

**How 'standards' fit into an objective based,
non-prescriptive safety regime where decision making is based
on the principle that risks should be reduced to as low as
reasonably practicable (ALARP)**

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(we didn't chose the title)

National Offshore Petroleum Safety Authority

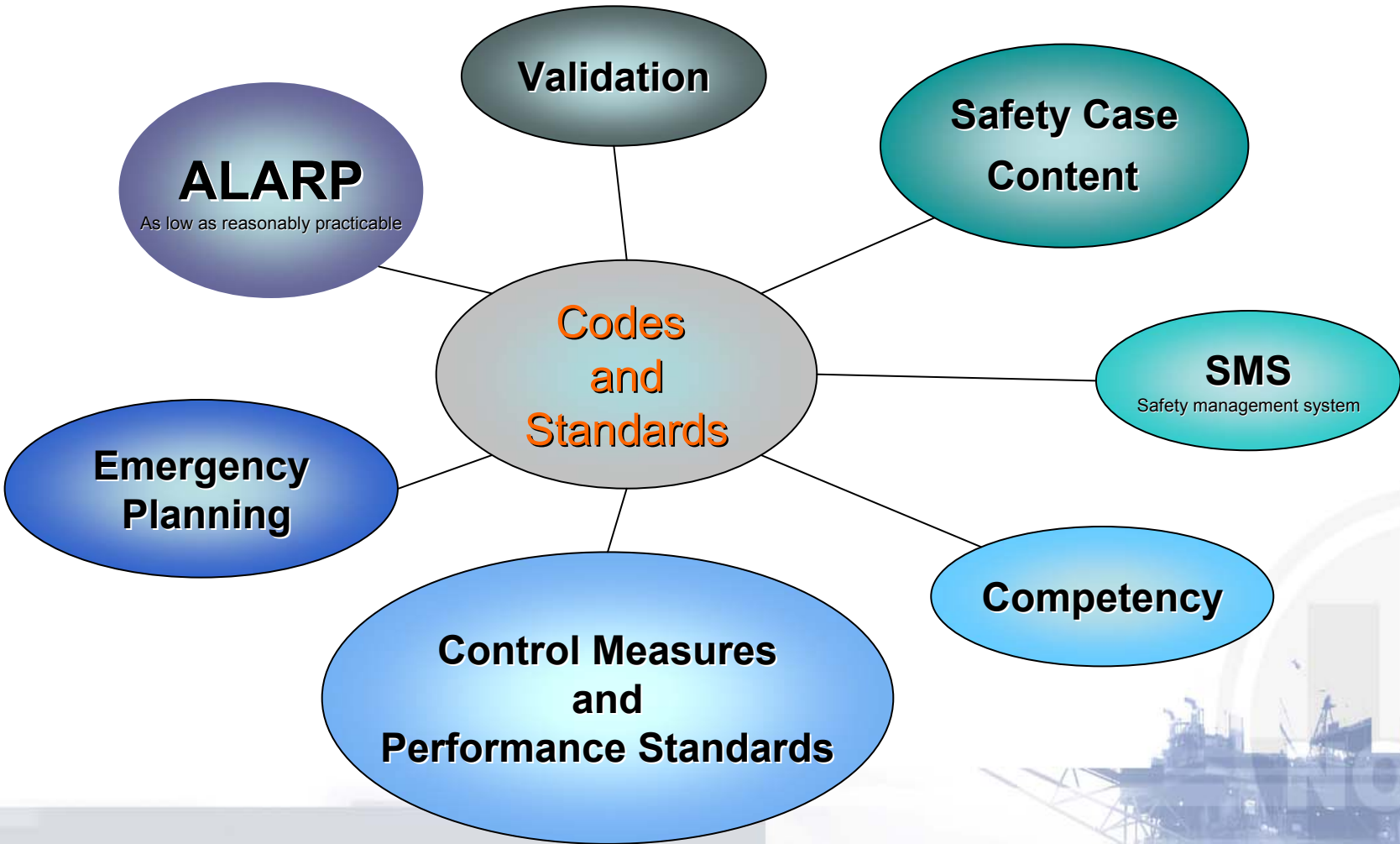
2009



eating the whale...

