Harmonisation of Oil Spill Prevention and Response in the Barents Sea: Reality or Just a Pipe Dream?

Dr Tina Hunter
Director, Centre for International Minerals and Energy Law, University of Queensland
Presentation Outline

• Legal regimes for petroleum activities
  • International Law
  • ‘Soft Law’
  • National law

• Oil spill prevention and response
  • Regulatory Bow Tie

• Conclusion: prevention vs response
Barents Sea Petroleum Reserves

Figure 1: Petroleum Reserves and Borders in the Barents Sea

Source: Ole Gunnar Austvik, Oil and Gas in the High North: A Perspective from Norway
Legal Regimes – International Law

• No ‘international law’ for petroleum activities
  • IADC, API, ISO, NORSOK

• UNCLOS – particularly a56 (EEZ), a76 (CS), a234

• IMO – eg SOLAS

• Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic

• Illulissat Declaration (Ship Based)

• Other ship based international oil conventions
Regional agreements

- Regional law – OSPAR
  - Signatories
- Copenhagen Agreement
- Bonn Agreement
- European Maritime Safety Agency
- Norway-Russia Cooperation
- Arctic Cooperation through Arctic Council
Legal Regimes – Soft Law

• Northern Dimension policy
• Arctic Council
  • PAME Working Group
    • Arctic Offshore Oil and Gas Guidelines 2009
    • AOOGG: System Safety Management and Safety Culture

• SHOULD THERE BE BINDING INSTRUMENTS FROM AC? or DOES SELF REGULATION WORK?
Legal Regimes: just about compliance?

- Objective-based regulation vs prescriptive regulation
  - Never forget the early lessons – Alexander Kielland; Piper Alpha
  - But: ‘Piper Alpha’ process safety superseded by the Macondo/Montara ‘well integrity’

- Safety Culture
- Standards and Best Practice
- ALARP/Safety Case vs GOP

- Risk Assessment and Hazard Identification
- Inspection not just approval of WOM
- Comparison to building industry

- Norway
  - Risk-based – Identify risk; utilise barriers

- Russia
  - More prescriptive?
  - Use of Risk based assessment of HSE?
Adapted ‘Bow Tie’ analysis of prevention of, and response to, loss of well integrity in unconventional petroleum operations
Adapted ‘Bow Tie’ analysis of prevention of, and response to, loss of well integrity in conventional petroleum operations
Barrier management in Norway

Barrier management process – ISO 31000

Process:
1. **Context**
   - System definition, description and assumptions
   - Regulations, standards, best practices, company specific requirements a.o.

2. **Risk assessment**
   - **Hazard Identification**
     - (per area and for all relevant potential internal/external hazards and accidents)
   - **Establish barrier functions, elements and performance requirements**
     - (per area and for all relevant potential internal/external hazards and accidents)
   - **Perform risk analysis and safety related studies/analysis**
     - (What can happen, how likely, what is the consequence? Asses and compare with design-/acceptance criteria)
   - **Asses and evaluate risk (Risk evaluation), incl. sensitivities, uncertainties**
     - Establish the risk picture

3. **Risk Treatment**
   - Need for additional/more effective barriers/risk reducing measures?
     - YES
     - NO
   - Establish specific startegy and specific performance requirements

4. **Document process/results from Risk evaluation and Risk Treatment into Strategy**
   - Specific per barrier/event/area

5. **Specify performance requirements into Performance standards**
   - Function/integrity/vulnerability

O. Thomassen, PSA
Barrier management in Norway

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**Risk Treatment**
- **Need for additional/ more effective barriers/risk reducing measures ?**
- **Establish specific barrier strategy and specific performance requirements**

**Technical barrier elements**
- Containment
- Fire detection
- Ventilation/HVAC
- Gas detection
- ESD
- Ignition Source control
- Drainage
- Flare and relief
- Passive fire protection
- Active firefighting
- Emergency power
- etc.

