



Subsea Engineering Competency Profile



SUBSEA EQUIPMENT MANUFACTURE ELECTIVE

ME-004

This competency demonstrates a subsea engineer is equipped with sufficient knowledge and experience to effectively supervise or approve the manufacture, factory acceptance testing and transport of subsea equipment including trees, manifolds, termination assemblies and associated tooling.

ELEMENT OF COMPETENCE	WHAT THIS COMPETENCE MEANS IN PRACTICE	TYPICAL EXAMPLES OF EVIDENCE
<p>Expert knowledge of:</p> <ul style="list-style-type: none"> • The manufacture, fabrication, assembly and testing of subsea equipment. • Quality control management systems applicable to the manufacture, test and transportation of subsea equipment. • Relevant international standards associated with the manufacture of subsea equipment. • The functional role of sub-components and how they interact with the assembly, including control systems, gate, ball and needle valves, connectors, chokes, chemical injection devices, flow meters and other sensors and instrumentation. • Resolution of manufacturing defects and errors • The impact that manufacturing and testing has upon the performance of the product during the design, installation and operation phases. • The impact of manufacturing methods on exotic alloys. 	<p>Capable of providing technical support to the design, manufacture, testing and transportation of subsea equipment.</p> <p>Capable of:</p> <ul style="list-style-type: none"> • Specifying / implementing quality control requirements. • Managing components / materials procurement. • Specifying / implementing test methods • Interpreting test results and performing troubleshooting. • Providing technical support to an installation team, including unpacking and repair. • Interfacing with installation team and support operations executing subsea tieback, intervention or decommissioning. • Leading manufacturing reviews and identifying potential issues during the design phase of subsea equipment. 	<p>Refer to only as many Indicators of Attainment as you need to demonstrate the Element of Competence</p> <p>Can describe in detail the processes to manufacture the equipment from raw materials and sub-components through to final assembly, test and transport.</p> <p>Has at least 5years experience leading the manufacturing and testing of subsea equipment representing either the manufacturer's or client's perspective. This includes:</p> <ul style="list-style-type: none"> • Qualification, validation and verification activities. • Risk based assessments of manufacturing activities. • Materials planning and plant scheduling. • Key manufacturing activities. • Manufacturing quality control including materials traceability and identification and resolution of non-conformances. • Painting and thermal insulation. • Testing activities. • Interpretation of test results including dimensional electrical and hydraulic.



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<p>Working knowledge of:</p> <ul style="list-style-type: none"> ● International standards relating to lifting, welding, coating and painting, cathodic protection and quality assurance. ● The key materials available and their limitations, including austenitic and duplex steels, polymers, elastomers, carbon steel and structural steel. ● Manufacturing process reviews and improvement. ● Destructive and non-destructive testing of components and assemblies. ● First-fill fluids and their cleanliness requirements. ● The handling, transportation, installation and commissioning of subsea equipment. ● The impact of manufacturing methods on safety and environment ● Process safety fundamentals and how isolations and barrier proving influence the testing ● ROV and diver access and interface requirements 		