Subsea Engineering Competency

SUBSEA ENGINEERING TECHNOLOGIST	S-001T

Achievement of this competency demonstrates a subsea engineering technologist has an understanding of the design, construction, installation, operation, maintenance and repair of subsea systems and how they interact with the environment, other subsea equipment and surface facilities. The technologist is able to modify and adapt established engineering practices and advance engineering technology, while focusing on interactions within the system.

The Elements of Competence in this document are based on the Australian Engineering Competency Standards, Stage 2 – The Experienced Engineering Technologist. Refer to the Standard for Elements of Competence 1 to 11. The elements 12-16 presented in this document are intended to replace the Technical Proficiency elements presented in the Australian Engineering Competency Standards, Stage 2 document

Full details are available from the Engineers Australia website; https://www.engineersaustralia.org.au/Membership/Chartered/Chartered-Help

ELEMENT OF COMPETENCE ENGINEERING TECHNOLOGIST	WHAT THIS COMPETENCE MEANS IN PRACTICE	TYPICAL INDICATORS OF ATTAINMENT SELECT THESE OR OTHER INDICATORS OF ATTAINMENT TO DEMONSTRATE THE ELEMENT OF COMPETENCE
12. Knowledge of Technology	Means that you comprehend and apply the knowledge embodied in widely accepted procedures, processes, systems or methodologies to subsea engineering activities	• maintain a working knowledge of technical aids in the field of subsea engineering through in-house and/or industry training (e.g. CSWIP), operator and/or supervisor qualifications (e.g. IMCA, AODC) and on-the-job application • interpret and apply standards and codes of practice relating to subsea engineering, including IMCA, UKOOA, OGA etc. • use engineering knowledge and understanding to interpret subsea engineering task instructions, procedures, drawings or sketches • apply technical and practical skills using state-of-the-art tools, technologies and information systems e.g. application of dynamic positioning systems, experience in diving activities, ROV & AUV intervention, use of heavy and light lifting systems etc. • applied knowledge of above to undertake customer's high-level and detailed scopes of work

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13. Local Knowledge	Means that you demonstrate the application of knowledge of national and local regulations and guidelines, available resources, technologies and products, and awareness of local environmental conditions.	• select and apply appropriate local technical standards to subsea projects • apply company safety systems, standards and procedures • comply with local environmental regulations, standards and codes of practice • take account of and apply local conditions to design, planning and execution of operational and intervention activities, e.g. knowledge of local met-ocean conditions - weather, waves & currents, tides, water temperatures and marine growth • apply knowledge of first principles to link codes, standards and specifications to subsea engineering activities • apply established locally available resources, facilities and systems to subsea activities • performed engineering work in accordance with country and regional regulations - safety case, conformance, reporting, notice to dive etc. • applied above to the development and review of subsea procedures and processes • take account of legislative and regulatory requirements that affect subsea developments or existing subsea facilities

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14. Problem Analysis	Means that you identify, investigate, analyse and problem-solve subsea engineering issues.	• accurately determine the main issues that require addressing for any identified subsea problems, develop and apply remediation • work with stakeholders to reach an agreed understanding of the expected capability, reliability, or functionality of the required subsea product, project or system • undertake performance management measurements, condition assessment or trend analysis leading to system availability, reliability or efficiency improvement • investigate and analyse subsea products, projects, processes or systems • application of performance standards and verification practices for subsea equipment, support and intervention systems, and/or processes • developed operation, maintenance and/or inspection programs for above. • developed remedial programs to address identified problems • describe at least one historical industry event, the lessons learnt and regulatory changes arising from this event

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15. Advanced Operation	Means that you develop and use subsea related technological resources skilfully, creatively and reliably.	• develop the necessary capacity to skilfully apply state-of-the-art subsea related tools, materials, resources and information systems • develop and use new and emerging subsea related tools, equipment, engineering applications and systems to create value for customer • provide feedback, suggestions and advice to others on the practical application and potential for improvement of subsea equipment, applications and systems • stay up to date on new and emerging subsea-related technologies, techniques, products, materials and methods • skilfully operate and maintain tools, resources and information systems to reliably produce, modify or repair subsea equipment or information • predict time, human effort and equipment resources required to design, construct, install or maintain subsea assets or support systems • plan, organise and supervise subsea projects • has updated drawings, procedures, or processes following an approved Management of Change process, to take account of new developments, process changes, or identified problems

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16. Evaluation	Means that you evaluate the outcomes and impacts of subsea engineering activities.	• monitor and evaluate subsea product, project or system against whole of life criteria (cost, quality, safety, reliability, maintenance, aesthetics, fitness for purpose and social and environmental impact and decommissioning) • determine criteria for evaluating a subsea design solution and address obligations for health, safety and environment • clarify or adopt criteria for evaluation and review, and evaluate the effectiveness of subsea engineering activities • evaluate subsea project or systems performance against the original specification or design intention • assess and use technical information correctly to ensure that recommendations are based on reliable and repeatable data • evaluate subsea project or systems constructability, availability and maintainability for application to future design improvement e.g. providing practical input to subsea project lessons learnt process • has undertaken technical reporting on subsea project, to include workscope results, non-conformance and proposed actions