**Operational barrier elements**
- Design and arrgt.
- Maintenance
- Operations and activities
- Modifications
- Changes/MOC
- Deviation handling
- Work processes

**Organisational barrier elements**
- Competence
- Communication/
- Work practice
- Procedures
- Work environment
- Man / machine
- Control, check, verify
- Documentation
- Resources, Capacity
- Work load / Time
- Planning
- Roles and responsability

**Plant specific barrier Strategy** (per area)

**Performance requirements**
- Performance standards
Figure 3. Recommended Key HSE standards related to risk management of major hazards

**ISO 31000**
Guideline on principles and implementation of risk management (functional)

**LEVEL 1**
- Risk management
  - main principles

**LEVEL 2**
- Safety barriers and arctic offshore design
  - main principles
  - ISO 13702
  - ISO 10418
  - Mitigations of fires and explosions
  - ISO 19906
  - Arctic offshore structures
  - Well integrity
    - ISO proposal
    - NORSOK D-010
  - Risk assessment
    - ISO 17776

**LEVEL 3**
- Safety barriers
  - Technical safety
    - NORSOK S-001
  - Well integrity
    - NORSOK D-010
  - Risk assessment
    - NORSOK Z-013

**LEVEL 4**
- Safety barrier elements
  - Functional safety of E/E/PES
    - IEC 61508
    - Instrumented safety system
      - IEC 61511
  - Ventilation
    - ISO 15138
  - Ignition source control
    - IEC 60079
    - IEC 61892
    - IEC 80079
  - Drilling facilities
    - NORSOK D-001
  - Production
    - Riser, X-mas tree, SSCV
  - DWCO
    - Riser, BOP, Mud
Barents 2020

- Baseline Offshore HSE Standards
  - Use of NS system as baseline
  - Norsk PSA

- Harmonisation of Laws
  - Use of NS system as baseline

BUT

- Regulation must be contextual – best practice is not abstract but situational

1. Recommend the basic list of internationally recognized standards for use in the Barents Sea

2. Recommend standards for design of stationary offshore units against ice loads in the Barents Sea

3. Recommend standards for Risk Management of major Hazards, such as Fires, Explosions and Blow-outs on offshore drilling, production and storage units in the Barents Sea.

4. Recommend standards for evacuation and rescue of people from ships and offshore units, including standards for rescue equipment

5. Recommend standards for working environment and safety related to human performance and decision making (Human factors) for operations in the Barents Sea

6. Recommend safe standards for loading, unloading and ship transportation of oil in the Barents Sea – to minimize risk of accidental oil spills

7. Recommend standards for operational emissions and discharges to air and water in the Barents Sea
But…

What if there is a loss of well control?
Oil Spill response

- Response as close to operation as possible
  - Booming and Skimming
- Norwegian response
  - Government, Private and municipal contingency system
  - All available resources in society used to combat major spills
- Satellite monitoring
- Graded contingency plans
  - National, regional, local
- extended to Russian areas?
Responding to Oil Spills
not just oil spill response

• Emergency Response
  • Control and Mitigation of fires and explosions on offshore production installations ISO 13702; NORSOK S-001
    • Adapted for Barents sea
    • Need for containment of HC
  • Rescue and treatment of injured
    • Ad

• Well control response
  • Mobilisation of resources
    • Human, technical,
  • Capping stack – Wild Well Control
    • Closest – Aberdeen
Conclusions

- Prevention is better than response - WELL INTEGRITY CRITICAL
- Norwegian System provides excellence in safety (HSE) and spill response
- Legal Framework predicated on objective-based regulation
- Need to be cognizant of Bow Tie –
  - Barriers
  - Responses
- Barents 2020 provides framework for prevention and response but...
  - NEED FOR HARD LAW and EXPERTISE
- Greatest challenge well control response?
Call for papers: OGEL Special Issue on "Emerging Issues in Polar Energy Law and Governance"
8/6/2014

Oil, Gas, and Energy Law Journal (www.ogel.org) invites submissions for a Special Issue on "Emerging issues in Polar Energy Law and Governance".

The Polar areas provide special challenges, opportunities and restrictions regarding the development of energy resources, particularly oil and gas. The potential for enormous untapped energy reserves and the international law challenges of maritime boundaries borders and competing claims of sovereignty will make the Arctic region home to one of the most compelling sets of international legal issues in the 21st Century. The renegotiation of the Madrid Protocol in the Antarctic, which currently prevents mining in the Antarctic regions, combined with similar issues of competing claims of sovereignty, and the overarching Antarctic Treaty Framework means that potential energy resource development Antarctic region will become increasingly controversial and prominent.

OGEL encourages submission of relevant papers, studies, and comments on various aspects of this subject. The focus of this Special Polar Issue is the search for and exploitation of energy resources in the polar regions. In particular it seeks to focus on current and emerging legal frameworks within which energy resources will be developed. However, this special edition also seeks submissions of papers and studies addressing the wider topic of the international legal framework for the polar regions.