- **How ‘standards’ fit into an objective based,** (non-prescriptive safety) **regime** where decision making is based on the principle that risks should be reduced to as low as reasonably practicable (ALARP)
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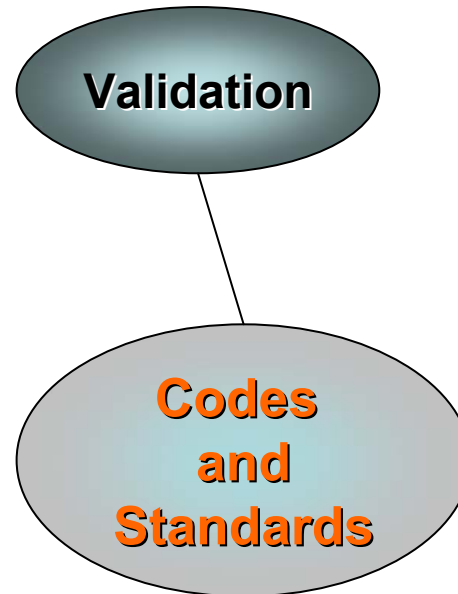
battling the octopus...



start at the beginning..

Role of Validation in SC regime

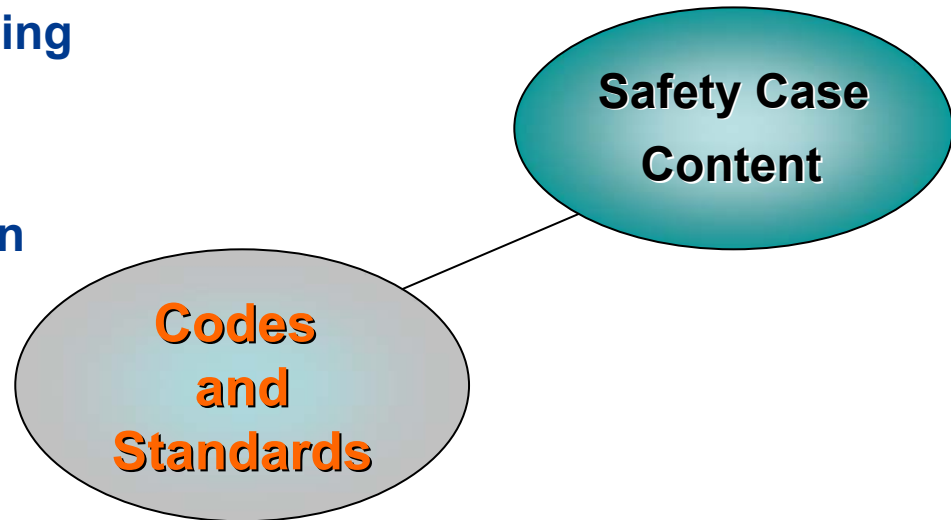
- MoSOF regulation 44
- Design, construction, and installation, significant modification, or decommissioning
- No specific legislative requirements for use of standards but very well established in practice
- NOPSA validation process is typically a subset of project team's work



- Role of classification societies' rules
- Use of standards – routine – well testing operations
- Use of standards – non-routine – Surface BOP

establishing your case for safety

- Safety case is an accepted, binding agreement on how safety will be managed and enforced
- Standards have a valuable role in reaching agreement between operator and regulator



MoSOF Reg 11 – “Standards to be applied”

- The law says you must “specify all the Australian and international standards that have been applied”... but does not explain where you should or could you them
- This law does NOT say which standards you must use

establishing your case for safety

- Standards can be Australian or International – but they must be adhered to.

- Regulator decides on acceptability

- Standards will probably already be in place; Basis of Design, ISM, class requirements, etc.

- Historically use of Australian standards has been poor (low –level) e.g. fire-extinguishers, colour coding of piping, etc.

