GEOSPATIAL ENGINEERING

Hydrographic Surveying

The measurement and the portrayal of the Earth's surface covered by water, including the provision of dynamic measurement of water and it's movement.

Range Indicators

Competency will be demonstrated in the application of relevant knowledge, understanding and skills set out in the Hydrographic Surveying Competency Requirements. Such knowledge and skills will normally be obtained through a structured education to the requisite level and work experience.

This area of specialism includes the following core skills:

- The ability to understand tides, currents and water column parameters
- To have knowledge of the composition of seafloor and seabed sampling techniques
- To have experience of acoustic surveys and systems
- The ability to undertake surveys of estuaries and inland waters
- To have basic understanding of oceanography
- To have an understanding of offshore and on shore environments
- The ability to use specialist systems, i.e. ROV.s
- To be able to understand Acoustic Theory, Geodesy, Data acquisition and presentation
- The ability to use IT software for surveying operations and management
- To have knowledge of maritime law

Communication, computing and Health and Safety skills apply to all specialisms and are described elsewhere.

Evidence Guide

Evidence of successful achievement of this competency would be effective and efficient management of the Hydrographic Surveying process together with the application of appropriate systems for monitoring and reporting of data, at the minimum levels as stated in the competency details and range of elements

		GES2	Competencies and Range of Elements				
		Competency	**Hydrographic Surveying**				
Cross Reference	**Reference**	**Optimum Standard**	Activity Details	**Date of Assessment**			
				A	**K**	**E**	**B**
			Hydrography				
	A	K	Tides, currents and water column parameters.				
	B	K	Composition of the seafloor and Seabed sampling techniques.				
	C	E	Acoustic surveys and systems.				
	D	K	Calibration of sensors.				
	E	E	Shallow geophysical surveys / systems.				
	F	K	Surveys of estuaries and inland waters.				
	G	E	Survey planning and conduct.				
	H	E	Basic oceanography				
			Engineering Operations				
	I	K	The offshore environment.				
			OR				
	J	K	The inshore environment				
			OR				

		GES2	Competencies and Range of Elements				
		Competency	**Hydrographic Surveying**				
Cross Reference	**Reference**	**Optimum Standard**	Activity Details	**Date of Assessment**			
				A	**K**	**E**	**B**
	K	K	Ports and Harbours				
	L	K	Inland waterways				
	M	K	Use of specialist systems, i.e. ROV's etc.				
	N	E	Basic geotechnical engineering and geology.				
	P	K	Acoustic theory				
	Q	K	Ranging e.g. transponder / responder. Scanning systems and echosounders.				
	R	E	Navigation and positioning Position theory and systems (surface and sub-surface).				
	S	E	Installation and calibration of positioning systems.				

		GES2	**Competencies and Range of Elements**				
		Competency	**Hydrographic Surveying**				
Cross Reference	**Reference**	**Optimum Standard**	Activity Details	**Date of Assessment**			
				A	**K**	**E**	**B**
			Geodesy				
	A	E	Geodetic datums, parameters and shifts.				
	B	E	National / international reference systems and Projection theory.				
	C	K	Error theory.				
	D	E	Calculation and adjustment of control.				
			Data Acquisition				
	E	E	On – line acquisition systems				
	F	E	Quality Control				
	G	E	Data acquisition / performance criteria				

		GES2	**Competencies and Range of Elements**				
		Competency	**Hydrographic Surveying**				
Cross Reference	**Reference**	**Optimum Standard**	Activity Details	**Date of Assessment**			
				A	**K**	**E**	**B**
			Safety and emergency procedures				
	A	K	Health, safety and environmental issues.				
	B	E	HSE risk assessments.				
	C	K	Safe vessel operations.				
			Data presentation				
	D	E	Data processing planning.				
	E	K	Digital terrain modelling.				
	F	E	Survey reports.				
	G	K	Chart preparation and production.				
			Software				
	H	E	IT / ICT for surveying operations and management.				
			Law				
	J	K	UN Convention on the Law of the sea.				
			OR				

		GES2	**Competencies and Range of Elements**				
		Competency	**Hydrographic Surveying**				
Cross Reference	**Reference**	**Optimum Standard**	Activity Details	**Date of Assessment**			
				A	**K**	**E**	**B**
	K	K	Territorial sea law / regulations. OR				
	L	K	Docks and harbour legislation / regulations. Seamanship.				
	M	E	Safety.				
	N	E	The marine crew.				
	P	E	Weather factors and forecasts. The environment.				
	Q	A	Awareness of the marine environment and factors that impact e.g. pollution, vessel operations, etc				
		1st Review	Supervisors signature. Date:				
		2nd Review	Supervisors signature. Date:				
		3rd Review	Supervisors signature. Date:				