Specification of minimum standard of competence for ratings forming part of an engineering watch

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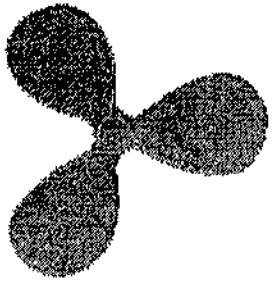
Function: Marine engineering at the support level

Table A-III/4

AUXILIARY PLANT MAINTENANCE PROFICIENCY GROUP

(Requires proficiency based practical demonstration)

1. Fit threaded steel pipe
2. Fit sweat copper pipe
3. Fit PVC pipe
4. Fit flared tubing
5. Take up on gate or globe valve stuffing box gland
6. Take up on centrifugal pump stuffing box gland
7. Tag out and lock out a piping system for repairs
8. Add a ring of packing to a gate or globe valve
9. Add a ring of packing to a centrifugal pump
10. Repack a gate or globe valve in place
11. Repack a centrifugal pump
12. Remove a flanged valve assembly
13. Fabricate a flange gasket
14. Install a flanged valve assembly
15. Place repaired piping system back into service
16. Add, remove, and change lube oil
17. Lubricate grease lubricated bearings
18. Shift duplex sea water strainers
19. Clean basket type sea water strainer
20. Change spin-on and cartridge oil filters
21. Perform basic metalworking
22. Install thermal insulation and lagging
23. Replace and adjust tension on drive belts



Specification of minimum standard of competence for ratings forming part of an engineering watch

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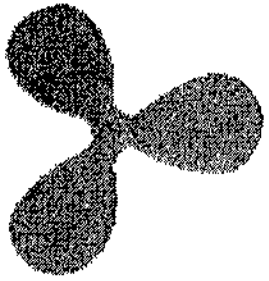
Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside shop facility, fit threaded steel pipe. Tool availability shall include a motorized power vise, equipped with a pipe cutter, reamer and universal thread cutting die assembly. Also included is a suitable assortment of stillson pipe wrenches.	Fits threaded steel pipe to include: a. selects and inspects pipe for suitability for fitting b. cuts lengths of pipe up to 1-1/2" pipe size c. reams pipe ends up to a 1-1/2" pipe size d. threads pipe ends up to a 1-1/2" pipe size e. assembles pipe to fittings up to a 1-1/2" pipe size	Rejects any pipe that is bent, out of round, heavily corroded or otherwise damaged. Uses cutting oil when cutting, reaming, and threading pipe. Successfully cuts pipe square and within 1/2" of prescribed length. Successfully removes ridge produced in the cutting process by reaming. Threads are fully formed and concentric to the pipe. Uses teflon tape or suitable pipe dope when assembling pipe to fitting. Upon final assembly insures joint able to withstand normal working pressures without leaking. All pipe fitting evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



Specification of minimum standard of competence for ratings forming part of an engineering watch

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Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside shop facility, fit sweat copper pipe via soft solder. Tool availability shall include an air-acetylene torch, an acetylene cylinder and regulator, flint friction lighter, copper pipe/tubing cutter/reamer, abrasive cloth, fitting brushes, suitable flux, and 95/5 soft solder.	Fits sweat copper pipe to include: a. selects and inspects pipe for suitability for fitting b. cuts lengths of pipe up to 1-1/2" pipe size c. reams pipe ends up to a 1-1/2" pipe size d. removes all oxidation from pipe end e. removes all oxidation from inside fitting pipe socket f. applies flux to pipe end g. assembles pipe to fitting h. lights air-acetylene torch and adjusts flame i. heats fitting j. feeds soft solder into point of entry k. allows joint to cool	Rejects any pipe that is bent, out of round, heavily corroded or otherwise damaged. Successfully cuts pipe within 1/2" of prescribed length. Successfully removes ridge produced in the cutting process by reaming. Pipe end and fitting internal surfaces are brought to a bright and shiny condition in removal of oxidation. Flux is applied using a suitable brush and in sufficient quantity, but not to excess. Torch is lit with a standard spark igniter and flame adjusted to adequate for the pipe size. Torch is moved constantly during heating process taking care not to direct flame at the solder point of entry.Uses an appropriate solder (95-5), insuring that solder containing lead is not used. Avoids breathing in of fumes. Allows fitting and pipe to melt the solder and not the torch flame. Insures solder has "taken" at point of entry through entire joint circumference. Upon final assembly insures joint able to withstand normal working pressures without leaking. All pipe fitting evolutions are performed in accordance with accepted shop safety practices,using the proper tools, and following all pertinent safety precautions to prevent personal injury.

