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Opportunities and Pitfalls in Safety Case Development

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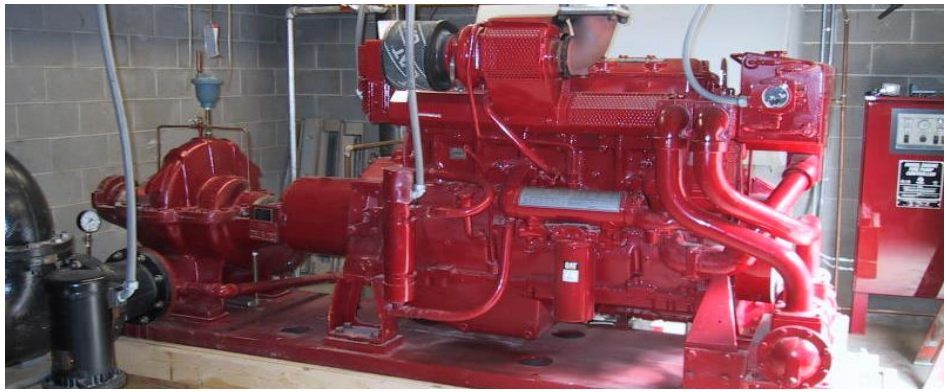
Your Speaker

- **Lachlan Dreher**
- **Director & Principal Risk Consultant with R4Risk**

- Chemical Engineer, RPEQ, CPEng, NER
- Over 25 years' experience in process safety / risk management consulting
- Specialist skills:
  - Process safety analysis
  - Quantitative risk assessment
  - MHF Safety Case development
  - SMS development and auditing
  - Fire safety , business risk, expert witness
  - HAZOP facilitation
  - Hazardous area classification
  - Consequence modelling
  - Bowtie analysis
  - Land use planning risk studies

R4Risk Services Overview

- Safety Case Development
- Major Hazard Facilities Safety Management
- Safety Management System Development
- Safety Case Compliance Auditing
- Safety Case/Report Approved Assessor
- Process Safety Management
- Fire Safety Studies
- Hazard Identification (HAZOP, HAZID)
- Hazardous Areas Assessments
- Consequence Analysis (Fire, Explosion and Toxic)
- Layers of Protection Analysis / Bowtie / SIL Studies
- Risk Assessment (Quantitative and Qualitative)
- Enterprise-wide Risk Management
- Business and Operational Risk Management
- Risk Assessment Workshop Facilitation
- Land Use Planning Risk Studies
- Occupied Buildings Risk Assessments
- Emergency Response Planning
- Dangerous Goods Assessments
- Hydraulic Analysis of Fire Systems
- Loss Prevention
- Safety in Design Assessment
- Accident Investigation
- Process Safety and Risk Management



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Overview

1. Introduction
2. Key Success Factors
3. Common Pitfalls
4. Conclusion

Introduction

- Health and Safety at Work (Major Hazard Facilities) Regulations 2016
- Classifies hazardous facilities as “upper tier” or “lower tier” *Major Hazard Facilities*
- Upper tier facilities are required to prepare a “Safety Case”
- Safety Case contents are described in Schedule 7 of the Regulations

Key Success Factors

1. Commitment
2. Set Expectations
3. Planning and Resourcing
4. Safety Management System
5. Safety Assessment Approaches
6. Discipline

Commitment

- Focus on improving safety (not just compliance)
- Commitment by senior management
  - Process Safety Leadership
  - Demonstrated ongoing commitment through the process
- Effective real consultation
  - Develop a consultation plan
- Involvement of stakeholders
- Engage with the regulator

Set Expectations

- Clearly defined expectations for what is to be achieved
- Workforce works TOGETHER to achieve a safer workplace
- Cultural Change

Set Expectations

- Improved *Control Measures*
  - Systematic assessment of *Control Measures*
  - Performance monitoring of *Control Measures*
- Improved Knowledge Management
  - Clearer understanding of hazards and controls across the workforce
  - Increased awareness amongst employees
  - A documented and comprehensive SMS
- Management assurance
  - ALL *Major Incidents* and *Major Incident Hazards* have been identified
  - All hazards are appropriately managed