Safety Case Content

Codes and Standards

- Common usage for international standards, CAP 437, MODU Code, API Recommended Practices,

- Other issues – lifting equipment, PPE

- Data reporting and classification - TOOCS

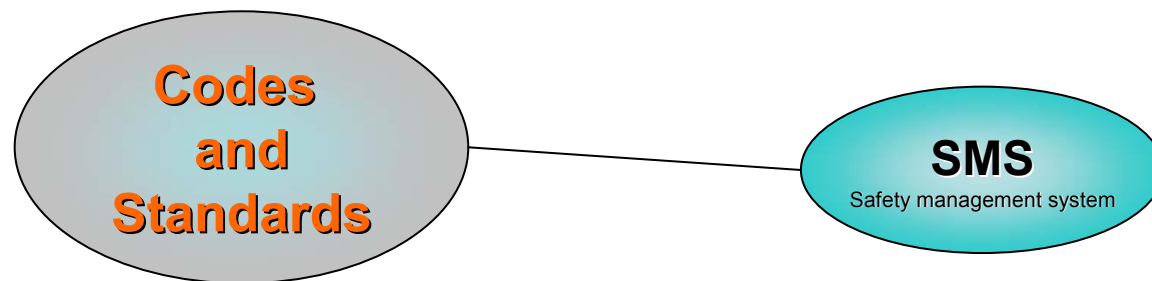
an example...

- Standards relating to work vests
- Billy Pugh work vest
- Pro/ con
- Suitability



setting the rules ..

- Contents of SC specified in Part 3 of MoSOF regulations
- Formal requirement Reg 9(4)(i) that the SMS must “specify the performance standards that apply”



- SC should describe how Performance Standards are arrived at – identification, formulation, use.
- Also consider existing standards for management systems (ISO, IADC, etc)

Demonstration of ALARP
Good oilfield practice ...?
Compliance with standards..

how do you know..

Crew competency has been a major challenge

- Australian Training Quality Framework (ATQF)
- Drilling and Process operator competencies established – and available
- Crane Operator competency standard developed recently by industry

**Codes
and
Standards**

Codes and Standards that are currently in common usage

- STCW95 – marine standard
- IMCA competencies – DP operator
- Well Control tickets, IADC competency scheme

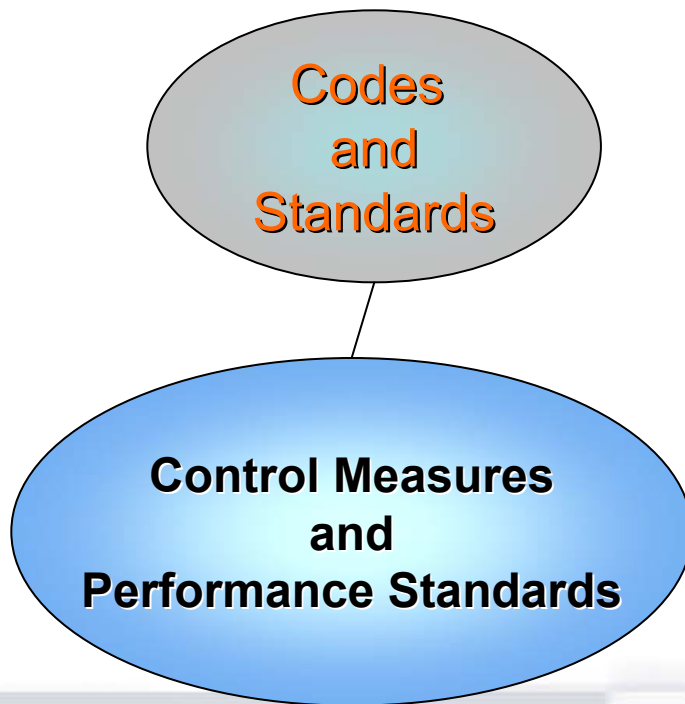
Competency

what's a bow-tie got to do with it ..?