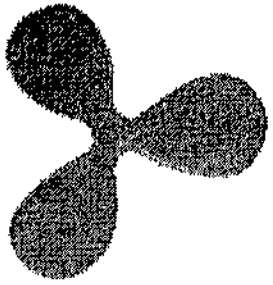

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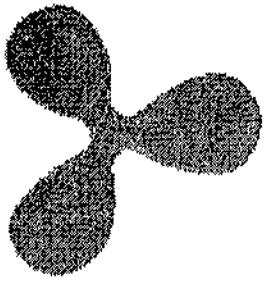
Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside shop facility, fit PVC pipe. Tool availability shall include a PVC pipe cutter or suitable saw, abrasive cloth, PVC solvent, and PVC cement.	Fits PVC pipe to include: a. selects and inspects pipe for suitability for fitting b. cuts lengths of pipe up to 4" pipe size c. reams pipe ends up to a 4" pipe size d. cleans pipe end and fitting internal socket e. applies PVC cement to fitting internal socket f. inserts fitting onto pipe or vice versa g. allows PVC cement to cure	Rejects any pipe that is cracked, out of round or otherwise damaged. Successfully cuts pipe within 1/2" of prescribed length. Successfully removes ridge produced in the cutting process by sanding with abrasive cloth. Pipe end and fitting internal surfaces are throughly cleaned by use of appropriate PVC solvent applying with a suitable brush. PVC cement is applied to fitting pipe socket using a suitable brush and in sufficient quantity, but not to excess. Insures that either pipe or pipe fitting is rotated 90 degrees after insertion before allowing cement to cure. Upon final assembly insures joint able to withstand normal working pressures without leaking. All pipe fitting evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



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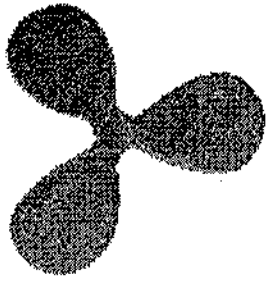
Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside shop facility, fit flared tubing. Tool availability shall include a tubing cutter/reamer, universal tube flaring tool, lever type and spring type tube benders, and an assortment of flare nut line wrenches.	Fits flared tubing to include: a. selects and inspects tubing for suitability for fitting b. cuts lengths of tubing up to 1/2" OD SAE tubing size c. reams tubing ends up to a 1/2" OD SAE tubing size d. slips flare nut onto tubing and pushes away to allow flaring g. flares tubing end h. repeats process for other end of tubing i. bends tubing to conform to existing requirements j. assembles joints by tightening flare nuts onto male flare fittings	Rejects any tubing that is kinked, out of round, heavily corroded or otherwise damaged. Successfully cuts tubing square and within 1/2" of prescribed length. Successfully removes ridge produced in the cutting process by reaming. Upon final assembly insures joint able to withstand normal working pressures without leaking. All tube flared fitting evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



