

Surveyor Grade I

S20 and S21

The following should be read and used in conjunction with the information pack 'Competence Assurance & Assessment: Introduction for Experienced Freelance Personnel'.

Evidence Required

- Competence appraisal:** ♦ at Surveyor Grade I level
- Work records:**
- ♦ copy of one safety related document such as risk assessment form, toolbox talk sheet or safety briefing which clearly shows that the candidate was involved in the process
 - ♦ copy of survey sensor calibration results/ check sheets completed by the candidate
 - ♦ copy of positional quality comparisons prepared by the candidate
 - ♦ copy of survey logbook entries over a minimum 14 day period
- Witness testimonies:**
- ♦ one example of the candidate maintaining a safe working environment for self and others
 - ♦ one example of candidate maintaining the online positioning and acquisition systems
 - ♦ one example of the candidate performing quality control checks on surface and subsurface positioning systems as well as data logging systems ROV system
- Essential knowledge:** ♦ written answers to Surveyor Grade I questions
- Curriculum Vitae** ♦ Detailing offshore trips, work scope, clients, regions etc.

IMCA Framework Requirements

The competence assurance and assessment framework developed by IMCA (the International Marine Contractors Association) sets out a number of elements for each safety-critical position. The following table shows how competence can be demonstrated against each element.

Code	Demonstration	Covered by
S/S20/000/01 Safety	Ability to adhere to offshore safety standards and maintain a safe working environment Ability to follow company safety procedures Ability to participate in risk assessment process Ability to recognise hazards in the work place Demonstrate a knowledge of how to react to safety critical situations and what immediate action can be taken to minimise/eliminate them	CA(a), Q4 WT R, Q6 CA(a), Q2 CA(a)
S/S20/000/02 Emergency Procedures	Ability to recognise a potential or actual emergency situation and report it appropriately	WT, CA(a), Q1,4, 5
S/S20/000/03 Behavioural Factors	Ability to give and receive handovers at start and end of shift Ability to maintain clear and concise logbooks and records Ability to use concise and unambiguous writing skills and the ability to handle written language effectively Ability to communicate effectively with marine crew using correct descriptive terms for direction, vessel locations and relevant seamanship terms	CA(b) R R, CA(b) CA(b), Q8
S/S20/000/05 Seamanship	Demonstrate knowledge of practical seamanship and basic rigging skills Demonstrate knowledge of how weather conditions affect ship handling and its impact on the safe handling of survey systems	CA(e), CA(e), Q3
S/S21/000/06 Software	Ability to configure survey software for use on the current projection/geodetic datum Ability to create and configure a navigation vessel with positioning and peripheral survey sensors	CA(d) CA(d)

Code	Demonstration	Covered by
	Ability to create and configure graphic display showing vessel(s) and relevant map information appropriate for the project tasks undertaken Ability to create waypoints and targets Ability to create survey lines/run lines/sail lines	CA(d) CA(d) CA(d)
S/S21/000/07 Data Acquisition	Ability to configure system to monitor data quality Ability to take appropriate action in cases of performance outside defined acquisition criteria Ability to configure/check configuration of online systems Ability to configure logging of project data in accordance with company standards and project procedure Ability to verify logging and recording system outputs Ability to configure and verify geodetic and datum shift parameters Demonstrate understanding of calibration requirements and procedures	WT, CA(h) CA(h), Q10 WT, CA(h) CA(h) WT, CA(h) WT, CA(h), Q12 CA(e)
S/S21/000/08 Data Management	Ability to create and maintain clear and concise survey logbook and records	R
S/S21/000/10 Hydrography /Oceanography	Demonstrate knowledge of the effect of tidal and water column parameters on survey sensors Demonstrate knowledge of sound propagation and factors affecting its application to survey observations Demonstrate knowledge of tides and currents and their affect on survey operations	Q18, 20 Q17 Q19
S/S21/000/11 Navigation and Positioning	Ability to power up and configure the navigation system and check data transmission is operational Ability to define vessel co-ordinate system and determine 3D offsets for all positioning and ancillary sensors Ability to enter offset data into survey system, ensuring adherence to sign conventions Demonstrate understanding of calibration requirements and assist with calibration planning Ability to perform required survey sensor calibrations Ability to perform acoustic positioning system calibrations Ability to apply calibration corrections to positioning systems ensuring adherence to sign conventions	CA(f) CA(e) CA(e) R, CA(e) R, CA(e) CA(g), Q13 CA(e)
S/S21/000/12 Co-ordinate Reference Systems	Demonstrate knowledge of common datum definitions applicable to the local work area Ability to check that datum transformation parameters have been correctly applied	WT Q12

