Subsea Engineering Competency Profile

SUBSEA OPERATIONS ELECTIVE	SAM-003

This competency demonstrates a subsea engineer has expertise in:

- Inspection, monitoring, maintenance and repair operations on components of the production system
- Failure mode identification, damage mechanism monitoring and the link to spares inventories
- Process related operations using the production control system for non-routine operations and trouble shooting
- Permit to Work, isolation and simultaneous operations (SIMOPS)
- Flow assurance requirements for the various phases of operations including shut down, flushing, venting and start-up

ELEMENT OF COMPETENCE	WHAT THIS COMPETENCE MEANS IN PRACTICE	TYPICAL EXAMPLES OF EVIDENCE Refer to only as many Indicators of Attainment as you need to demonstrate the Element of Competence
Expert knowledge of; • production systems such that the engineer can proceduralise operations on the entire system or subsystems to facilitate the inspection, maintenance, troubleshooting and repair of discrete components comprising the facilities • production control systems and the role of production operators (production technicians)	Understands production systems and the effect of changes to flow paths, over or under pressure, and changes to the fluid stream on the production. Understands the limitations of flow networks in terms of fluid service, pressure and temperature and writes appropriate procedures for inspection, maintenance and repair activities.	Has written inspection, monitoring, maintenance or repair procedures that integrate operations procedures. Expert in the interpretation of P&IDs. Demonstrable experience in operations surveillance, troubleshooting and resolution.
Expert knowledge of; • a facility's Permit To Work system and what controls may be placed on procedures to be executed • the requirement for and placement of isolations required for particular operations	Can isolate sub-systems of the facility such that other operations can be continued while executing a particular inspection, maintenance or repair activity. Determines in which cases, the whole plant, a module, a network, a flow loop or an individual equipment element is required to be shut down to execute an activity.	Has acted as the permit authority for an operations procedure Has written an isolation scheme for an operations procedure. Has critically reviewed the isolations for a given operation.

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• what limitations and controls on simultaneous activities are required for an operations procedure to be permitted		Has executed subsea intervention operations on a live hydrocarbon facility.
Knowledge of; • the requirements of the plant and process at the various phases of executing an operation including shut down, flushing, venting, bleeding, priming and start-up • the equipment required to execute operations in particular phases of the operation	Understands the effects of operations on the equipment and the process. Minimises the impact of inspection, maintenance and repair operations on the remainder of the facilities, allowing production to continue where possible. Selects equipment that provides the best outcome in terms of safety, ease and speed to execute operations of the facilities.	Has written procedures that allow execution of an operation while the remainder of the plant continues to operate. Has critically reviewed the advantages and disadvantages of different equipment spreads for given operations.
Expert knowledge of: • Subsea facility failure modes identification • Definition of risk-based inspection regimes and strategies • Monitoring methods • Reliability based strategies	Capable of: • Identifying failure modes of equipment • Identifying damage mechanisms contributing to failure modes • Monitoring the rate of change and interaction of damage mechanisms on equipment • Adjusting inspection frequencies • Intervening to remediate damage as required	Has performed each element of this competency on an operational facility.

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