Subsea Engineering Competency

CONSTRUCTION AND INSTALLATION ENGINEERING ANALYSIS ELECTIVE	CEM-002
This competency demonstrates a subsea engineer has a detailed understanding of construction and installation engineering activities and the relevant analysis techniques. Construction and installation in this context mean the handling, transport, installation and connection of structures, tie-in spools, flexible flowlines and umbilicals.	

ELEMENT OF COMPETENCE	WHAT THIS COMPETENCE MEANS IN PRACTICE	INDICATORS OF ATTAINMENT Refer to only as many Indicators of Attainment as you need to demonstrate the Element of Competence
Expert knowledge of: • International and Australian standards associated with offshore installation • Onshore lifting for load-out, offshore lifting, deployment and recovery criteria using surface support vessels, specialist transportation vessels and barges • Installation analysis associated with the load-out, sea-fastening, transportation, installation, tie in and pre-commissioning of structures, rigid spools, flexible products and appurtenances • Analysis criteria for the lifting of heavy loads, during load-out, ship to ship and ship to seabed deployment, including dynamic amplification factors accounting for vessel motions and crane characteristics • Metocean data, route planning, sea states and their implications for installation analysis	Capable of influencing engineering designs up to and during FEED to deliver the lowest installed cost. Delivers comprehensive advice on installation and construction engineering and analysis during detailed design and installation phases. Capable of: • Interpreting applicable Australian and international standards • Defining the load cases and handling requirements for subsea facilities from load-out to placement on the seabed and connection • Leading a team of installation analysis engineers • Reviewing and approving engineering deliverables required for offshore installation of subsea facilities, including static and dynamic analysis, definition of limiting seastate criteria, engineering of rigging and installation aids, preparation of lifting schematics support the analysis and consideration of limiting landing speeds and heave compensation systems	Can describe in detail the analysis process for load-out, transportation, deployment, installation, connection and pre-commissioning of subsea facilities Can cite examples of where offshore installation activities have been analysed successfully and demonstrate examples of interaction with other disciplines to achieve this outcome Has demonstrable experience leading an engineering analysis team or construction engineering team on at least two projects installing subsea production facilities.

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Working knowledge of: • The regulatory requirements associated with offshore installation planning and operations • The safety case regime and its application to offshore installation and pre-commissioning activities	• Interfacing with other disciplines to ensure installation analysis is consistent with the structure design, installation procedures and risk assessments.	