DEVELOPMENT OF SUBSEA REGULATIONS IN THE NORWEGIAN PETROLEUM INDUSTRY – FOLLOW UP AND USE OF STANDARDS

Trond Sundby
Petroleum Safety Authority, Norway
Petroleum Safety Authority (PSA)

- Independent regulator from 2004
- Regulator for technical and operational safety, including emergency preparedness, and for the working environment in all phases of the petroleum activity
- Report to the Ministry of Labour and Social Affairs
- About 170 employees
- Collaborate with other HSE regulators nationally and internationally

Area of responsibility

- 350 subsea installations
- 95 Fixed installations (platforms)
- 16,000 km pipelines
Main features of the regulations

• The regulations are based on performance (functional) requirements, which:
  • give the industry the freedom to choose its own best solutions
  • underpin the allocation of responsibility
  • refer to norms and industry standards, providing predictability for users and indicating the standard which solutions are expected to meet.

• The regulations require the companies to set risk targets and to manage their operations in relation to these.
Development of Petroleum HSE regulations in Norway

Detailed control:
- Prescriptive requirements
- Inspections
- Detailed orders

Framework control:
- Functional requirements
- System orientation
- Dialogue on problems

Culture of opposition
Culture of cooperation

22 REGULATIONS & 4 guidelines
1985
1995
14 TECHNICAL REGULATIONS & 33 guidelines
1995
2002
4 TECHNICAL REGULATIONS & 4 guidelines
2002

Framework regulations
- Management
- Documentation
- Technology
- Operation

Management regulations
Activities regulations
Facilities regulations
What is a standard?

Definition:
• a document developed, by consensus and endorsed by recognised institutions
• contains a set of specific requirements and recommendations relating to equipment, systems, processes and services including operations
• developed with a transparent process and include all relevant stakeholders to facilitate consensus (Examples: ISO Global; NORSOK National)

They are an asset of accumulated experience and used by all stakeholders in the industry
International

Regional

National

Industry

Companies

Recognised

ISO / IEC

CEN / CENELEC

ANSI

Japan etc.

BSI

Other European

API

ASME

OGP

EEMUA

UKOOA

OPERATORS

CONTRACTORS

SUPPLIERS

Vienna Agreement
Hierarchy of standards and referenced standards

- Laws
  - Regulations
  - Guidelines, Notices

- National lawmakers and regulator's responsibility
  - Industry standards
    - National standards
    - Regional standards
    - International standards
  - Joint industry work
    - Group specifications
      - Company specifications
      - Project specifications

- Operator's responsibility

<table>
<thead>
<tr>
<th>Standards</th>
<th>Count</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC</td>
<td>11</td>
<td>71</td>
<td>42 %</td>
</tr>
<tr>
<td>ISO</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORSOK</td>
<td>49</td>
<td>57</td>
<td>33 %</td>
</tr>
<tr>
<td>NEK</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSTA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOROG</td>
<td>6</td>
<td>43</td>
<td>25 %</td>
</tr>
<tr>
<td>NR</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMO</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy institute</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NT (NordTest)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDTC</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DNV</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMCA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEA (Energistyrelsen)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>API</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total 171
Management regulations Section 24 Use of recognised standards

- When the responsible party makes use of a standard recommended in the guidelines, the responsible party can normally assume that the regulatory requirements have been met.

- When other solutions than those recommended in the guidelines are used, the responsible party shall be able to document that the chosen solution fulfils the regulatory requirements.
History of subsea standards ISO/API

• Early API Standards
  • Standard materials and dimensions
• ISO/API Specification 6A / ISO 10423
  • Its development and design rules
• ISO/API Specification 16A / ISO 13533
  • Differences from 6A
• ISO/API Specification 17D / ISO 13628-4
  • Different applications and scope
Summary

• Prudent activities, risk reduction, continuous improvement, barrier management

• Challenges:
  • Interfaces in non-overlapping standards
  • Wellhead fatigue
  • International standardisation
  • Material specifications

• Standardisation ↔ Technology development
  • Sharing of information and experiences
  • Update with latest knowledge

Functional requirements – opportunities for the industry
Safety – status and signals - New issue

Read more about the background to the PSA’s main issue for 2017. What is the position? What is needed to reverse the trend?

Read webzine