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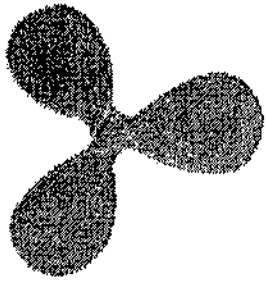
Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, take up on gate and globe valve stuffing box glands where stem to bonnet leakage exists.	Takes up on a gate or globe valve stuffing box gland to include: a. determines for the need to take up on gate or globe valve stuffing box gland. b. checks for bent or scored stem c. checks valve for ease of operation, insuring that it is a candidate for taking up on the gland without the necessity of adding packing or repacking the valve d. checks position of gland to determine if it may be further taken up, if so: e. tightens alternately each gland nut slightly and evenly until stem to bonnet leakage ceases f. inspects the gland to insure that it is square g. checks valve for ease of operation, insuring that operation is not unacceptably difficult	Successfully takes up on a gate or globe valve stuffing box gland to stop stem to bonnet leakage while insuring that the ease of valve operation is acceptable. Correctly determines if valve requires adding a ring of packing or requires repacking to succesfully stop the leak while insuring that the ease of valve operation is acceptable. All valve packing maintenance evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



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Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, take up on a centrifugal pump stuffing box gland where the stuffing box leak-off rate is excessive.	Takes up on a centrifugal pump stuffing box gland to include: a. checks for the need to take up on a centrifugal pump stuffing box gland. b. checks position of gland to determine if it may be further taken up, if so: c. tightens alternately each gland nut slightly and evenly until stuffing box leak-off rate is acceptable d. inspects the gland to insure that it is square e. checks stuffing box for evidence of overheating f. checks pump drive motor current draw to insure amperage is within acceptable limits	Successfully takes up on a centrifugal pump stuffing box gland to restore the proper leakoff rate. Seeks clarification from local operating guide, pump technical manuals and engineering watch supervisors as appropriate to determine proper leak-off rate as necessary. Correctly determines if pump requires adding a ring of packing or requires repacking to succesfully restore the proper leak-off rate while insuring that the stuffing box does not overheat or the drive motor does not draw excessive current. All pump packing maintenance evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.

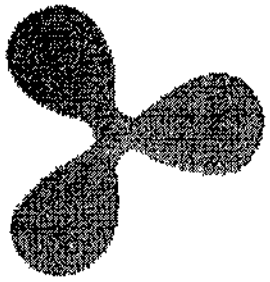

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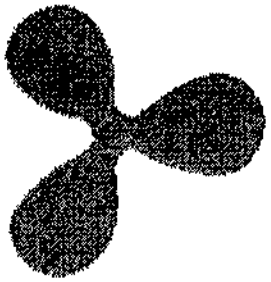
Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, tag out and lock out a piping system for repairs.	Tags out and locks out a piping system for repairs to include: a. consults vessel's tag out/lock out procedural manual for requirements b. consults piping system schematic and electrical distribution diagrams relevant to repair to be undertaken c. devises an isolation strategy relevant to the repair to be undertaken d. reviews strategy with watch engineer or equivalent e. seeks and gains permission from the watch engineer to implement the tag out/lock out stategy incormance with established procedure f. completes the required paperwork and documentation g. performs the necessary isolations (closing valves, opening breakers and disconnect switches, etc.) h. affixes a properly filled out warning tag in conformance with the tag out procedure for each isolation point i. locks out valves, breakers, and disconnect switches as relevant and practical j. renders system safe to open by draining and/or depressurization k. notifies and updates watch engineer of status of isolation and repairs as appropriate	Sucessfully implements tag out and lock out procedures in conformance with the vessel's related procedural manuals. Consults appropriate vessel piping system schematics, electrical distribution diagrams, watch engineers, or first assistant engineer in developing an appropriate isolation strategy as required. Performs no isolations without the necessary permissions from the officer in charge of the engineering watch. Implements two valve or two switch protection whenever possible or practical. Insures independent verification of implemetation of the tag out and lock out procedure as required. Insures that system drainage and/or de-pressurization is successfully accomplished before system is opened for repairs. Keeps watch engineer informed of isolation and repairs to keep the watch engineer current in terms of operational status of plant.



