# Subsea Engineering Competency Profile

## SAFETY AND RISK ENGINEERING FUNDAMENTALS

This competency demonstrates a subsea engineer has working knowledge of:

- safety and risk management principles
- an understanding of the role of safety and risk assessments and the tools employed for safety and risk assessments throughout the lifecycle of subsea production systems
- the application of safety and risk management frameworks over the various lifecycle phases of a subsea production system
- the application of safety and risk management frameworks to operations conducted on the subsea production system
- emergency response and incident response activities

### ELEMENT OF COMPETENCE

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<th>INDICATORS OF ATTAINMENT</th>
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<tr>
<td>Capable of providing support for project and operations teams to execute work safely in compliance with all applicable regulations</td>
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<td>Recognises the role, applications and limitations of safety and risk assessment methodologies employed in the industry.</td>
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<td>Understands the safety implications of facility design choices</td>
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<td>Has contributed input into the facilities description, management system description or safety assessment sections of at least two safety cases for a subsea production system.</td>
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<td>Has led, contributed to, or participated in at least five risk assessments that are related to subsea production systems.</td>
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<td>Can describe how work is executed and controlled on production systems from a safety and risk perspective</td>
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Working knowledge of safety management processes and theory, and how these are applied including:

- health and safety regulations
- safety in design
- construction safety assessment
- operations safety assessment
- safety management systems
- emergency response planning
- permit to work and maintenance safety systems.

Working Knowledge of risk management processes and theory, and how these are applied including:

- risk assessment principles and processes such as risk and reliability criteria: HAZOP, HAZID, HAZAN, HIRA, FMECA and RAM

Capable of:
- Providing input into risk assessment processes as they pertain to lifecycle operations on subsea production systems

Has lead, contributed to, or participated in at least five risk assessments that are related to subsea production systems.
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| • process safety principles and the concept of safety critical elements  
• dropped object assessment  
• project and asset technical risk assessment  
• quantitative and qualitative risk assessment  
• consequence modelling  
• ALARP principle and its effect on design, compliance and documentation  
• risk mitigation principles and methods including application of the preferred hierarchy (elimination; control; mitigation)  
• management of change | • Participating in or leading risk assessments for interventions on subsea production systems or related components  
• Interfacing with safety and risk management specialists | Can identify and communicate the range of safety and risk issues that can be expected to arise from activities over the lifecycle of the subsea production system. |
| Working knowledge of emergency response and incident management activities | Capable of:  
• Defining the processes and procedures to be executed in support of emergency response, crisis management and oil spill response activities  
• Providing support to an Incident Management Team or Emergency Response Team during the response to an incident. | Has acted as a member of an Oil Spill Response Team, or an Incident Management Team or an Emergency Management Team. |