The law requires identification of technical and other control measures (for MAEs)

The SMS must specify performance standards that apply

- Various means of describing, & illustrating the control measures

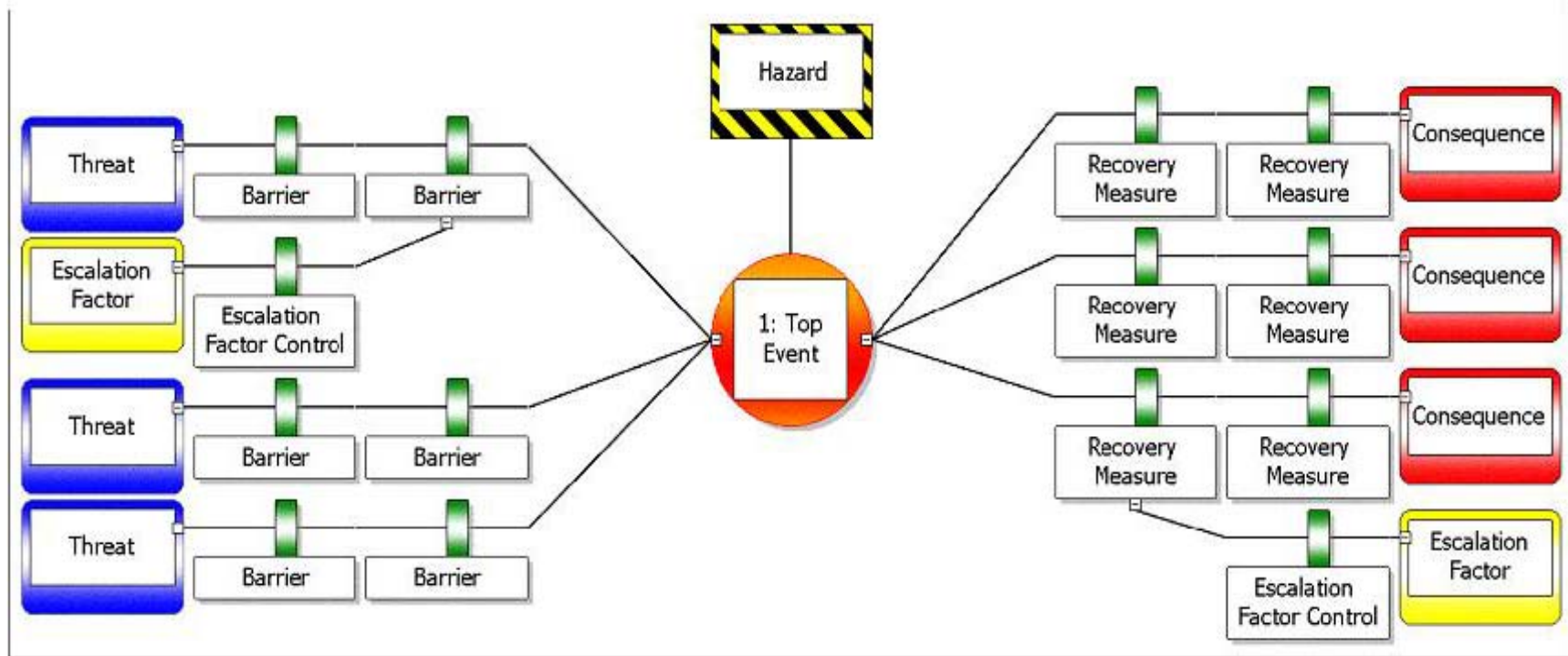


Performance standards need to be specific