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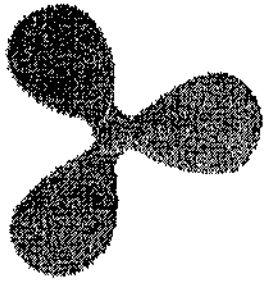
Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, add a ring of packing to gate and globe valves stuffing boxes in place.	Adds a ring of packing to a gate or globe valve in place to include: a. determines need for adding a ring of packing b. predetermines proper packing availability before work is to begin c. insures that the valve pipe section is properly isolated, locked out and tagged out d. insures that the valve pipe section is properly drained or de-pressurized e. removes packing gland nuts e. pulls back gland and follower and ties out of the way if necessary f. locates gap end of outermost ring g. cuts a ring of correct packing cut to proper length using stem or suitable mandrel h. inserts ring of packing insuring that it enters squarely by using the gland follower and that the gap end is oriented 180 degrees from the outermost ring i. take up on gland nuts alternately making sure gland is square j. rotates handwheel, opening and closing valve k. clears system tagout, unlocks valves, and cuts in fluid to valve assembly l. takes up on gland nuts sufficienttly to stop any stem to bonnet leakage m. checks ease of valve operation to insure the effort is not excessive	Correctly determines the criteria or basis for adding a ring of packing. Correctly adheres to vessel policy and procedural guides with respect to isolation, lock-out, and tag-out procedures. Successfully drains or depressurizes piping section before valve repacking work begins. Successfully adds a ring of packing to the valve. Once pressurized, successfully takes up stuffing box gland to stop stem to bonnet leakage while insuring that the ease of valve operation is acceptable.All valve packing maintenance evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



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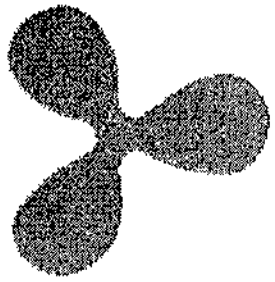
Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, add a ring of packing to conventionally packed centrifugal water pump stuffing box.	Adds a ring of packing to a centrifugal pump stuffing box to include: a. determines need for adding a ring of packing b. predetermines proper packing availability before work is to begin c. insures that the pump is properly isolated, locked out and tagged out d. insures that the pump pipe section is properly drained or de-pressurized e. removes packing gland nuts f. pulls back gland and follower and ties out of the way if necessary g. locates the gap end on the outermost installed packing ring h. cuts a ring of correct packing cut to proper length using pump shaft or suitable mandrel i. inserts the packing ring by pressing in with the gland follower and insuring that the gap end is oriented 180 degrees from the outermost ring j. after ring is installed, take up on gland nuts alternately and snugly making sure gland is square k. clears system tagout, unlocks valves, and cuts in water to pump l. starts pump m. adjusts gland nuts to obtain the proper leak-off rate n. checks stuffing box for evidence of overheating and checks pump drive motor current draw o. loosens packing gland nuts if necessary p. after run in period, adjusts leak-off rate to proper rate	Correctly determines the criteria or basis for adding a ring of packing.Correctly adheres to vessel policy and procedural guides with respect to isolation, lock-out, and tag-out procedures. Successfully drains or depressurizes pump section before pump repacking work begins. Successfully repacks pumps. Seeks clarification from local operating guide, pump technical manuals and engineering watch supervisors as appropriate to determine proper leak-off rate as necessary. Eventual adjustment of pump packing to succesfully restore the proper leak-off rate while insuring that the stuffing box does not overheat or the drive motor does not draw excessive current. All pump packing maintenance evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



