



## Regulated Qualifications Unit and Assessment Specification

<b>Unit title</b>	Control Marine Radar and Automatic Identification Systems
<b>Regulator unit code</b>	T/504/1132
<b>SQA unit code</b>	H3M7 57
<b>SSC ref</b>	Unit 88

## History of changes

**Publication date:** March 2013

**Version:** 02 (December 2017)

<b>Version number</b>	<b>Date</b>	<b>Description</b>	<b>Authorised by</b>
02	December 2017	Unit Specification updated to reflect current Ofqual terminology.	Qualifications Officer

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## Regulated qualifications unit specification

<b>Title</b>	Control Marine Radar and Automatic Identification Systems	
<b>Level</b>	3	
<b>Credit value</b>	5	
<b>Outcomes</b>	<b>Assessment criteria</b>	
<b>The learner will:</b>	<b>The learner can:</b>	
1 Be able to use marine radar.	1.1 Set up a marine radar in accordance with manufacturer's instructions.	1.2 Demonstrate the functions of radar controls.
	1.3 Demonstrate correct operation of a radar.	1.4 Interpret information obtained from the radar display.
	1.5 Demonstrate parallel indexing techniques.	1.6 Respond appropriately to system alarms.
2 Be able to utilise information displayed by a radar.	2.1 Detect false echoes.	2.2 Recognise a RACON (radar beacon).
	2.3 Recognise a SART (search and rescue transponder).	2.4 Obtain target range.
	2.5 Obtain target bearing.	
3 Understand how to use radar for collision avoidance.	3.1 Identify critical targets.	3.2 Identify changes in targets' course and speed.
	3.3 Explain the actions needed to avoid a close encounter with other vessels in accordance with the international regulations for the prevention of collision at sea D speed.	

<b>Outcomes</b> <b>The learner will:</b>	<b>Assessment criteria</b> <b>The learner can:</b>
4 Be able to use radar for collision avoidance.	4.1 Use paper plotting sheet for anti-collision plotting.  4.2 Interpret display to obtain range and bearing.  4.3 Interpret display to obtain time for target's closest approach.  4.4 Demonstrate how to take action to avoid a close encounter with other vessels in accordance with the international regulations for the prevention of collision at sea.
5 Be able to use Automatic Radar Plotting Aids (ARPA).	5.1 Use system tests.  5.2 Use operational warnings.  5.3 Identify critical targets.  5.4 Use trial manoeuvres.
6 Know how to use Automatic Identification Systems (AIS).	6.1 Describe the use of AIS in relation to bridge procedures.  6.2 Explain the advantages and disadvantages of the mode of presentation of the geographical display.  6.3 Explain how to respond correctly to alarms.
7 Be able to use AIS.	7.1 Set up AIS in accordance with manufacturers' instructions.  7.2 Use information generated by AIS.  7.3 Update AIS information.  7.4 Use information obtained via AIS interfaced with other navigation systems.  7.5 Respond correctly to an alarm.

<b>Outcomes</b>	<b>Assessment criteria</b>
<b>The learner will:</b>	<b>The learner can:</b>
8 Know radar theory.	8.1 Explain the basic principles of operation of radar. 8.2 Describe the factors which affect the performance of radars and ARPA. 8.3 Describe the factors affecting the quality of radar picture with respect to control settings. 8.4 Explain the advantages and disadvantages of different radar modes with respect to target detection and tracking. 8.5 Explain the term radar horizon. 8.6 Explain the effect of atmospheric refraction on the detection of targets. 8.7 Explain the purpose of RACONS and SARTS.
9 Know ARPA theory.	9.1 Describe factors affecting system performance. 9.2 Explain the methods of target acquisition. 9.3 Explain the difference between true and relative vectors' graphic representation of target information. 9.4 Describe the effect of changes in own ship's course or speed on displayed ARPA information. 9.5 Explain use of danger/exclusion areas. 9.6 Explain dangers of misusing trail manoeuvre facility.
10 Know the principles of operation of Automatic Identification Systems (AIS).	10.1 State the objectives of AIS as defined by the International, Maritime Organisation. 10.2 Describe the underpinning concepts of AIS.

<b>Outcomes</b>	<b>Assessment criteria</b>
<b>The learner will:</b>	<b>The learner can:</b>
	<p>10.3 Describe the configuration of components with reference to a typical minimum keyboard display.</p> <p>10.4 Explain the effect of position of the AIS antenna.</p> <p>10.5 Explain the principles of propagation of digital data over VHF.</p> <p>10.6 Compare propagation characteristics of AIS with those of radar.</p> <p>10.7 State the principles of regional operational settings.</p>
<p>11 Know the capabilities of Automatic Identification System (AIS).</p>	<p>11.1 Describe the range and type of information capable of being sent by vessels.</p> <p>11.2 Explain the limitations of AIS.</p> <p>11.3 Explain the benefits of using AIS targets in different radar blind spots.</p> <p>11.4 Identify the range of uses for AIS.</p>

<b>Additional information about the unit</b>
<b>Unit purpose and aim(s)</b>
Covers competence and underpinning knowledge required to <i>Control Marine Radar and Automatic Identification Systems</i> by the person in charge of a navigational watch on any size of vessel operating in any area.
<b>Unit start date</b>
01/06/2013
<b>Details of the relationship between the unit and relevant national occupational standards (if appropriate)</b>
Maritime NOS (Jan 2012) — B02 Maintain a navigational watch
<b>Details of the relationship between the unit and other standards or curricula (if appropriate)</b>
Seafarer's Training, Certification and Watchkeeping Code (Table A-II/1); MNTB guidance on Navigation Aids and Equipment Simulator Training (operational level).
<b>Assessment requirements specified by a sector or regulatory body (if appropriate)</b>
Maritime Skills Alliance's Assessment Strategy and Maritime and Coastguard Agency requirements MNTB guidance on Navigation, Radar, ARPA, ECDIS & AIS Simulator Training (operational level).
<b>Endorsement of the unit by a sector or other appropriate body (if required)</b>
Maritime and Skills Alliance
<b>Location of the unit within the subject/sector classification system</b>
4.3 Transportation Operations and Maintenance
<b>Name of the organisation submitting the unit</b>
Skills for Logistics
<b>Guided learning hours</b>
42

## Regulated qualifications assessment specification

### Assessment (evidence) requirements

The following evidence is required to demonstrate that learners have the appropriate level of knowledge to undertake the control of marine radar and automatic identification systems. All outcomes and assessment criteria must be achieved.

Written and/or recorded oral evidence produced either on or off-the-job is required for the following:

- ◆ Outcomes 3, 6, 8, 9, 10 and 11

This could be achieved through oral questioning of learners.

Assessment evidence in the workplace or in an appropriate simulated environment is required for the following:

- ◆ Outcomes 1, 2, 4, 5 and 7

This could be achieved through the observation of learners undertaking practical exercises.

An approved Maritime Skills Alliance (MSA) approved Training Record Book (TRB) should be used to record evidence of achievement.

### Guidance on assessment

Assessment evidence can be generated using an approved Maritime Skills Alliance (MSA) approved Training Record Book (TRB) and/or practical exercises.

Short answer written questions and/or oral interview could be used for the other outcomes and assessment criteria.