Q Question (written answer required)

R Record of work; document or product

CA Competence Appraisal Form

WT Witness Testimony

Sample Achievement Record

Candidate name:

First assessor name:

	Assessment Decision	Approval of Internal Verifier/ Competence Focal Point
Safety		
Emergency Procedures		
Behavioural Factors		
Seamanship		
Software		
Data Acquisition		
Data Management		
Hydrography / Oceanography		
Navigation and Positioning		
Co-ordinate Reference Systems		

Comments:

First assessor signature: Date:

Verifier signature: Date:

Sample Competence Appraisal

The appraiser must have observed the appraisee completing the task before completing the relevant section. Where necessary a number of different appraisers may be used to complete the form fully.

Appraisee name:

Task	Feedback to Appraisee	Appraiser <i>(Print name, sign and date)</i>
<p>a) Demonstrate safety and emergency awareness, familiarisation with worksite and ability to identify hazards.</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>b) Maintain effective teamwork and communication.</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>c) Demonstrate IT skills including Office packages, data management and CAD for charting.</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>d) Install, configure and maintain technical software packages for survey tasks, diagnose faults and rectify.</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>e) Understand calibration requirements and carry out basic calibration of survey sensors and devices ensuring offsets are entered correctly in system.</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>f) Install and monitor surface navigation eqpt. Perform positioning comparisons to confirm quality of solution.</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		

Task	Feedback to Appraisee	Appraiser <i>(Print name, sign and date)</i>
<p>g) Operate sub-surface positioning systems and perform system calibrations where necessary</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>h) Configure and verify online system to log project data in accordance with standard and project specific procedures. Monitor data quality during acquisition.</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>i) Present survey data in tabular and graphical format, in accordance with standard and project specific procedures, for client submission and report compilation</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p>Projects</p> <p>Indicate which projects you have participated in during the last 12 months. Specify project work scope</p>		
<p>Projects</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>	N.B. Feedback should be based on projects detailed above	
<p>Hardware/Software</p> <p>Indicate which hardware and software you have used during the last 12 months</p>		
<p>Hardware/Software</p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>	N.B. Feedback should be based on software / hardware detailed above	

Appraisee comments:

Appraisee signature:

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Date:

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Essential Knowledge – Sample Questionnaire

- 1 What is the definition of 'near miss' incident?
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- 2 List the most important hazards encountered when working offshore and the benefits of Toolbox Talks.
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- 3 What is the difference between sea, swell and current and explain their effect on the deployed ROV/towed vehicle bearing in mind the safe working limits for the launch of ROV/towed system?
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- 4 For your worksite describe in detail how any safety incidents are reported.
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- 5 Where can you find the company emergency procedure documents for your worksite?
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- 6 What is the TRA (task risk assessment) process and how does it apply to typical tasks carried out in your work environment?
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- 7 What QC checks should be applied to raw data?
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- 8 Explain the importance of good communications.
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- 9 What types of survey and/or inspection equipment can be fitted to an ROV for pipeline construction projects?
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10 If one or more of the sensors fails to be read by the navigation system how would you go about assessing where the problem lay and what are the most common reasons for data not reaching the navigation system in a readable format?

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11 What could be the effect on the number of satellites received when working alongside a platform or rig and what could be the outcome if the vessel was using DGPS as a reference for its DP system?

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12 How would you verify the geodetic parameters used?

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13 What is the difference between EHF and MF acoustic systems and explain in what circumstances you would use either one?

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14 What would be the outcome of using or interrogating a beacon code that is being used by another vessel, in the same area, for DP purposes?

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15 What is the effect of a faulty antenna earth connection on the HF diff signal?

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16 What would be the indications that the USBL system was not calibrated and describe methods of determining which currently applied correction may be wrong?

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17 What would be the outcome of not applying the correct speed of sound when determining position and depth from records?

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18 Where would you find the standard port to use for the project and which data would you extract from the Admiralty Tide Tables for input to the tidal database?

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19 On a long route survey (e.g. 100nm) how would you reduce depths for tidal variation when given one standard port to work from?

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20 What effect do tidal and water column parameters have on survey sensors?

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