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Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, repack gate and globe valves in place.	Repacks a gate or globe valve in place to include: a. predetermines proper packing availability before work is to begin b. Insures that the valve pipe section is properly isolated, locked out and tagged out c. insures that the valve pipe section is properly drained or de-pressurized d. removes packing gland nuts e. pulls back gland and follower and ties out of the way if necessary f. removes packing rings with packing pullers g. counts rings of packing h. cleans out stuffing box of packing debris i. checks valve stem for scoring and dresses up as necessary j. cuts sufficient number rings of correct packing cut to proper length using stem or suitable mandrel k. inserts first ring of packing insuring that it enters squarely by using the gland follower l. inserts the second ring insuring that the gap end is oriented 180 degrees from the frst ring m. continue likewise with other rings snugging with the gland nuts as necessary and staggering gaps ends 180 degrees apart n. after last ring is installed, take up on gland nuts alternately making sure gland is square o. rotates handwheel, opening and closing valve p. clears system tagout, unlocks valves, and cuts in fluid to valve assembly q. takes up on gland nuts sufficienttly to stop any stem to bonnet leakage r. checks ease of valve operation to insure the effort is not excessive	Correctly adheres to vessel policy and procedural guides with respect to isolation, lock-out, and tag-out procedures. Successfully drains or depressurizes piping section before valve repacking work begins. Successfully repacks valve. Once pressurized, successfully takes up stuffing box gland to stop stem to bonnet leakage while insuring that the ease of valve operation is acceptable.All valve packing maintenance evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.

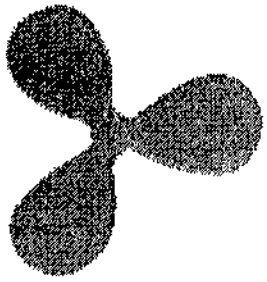

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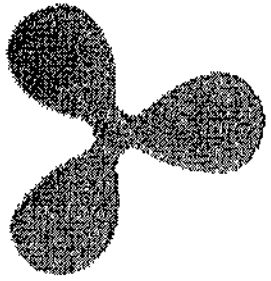
Table A-III/4 **Proficiency based practical demonstration**

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, repack a conventionally packed centrifugal water pump.	Repacks a conventionally packed centrifugal water pump to include: a. predetermines proper packing availability before work is to begin b. Insures that the pump is properly isolated, locked out and tagged out c. Insures that the pump pipe section is properly drained or de-pressurized d. removes packing gland nuts e. pulls back gland and follower and ties out of the way if necessary f. removes packing rings with packing pullers g. counts rings of packing h. determines position of lantern ring with respect to packing rings if so equipped i. cleans out stuffing box of packing debris j. checks pump shaft or shaft sleeve for scoring and dresses up as necessary k. cuts sufficient number rings of correct packing cut to proper length using pump shaft or suitable mandrel l. inserts first ring of packing insuring that it enters squarely by using the gland follower m. inserts the second ring insuring that the gap end is oriented 180 degrees from the first ring n. insures lantern ring is installed in proper position with respect to the packing rings if so equipped o. continue likewise with other rings snugging with the gland nuts as necessary and staggering gaps ends 180 degrees p. after last ring is installed, take up on gland nuts alternately and snugly making sure gland is square q. clears system tagout, unlocks valves, and cuts in water to pump r. starts pump s. adjusts gland nuts to allow somewhat excessive leak-off during run-in period while packing seats t. checks stuffing box for evidence of overheating and checks pump drive motor current draw u. loosens packing gland nuts if necessary v. after run in period, adjusts leak-off rate to proper rate	Correctly adheres to vessel policy and procedural guides with respect to isolation, lock-out, and tag-out procedures. Successfully drains or depressurizes pump section before pump repacking work begins. Successfully repacks pumps. Seeks clarification from local operating guide, pump technical manuals and engineering watch supervisors as appropriate to determine proper leak-off rate as necessary. Eventual adjustment of pump packing to succesfully restore the proper leak-off rate while insuring that the stuffing box does not overheat or the drive motor does not draw excessive current. All pump packing maintenance evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



