



National Craft Assessment and Certification Program
S P E C I F I C A T I O N S

MARITIME STRUCTURAL FITTER
AEN86MSTRFT01W

November 2017

Focus Statement

A journey-level maritime structural fitter, or ship fitter, must be able to interpret many different types of structural drawings and use them to perform the proper fit-up of structure components. A structural fitter must have knowledge of welding and cutting processes, metallurgy, and safety.

Overview

- Two-hour closed-book examination
- May use a basic function, non-printing calculator
- No extra papers, books, notes or study materials are allowed
- The minimum passing score is 75
- A corresponding hands-on Performance Verification is available

NCCER Curriculum

All NCCER knowledge assessments are referenced to NCCER's curriculum modules as listed on this specification sheet. You may order modules from Pearson (800.922.0579) or from NCCER's Online Catalog at www.nccer.org.

Assessment Development

All questions are developed and approved by subject matter experts under the direction of NCCER.

Credentials

Upon successful completion of the knowledge assessment, NCCER will send applicable credentials to the assessment center.

Score Report and Training Prescription

Each candidate will have access to their assessment results including their overall score and recommended training.

NCCER Registry

Knowledge assessment results are recorded in NCCER's Registry and become a part of the portable record of an individual's NCCER credentials.

Knowledge Assessment Contents:

Content Domain	Number of Questions
Basic Welding [29101-09, 29106-09, 29108-09, 86101-14]	16
Fire Watch [86102-14]	4
Structural Print Reading [86103-14, 86202-14, 86301-15]	33
Fitting [86104-14, 86203-14, 86302-15]	23
Cutting and Burning [29102-09, 29103-09, 86201-14]	17
Base Metal Preparation [29105-09, 29203-09]	7
Total Number of Questions	100

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Learning Objectives related to Assessment:

	Basic Welding
Registry ID Number:	Module Title and Objectives:
29101-09	Welding Safety
	Identify some common hazards in welding.
	Explain and identify proper personal protection used in welding.
	Describe how to avoid welding fumes.
	Explain some of the causes of accidents.
	Identify and explain uses for material safety data sheets.
	Explain safety techniques for storing and handling cylinders.
	Explain how to avoid electric shock when welding.
	Describe proper material handling methods.
29106-09	Weld Quality
	Identify and explain weld imperfections and their causes.
	Identify and explain nondestructive examination practices.
	Perform a visual inspection of fillet welds.
29108-09	SMAW - Electrodes
	Identify different types of filler metals.
	Identify and select the proper electrode for a specified welding task.
86101-14	Tack Welding
	Set up proper arc welding equipment.
	Describe methods of striking an arc.
	Describe how to properly perform a tack weld.
	Fire Watch
Registry ID Number:	Module Title and Objectives:
86102-14	Fire Watch
	Describe the different classes of fires and the methods used to extinguish them.
	Explain the duties and responsibilities of a fire watch.
	Describe the different types of fire extinguishers and their inspection requirements.
	Structural Print Reading
Registry ID Number:	Module Title and Objectives:
86103-14	Introduction to Structural Fitter Drawings
	Recognize and identify basic fabrication drawing terms, components, basic lines, symbols, and bills of material.
	Identify various drawing views such as plan, elevation, section, and details.
86202-14	Intermediate Structural Print Reading
	Identify welding symbols and explain how they determine joint design.
86301-15	Advanced Structural Print Reading

	Describe how drawings for a vessel are structured.
	Interpret the types of drawings commonly used by structural fitters. a. Assembly drawings b. Mechanical drawings c. Foundation drawings
	Explain the drawing change process.
	Fitting
Registry ID Number:	Module Title and Objectives:
86104-14	Fitting I
	Explain the role the fitter plays in quality assurance and safety.
	Recognize and identify structural members and calculate their thicknesses.
	Identify layout tools, fitting tools, and fitting aids used to fit up, align, and check plate joints.
86203-14	Fitting II
	Identify packing, gasket materials, and structural accessories.
	Describe proper fit procedures related to fitting tasks in all positions.
86302-15	Fitting III
	Describe tools and methods used to lay out mold lines, radius corners, and penetrations.
	Describe proper fit procedures related to fitting tasks in all positions: <ul style="list-style-type: none"> • Longitudinals • Shell plating • Bulkheads/deck plates • Frames • Foundations • Miscellaneous structural items such as chocks, headers, collars, brackets, and clips • Watertight and non-watertight doors and hatches
	Describe how to assemble, erect, and set a modular unit.
	Cutting and Burning
Registry ID Number:	Module Title and Objectives:
29102-09	Oxyfuel Cutting
	Identify and explain the use of oxyfuel cutting equipment.
	Set up oxyfuel equipment.
	Light and adjust an oxyfuel torch.
	Shut down oxyfuel cutting equipment.
	Disassemble oxyfuel equipment.
	Change cylinders.
	Perform oxyfuel cutting: <ul style="list-style-type: none"> • Straight line and square shapes • Piercing and slot cutting • Bevels • Washing • Gouging
29103-09	Plasma Arc Cutting
	Explain the plasma arc cutting processes.

	Identify plasma arc cutting equipment.
	Prepare and set up plasma arc cutting equipment.
	Use plasma arc cutting equipment to make various types of cuts.
	Properly store equipment and clean the work area after use.
86201-14	Cutting and Burning Processes
	Set up, maintain, and safely use oxyfuel equipment and perform a leak/drop test in a shipboard environment.
	Ensure that confined spaces are gas-free.
	Explain how to lay out and cut bevels, chamfers, and circles.
	Explain how to cut/split various shapes, including: <ul style="list-style-type: none"> • T-beams • I-beams • Z-bars • Bulb angles • Brackets • Square tubing • Flat bar • Angles • Channel
	Base Metal Preparation
Registry ID Number:	Module Title and Objectives:
29105-09	Base Metal Preparation
	Clean base metal for welding or cutting.
	Identify and explain joint design.
	Explain joint design considerations.
29203-09	Physical Characteristics and Mechanical Properties of Metals
	Identify and explain the composition and classification of base metals.
	Explain and demonstrate field identification methods for base metals.
	Identify and explain the physical characteristics and mechanical properties of metals.
	Identify and explain forms and shapes of structural metals.
	Explain metallurgical considerations for welding metals.