- Details of Performance Standards would be in the SMS , not in the Safety Case

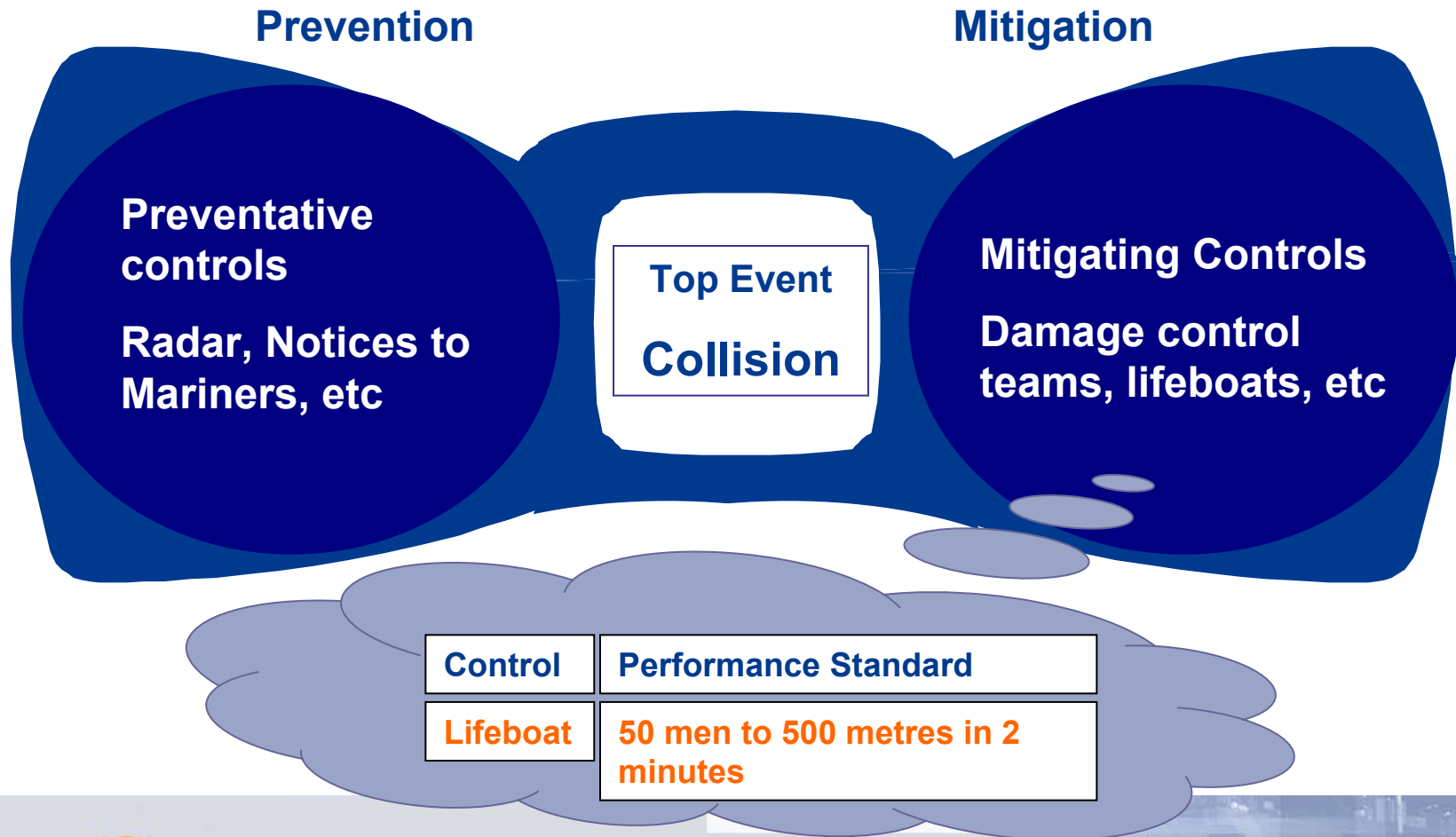
- Performance Standards widely accepted by OIMs etc as it specifies what they can and can't do.

Bowtie methodology



so here is a bow-tie...

- Threat is Errant Vessel



when it all goes wrong...