Planning and Resourcing

- Treat it as a ‘project’ – develop a project plan (Safety Case Outline)
  - Assign a “Project Manager”
  - Assign team members with clear roles & responsibilities
- Manage interactions between EHS and Process Safety
- Don’t underestimate the volume of work required
  - Allocation of resources
  - It should not be an “add on” to normal day-to-day work
  - Appropriate use of consultants
- Consider using a pilot study

Planning and Resourcing

- Involve the right people
  - Suitable qualifications, depth and range of experience
  - Operations staff with experience of the facility

- Develop comprehensive procedures for various process safety tasks
  - Provides consistency and repeatability
  - Ensure that the approaches are a suitable fit for the organisation
  - Ensure methods are comprehensive
  - Document the basis for decisions
  - Cover methodologies, pre-work, criteria etc.
  - Address the requirements (e.g. demonstration of risk reduced SFAIRP)
  - Consider ‘human factors’

Planning and Resourcing

- Ensure current and correct technical information
- Train the workforce in the process

Safety Assessment

- Safety Assessment requirements (r38)
  - Identify all *Major Incidents*
  - Identify all *Major Incident Hazards*
  - Assess the risks to health and safety for the *Major Incidents*
  - Develop and implement effective *Control Measures*
  - Establish and implement a comprehensive *Safety Management System*

Safety Management System

- The SMS should be the system that manages the safety at an MHF
  - It should be integrated and comprehensive
  - It should manage the *Control Measures*
- Lack of an sound SMS will cause major issues
  - It will take time to implement
- Conduct a gap assessment of the SMS

Safety Management System

- Cover all systems and procedures to select control measures
  - Cross reference between the Safety Case and the SMS
- Support all control measures, e.g.
  - Maintenance systems
  - Training
  - Operations
  - Document control
  - Audits
- Make the activities part of normal working (not purely compliance)

Simplicity

- Keep things as simple as practical
  - *Safety Assessment* methodology
  - Management of controls

- Keep things targeted and relevant
  - Reduces the amount of work required
  - Avoid analysis of events that are not significant
  - Focus on fewer but effective *Control Measures*
  - Avoid generation of actions that are not directly relevant

Simplicity

- Need to be able to sustain:
  - Systems and processes introduced
  - New controls
  - Ongoing resource requirements for new systems

Simplicity

- Aids the understanding of personnel across the organisation of
  - The *Major Incident Hazards*
  - The risk from these hazards
  - *Control Measures*
  - Management of *Control Measures*
  - The relationships between these factors

Discipline

- Maintain discipline to the process

- Key factors:
  - Attention to detail
  - Systematic approach
  - Consistency of methodologies and assumptions

Common Pitfalls

- Delays in establishing core systems
  - SMS too early in its implementation phase
  - Systems that cannot be maintained / sustained
  - Using standalone systems

- Selection of inappropriate *Safety Assessment* methodologies
  - Not ‘fit for purpose’
  - Conflicts with the legislative requirements
  - Inconsistency across the assessment
  - Not addressing the “Demonstration of Adequacy” for *Control Measures*

Common Pitfalls

- Inadequate resourcing
  - Inadequate technical resources
  - Over-reliance on consultant input

- Emergency Plan
  - Plans too generic
  - Failing to specifically address Major Incidents
  - Excessive numbers of scenario plans (consolidate where practical)
  - Link via the SMS for training and performance improvement

Common Pitfalls

- Safety Management System
  - Lack of clarity on the role and function of system components
  - Failure to define performance indicators
  - Lack of effective process safety auditing
  - Not having the maintenance system as an integral part of the SMS
  - Not making the SMS accessible
  - Failure to provide employees with access to relevant information for use in their daily work

Conclusions

- Key success factors:
  - Management Commitment
  - Thorough planning
  - Adequate resources
  - Appropriate methodologies

Thank you!

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