Unit and Assessment Specification

Unit title	Basic Vessel Engineering Systems
SQA code	H4JH 04
SCQF level	5
SCQF credit points	4
SSC ref	Unit 7

History of changes

Publication date: June 2013

Version: 01

Version number	Date	Description	Authorised by

Title	Basic Vessel Engineering Systems	
Learning Outcomes **The learner will:**		**Assessment Criteria** **The learner can:**
1	Know how an internal combustion engine works.	1.1 Identify engine components. 1.2 Describe the working principles of compression and spark ignition systems. 1.3 Identify engine configurations, eg in-line, horizontal, vee engine types. 1.4 Explain the meaning of engine terms, eg top dead centre, clearance volume, compression ratio. 1.5 Describe engine performance, eg rpm, power output, fuel consumption, torque. 1.6 Identify components of air induction and exhaust systems including pressure charging.
2	Know how diesel engine ancillary systems work.	2.1 Identify the components of the following systems and describe how they work: ♦ Fuel ♦ Cooling ♦ Lubricating ♦ Electrical ♦ Air compressor and starting ♦ Steering. 2.2 Identify suitable materials for use in cooling systems.
3	Know how the power generated is used to propel a vessel.	3.1 Describe how power is transmitted from the engine to the propellers using mechanical and electrical transmission. 3.2 Identify main propulsion layouts.
4	Know the purpose of vessel environmental, service and pumping systems.	4.1 Identify the heating, fresh and waste water, ventilation and air conditioning, and pumping systems and explain their purpose. 4.2 Identify main legislation covering marine pollution and outline the statutory requirements.

Learning Outcomes The learner will:	Assessment Criteria The learner can:
5 Know how to maintain safe operation of a vessel's engineering systems.	5.1 Describe the procedures for the safe starting, running and stopping of main propulsion engines and auxiliary systems. 5.2 Describe the procedures for continuous safe operation of vessel machinery. 5.3 Identify the key aspects of law, codes, principles and guidance relating to the continuous safe operation of vessel machinery.

Additional information about the Unit

Unit purpose and aim(s)

MCA Approved Engineering Course (AEC)

The aim of the Unit is to provide knowledge of basic vessel engineering systems.

Details of the relationship between the Unit and relevant national occupational standards (if appropriate)

MNTB/SFIA Marine NOS Units C1, C11, C12.
Non pleasure vessels operating in inland and coastal waters

- NOS: N113

Details of the relationship between the Unit and other standards or curricula (if appropriate)

MNTB/SFIA Underpinning Knowledge Library Documents
SFIA Engine Room Watchkeeping Course

Assessment requirements specified by a sector or regulatory body (if appropriate)

Assessment will be by a combination of the following methods — assignment; knowledge based testing; project work; presentation; practical demonstration; other, as agreed by the External Verifier.

Assessment (evidence) Requirements
The following evidence is required to demonstrate that learners have the appropriate level of knowledge to undertake Basic Vessel Engineering Systems. All Learning 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: ♦ Learning Outcomes 1, 2, 3,4 and 5 This could be achieved through oral questioning of learners. An approved Maritime Skills Alliance (MSA) approved Training Record Book (TRB) should be used to record evidence of achievement.
Guidance on Instruments of Assessment
Short answer written questions and oral interview could be used.