Emergency
Planning

Codes
and
Standards

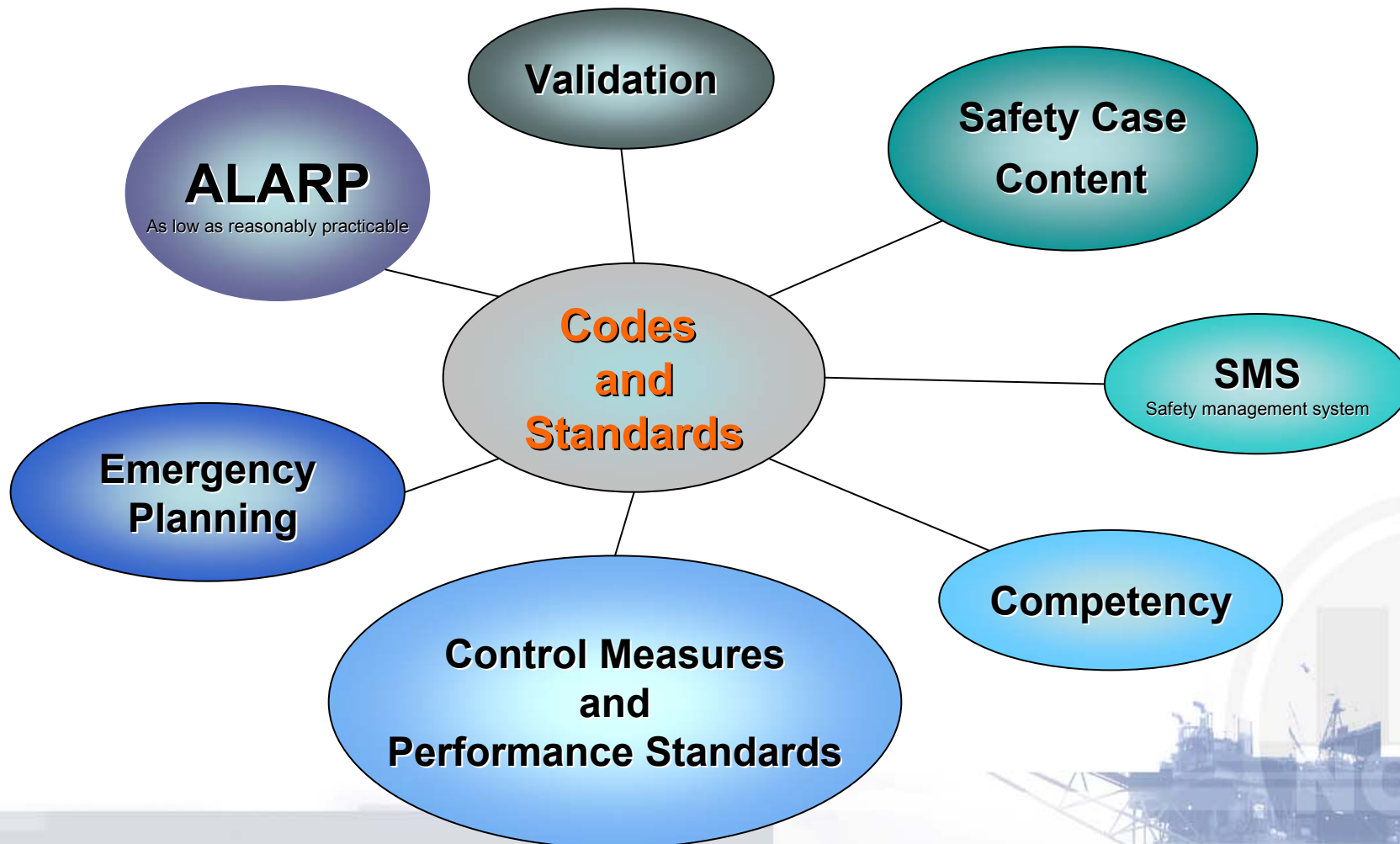
Role of standards in
emergency response

- Links performance standards (for vessels etc)
- Time to get injured person to definitive care
- Progress in other regimes on codes and standards for e.g. rescue craft

