics:

- Protecting and enabling
- More responsive regulation
- Governing Differently
The Future

- Key Principles of Smart Regulation:
  - Effectiveness
  - Flexibility
  - Transparency
  - Innovation and Adaptability
  - Accountability
  - Cooperation
The Future

- Opportunities/Outcomes, Smart Regulation:
  - Social and environmental benefits
  - Competitive innovative economy
  - Higher quality of life for Canadians
The Future - Discussion

- Who pays for standards development?
  - Standards do not develop themselves
  - Standard sales may not fully recover development costs
  - Information tends to be free
Thank you

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