Bridging the HSE Risk Management Competence Gap

Presentation to IADC Critical Issues Asia Pacific Conference
Kuala Lumpur, 23rd November 2011
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Purpose of presentation

- What is the competence gap? Why does it exist?
- How to bridge the gap?
  1. Training
  2. Qualifications
  3. Drilling-specific issues
- Case study
  - Building blocks
  - Modular programme
  - Benefits
What is the competence gap?

The competence gap arises when there is a mismatch between an individual’s knowledge and skills and the judgements they must make as part of their role.

Competence may be defined as:

- Training
- Qualification
- Experience
- Personal attributes

HSE risk management skills & knowledge specific to drilling industry & job role
The role of a competent HSE risk management professional

- To confidently provide advice to help the organisation make the right risk-based decisions at the right time
- To keep an open mind and see beyond pre-conceptions
- To apply appropriate risk management techniques and accurately interpret results
- To draw on their own judgement and apply common sense
But what **judgements are required?**

Spectrum of risk management roles and judgements

Potential for societal impact

Risk management professionals can be called upon to make or support an enormous variety of judgements
And things are not getting easier

- Competency requirements
- Technical challenges
- Company standards
- Legal requirements

Harsher environments
Deeper water
Higher H₂S
Novel technology
Inherently higher risk
And demographics are not helping

- Generational gap (low influx in 80s & 90s)
- Ageing workforce: >50% over 45

"The industry is experiencing a **shortage of skilled personnel** for both construction and operations with a large section of the existing **workforce approaching retirement**. Both issues need to be addressed, as a matter of urgency, if the industry is to meet rising demand in a timely and effective manner in the future".

OPEC Secretary General
Getting it wrong

Poor HSE risk assessment practices by **practitioners** can result in:
- Unidentified, unmitigated or overstated HSE risks
- Less than optimum allocation of resources

Poor awareness of HSE risk management by **managers** can result in:
- Ineffective leadership effecting HSE culture
- Lack of assurance that HSE risks are managed

HSE risk management competence has never been more important
But training & education is often not very effective

- **Industry training**
  - Off-the-shelf training may not fit reality
  - One-off hit with no assessment of learning
  - Spoon-feeding information

- **Academic study**
  - Can be too abstract or theoretical
  - Too far removed from industry-specific day-to-day realities
  - Focus on emerging research rather than current good practice in industry
So what to do?

- Attract and retain new talent
- Retain ageing workforce
- Transfer knowledge from ageing workforce

Effort mainly focussed on petroleum and geological workers to date.

What can drilling industry learn from this effort and other major hazard industries facing identical issues, e.g. nuclear?
Three simple steps to bridging the competence gap

1. **Tailor the training (one-size does not fit all)**
   - Address real risks relevant to drilling and individuals’ job roles
   - Practical, hands-on exercises based on real-life drilling case studies

2. **Obtain qualification (it can prove important)**
   - Requires assessment of performance, which encourages active participation and gains measurable skills
   - Recognised qualification demonstrates investment in employees and contributes to professional development

3. **Understand drilling-specific issues**
   - At least a working knowledge of technical and regulatory issues facing drilling industry
   - Best practice from other industries
Where is such HSE risk management training & education available?

- **Universities**
  - Very few first degrees in HSE risk management
  - Some postgraduate qualifications (resident or distance learning)

- **CASE STUDY**
  - Fragmented, many providers of public/open courses
  - In-house courses

- **Training Courses**
  - Experienced (including expats)
  - Inexperienced (but need development)

- **Recruitment**
Case study – the building blocks

**Foundation modules**
- Principles & technical issues
- Legal requirements and regulatory aspects

**Safety and Risk Management MSc**

**Modular training programme**
- HSE risk management principles & techniques
- Mix of lectures & practical hands-on exercises
- Formal assessment to MSc qualification

**Industry Specific Technical Training**

**On-the-job Experience**

**Work experience at facilities**
- Secondments
- Shadow experienced professionals
- Interact with range of industry personnel
Postgraduate Certificate

Core Modules
- Introduction to Practical Risk Mgmt
- Hazard Identification
- Hazard Assessment
- Risk Reduction & ALARP
- Health, Safety & Environment (HSE) Mgmt Systems

Optional Modules
- Choose one
  - Bowtie Analysis
  - Risk Control Systems & Performance
  - Safety/HSE Cases
  - Competency Mgmt, Culture & Behaviour

Postgraduate Diploma

Choose six

Identification and Assessment
- HAZOP Study
- Bowtie Analysis
- Safety Integrity Levels (SIL)
- Availability, Reliability and Maintainability (ARMA)
- Fault Tree & Event Tree Analysis

Physical Effects Modelling
- Human Factors in Design & Operations
- Oil and Gas Lifecycle Hazards & Risks
- Nuclear Lifecycle Hazards & Risks
- Rail Industry Hazards & Risks

Management Systems and Implementation
- Safety/HSE Cases
- Accident Investigation & Analysis
- Emergency Response Planning
- Workplace Safety
- Performance Monitoring, Auditing & Mgmt Review
- Competency Mgmt, Culture & Behaviour

Risk-Based Decision Making
- Risk Control Systems & Performance
- QRA for Oil & Gas & Process Industries
- Oil & Gas & Process Industry Risk Studies
- PSA in Nuclear Industries
- Rail Safety Analysis
- Business Continuity Management
- Research Methods

Risk Control Systems & Performance

Regulatory and Legal Basis
- Principles of Regulatory Systems and Processes
- Implementation of a Regulatory Regime
- Client-Specific Regulatory Issues (to be delivered by Client)

Nuclear Theory
- Nuclear Reactor Basics
- Nuclear Reactor Safety Principles

Practical Site & Industry Experience
- Secondments
- Industry networking

Master of Science

Project
Case study – not everyone needs or desires a qualification

All students attend all modules but a reducing proportion complete the full MSc programme.
Case study – advantages of assessment

- Tests learning outcomes and helps monitor progress of student
  - feedback to student & line manager of areas to focus on

- Requires research beyond module content

- Demonstrates ability to critically review and analyse, and apply **judgement**

- Assessment questions:
  - relevant to job role
  - output benefits company
Case study – key benefits of structured training programme

Company
- More skilled resource with formal qualifications, and greater staff retention
- Relevant learning, by tailoring case studies and methods
- Up-to-date topics delivered by approved risk practitioners
- Entirely flexible, modular approach allows integration with company existing training & development programmes

Student
- Receives formal qualification from recognised institution
- Demonstrates learning rather than just attendance
- Learning is specific, with case studies directly related to place of work
- Pathways through programmes tailored to individual needs

The effective use of training budget through targeted, client-specific learning
Summary: bridging the HSE risk management competence gap

- HSE risk management is relatively new compared to other professions
- Focus on providing new recruits with knowledge and skills to deal with technological challenges ahead
- Approach to training & education:
  1. Practical, case study based, relevant
  2. Assess learning
  3. Drilling-specific issues

THANK YOU