What Standards
were in force here

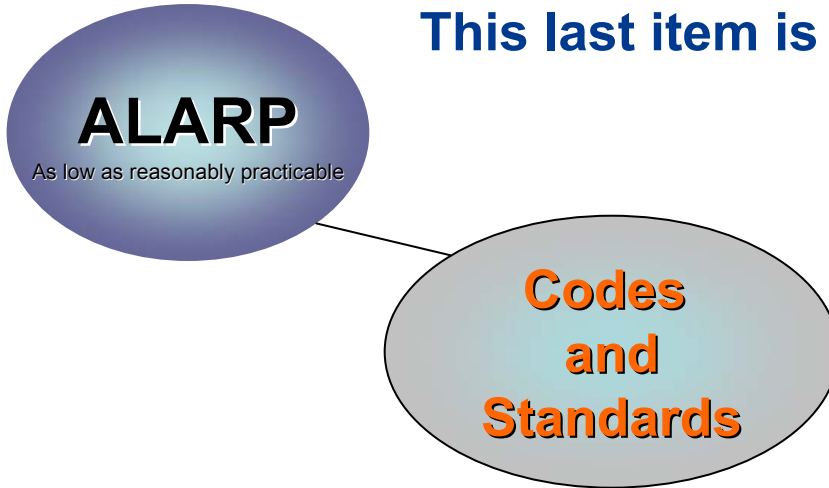


How 'standards' fit into an objective based, non-prescriptive safety regime



How 'standards' fit into an objective based,
non-prescriptive safety regime

This last item is the tricky one...



....so I will hand over to Kerry

Part Two

- How 'standards' fit into an objective based, non-prescriptive safety regime **where decision making is based on the principle that risks should be reduced to as low as reasonably practicable (ALARP)**

Application of the ALARP Principle Key concepts

**“reduce the risks to a level that is
as low as reasonably practicable”**

Application of the ALARP Principle Key concepts

Reasonable practicability

Determining whether risks have been reduced as low as is reasonably practicable involves an assessment of the risk to be avoided, and an assessment of the sacrifice (in money, time and effort) involved in taking measures to avoid that risk, and a comparison of the two.

Application of the ALARP Principle Key Concepts

Gross disproportionation

if a measure is practicable and it cannot be shown that the cost of the measure is grossly disproportionate to the benefit gained, then the measure is considered reasonably practicable and should be implemented.

Application of the ALARP Principle Key concepts

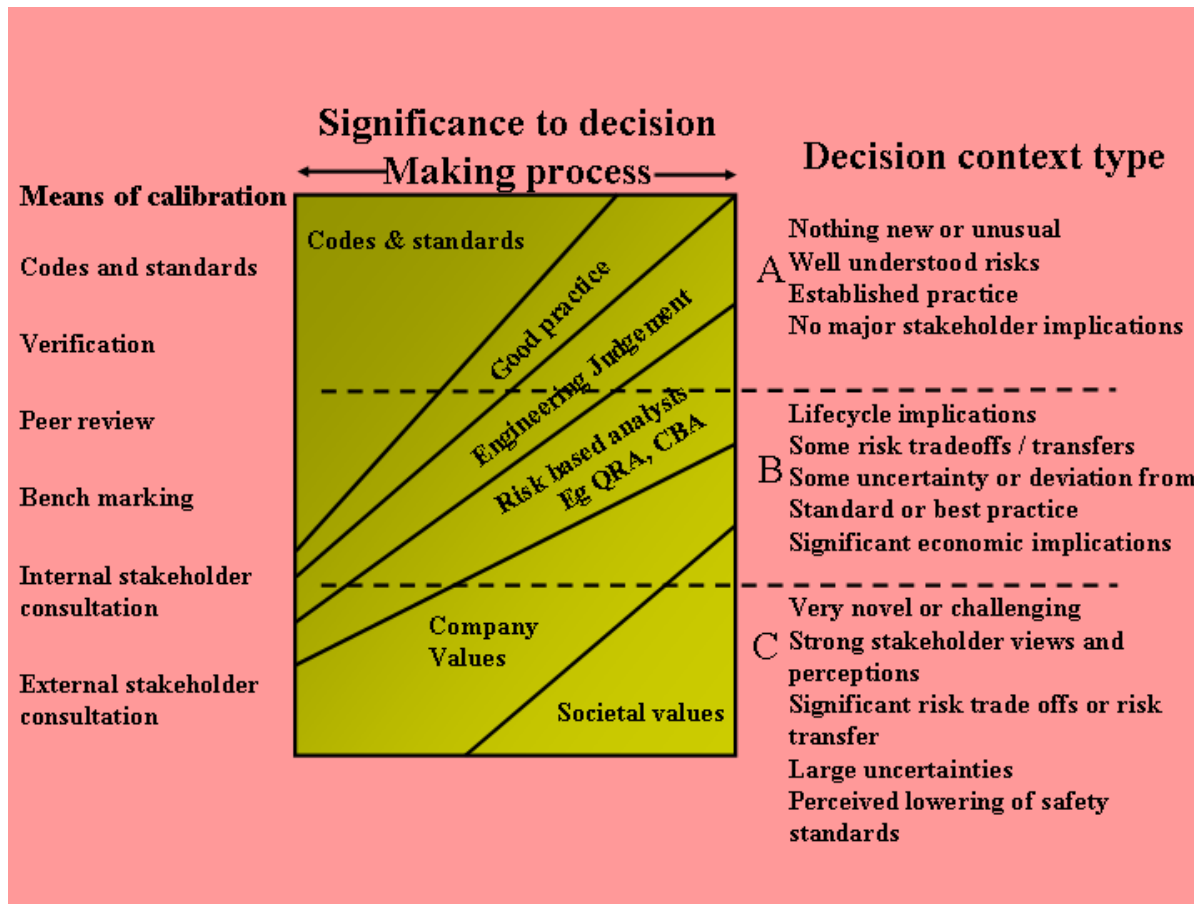
Good practice

- **UK vs Australia**
- **“any well-defined and established standard practice adopted by an industrial/occupational sector”**
- **generally represents a preferred approach; however it is not the only approach that may be taken**
- **may change over time because of technical innovation, or because of increased knowledge and understanding**

What are the Fundamental Approaches to Providing Evidence?

- **Hazard / Risk Criteria Approach**
- **Comparative Assessment of Risks, Costs and Benefits**
- **Comparison with Codes and Standards**
- **Technical Analysis**
- **Performance Data**
- **Improvement Approach**
- **Judgement Approach**
- **Practical tests**

Framework for Risk Related Decision Support



Use of Industry Codes and Standards

- **Important role**
- **Australian Standards vs equivalents from overseas**
- **Suitable and appropriate to the specific facility**
- **The safety case will need to include a convincing argument that these standards are appropriate and sufficient.**

Use of Industry Codes and Standards

"For some time the Safety Directorate has been concerned that reliance on good engineering practice, the application of approved standards and the certification and inspection regimes do not of themselves comprehensively identify and highlight the hazards and sequences of events that can lead to a major accident."

- Development of Standards
- Risk assessment

Use of Industry Codes and Standards

- **Over-arching standards – the MODU Code**
(International Maritime Organisation Code for the Construction and Equipment of Mobile Offshore Drilling Units)
- **Suites of Standards**
- **Justify applicability and recognise limitations**

ALARP

- For particularly large or complex facilities, it may be necessary to go beyond the established standards in order to demonstrate that risks related to facility design are ALARP. For example:-
 1. The standards may not address the types of incident that are of prime concern to the facility;
 2. There may be gaps in the standards, such that the particular standard does not govern all aspects of hazards and risks at a facility;
 3. The standard has fallen behind current good practice, or the facility has fallen behind the standard as that has been further developed.
 4. It may be reasonably practicable to do more than what a standard specifies

Assessing compliance with reasonable practicability

New Builds:

- Good practice at the design stage is essential to demonstrating achievement of ALARP.
- Other potential options should be considered to determine whether further risk reduction measures are reasonably practicable.
- As a guide, designers can aim and compare against levels of safety that are known to have been achieved in other “good practice” designs.

Assessing compliance with reasonable practicability

Existing Facilities:

- compare against current good practice.
- adopt good practice measures so far as is reasonably practicable.
- reduce the risk e.g. by partial solutions, alternative measures, etc.
- When a code or standard is updated to a higher standard, the plant, installation or situation should be examined to see if it can be brought up to the new standard.
- Any such upgrades should be undertaken if reasonably practicable.

Conclusion

- **Whatever standard or set of standards is used, the operator should take care to justify applicability and recognise limitations of those standards**
- **Compliance with technical standards can provide a sound design basis for standard offshore facilities, but does not replace risk assessment.**
- **Compliance with codes and standards is a starting point but does not go all the way to providing evidence that risks have been reduced to a level that is ALARP**

Safety Case Guidance Notes



Questions?