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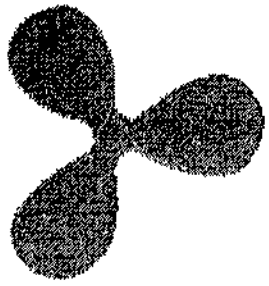
Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, suitable shoreside piping installation, remove a flanged valve assembly. Tool availability includes a mechanic's tool set, slings, shackles, chain fall, and tag lines.	Removes a flanged valve assembly to include: a. Insures that flanged valve pipe section is properly isolated, locked out and tagged out b. Insures that flanged valve pipe section is properly drained or de-pressurized c. Insures that provisions are made for supporting, rigging, and moving the flanged valve assembly as required d. Breaks loose all flange bolts e. Insures valve is properly supported f. Removes all flange bolts except those at 12:00 and 6:00 positions g. With valve supported take sufficent strain on rigging to allow removal of the last two remaining bolts h. Pries valve away from pipe flanges as necessary to break loose i. Separates valve from pipe flanges and moves out of way and lowers to deck plates Note: smaller valves may not require rigging apparatus. Such removals may be accomplished single-handedly or with the aid of a helper.	Correctly adheres to vessel policy and procedural guides with respect to isolation, lock-out, and tag-out procedures. Successfully drains or depressurizes piping section before flange disassembly work begins. Exercises good judgement with respect to support and rigging requirements. Obtains help as needed. Successfully removes valve assembly. All valve removal evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury.



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STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, fabricate a flange gasket from sheet material. Tool availability includes, adjustable gasket cutter, ball pein hammer, gasket hole punches, and scissors.	Fabricates a flange gasket from sheet material to include: a. inspects flange faces b. cleans flange faces by scraping and sanding as appropriate c. selects suitable gasket sheet material for the application d. marks and/or cuts outside diameter of flange gasket using the flange as a template, by using a rule and adjustable gasket cutter, by using a ball pein hammer, or by using an oil imprint as appropriate e. marks bolt holes by using the flange as a template, by using a ball pein hammer, or by using an oil imprint as appropriate f. cuts holes by using gasket hole punches e. marks and/or cuts inside diameter of flange gasket using the flange as a template, by using a rule and adjustable gasket cutter, by using a ball pein hammer, or by using an oil imprint as appropriate f. lines up, fits, and trims gasket as appropriate	Successfully fabricates flange gasket where all evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury. Finished product properly fits flange. Variation in technique; ie, use of flange as a template, use of an oil imprint, or the use of a ball pein hammer is permitted.

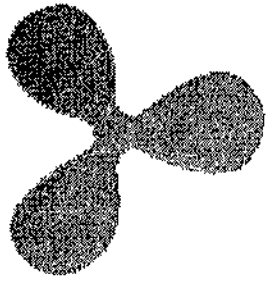

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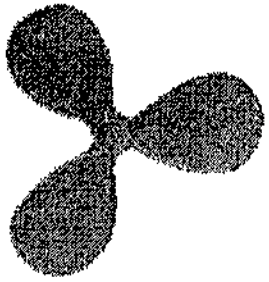
Table A-III/4

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, install a flanged valve assembly back into a flanged pipe line. Tool availability includes a mechanic's tool set, slings, shackles, chain fall, and tag lines.	Installs a flanged valve assembly back into a flanged pipe line to include: a. with appropriate rigging hoists valve assembly into place b. aligns valve assembly into place with aligning pins through strategically selected flange bolt holes c. inserts flange bolts through two bolt holes on either side near the bottom d. positions preformed ring gasket in place e. removes aligning pins and inserts remaining flange bolts insuring that flange gasket remains in proper alignment with flange faces f. snugs flange bolts using the criss-cross method to insure flange gaps are taken up evenly by tightening in several passes g. wrench tightens flange bolts using the criss-cross method h. applies final torque to flange bolts using the criss-cross method i. repeat steps (b) through (h) for opposite flange	Exercises good judgement with respect to support and rigging requirements. Obtains help as needed. Successfully installs valve assembly. All valve installation evolutions are performed in accordance with accepted shop safety practices, using the proper tools, and following all pertinent safety precautions to prevent personal injury. Care is taken to insure that the flanges are drawn up evenly and that the flange gaskets are properly aligned with the flange faces.



Specification of minimum standard of competence for ratings forming part of an engineering watch

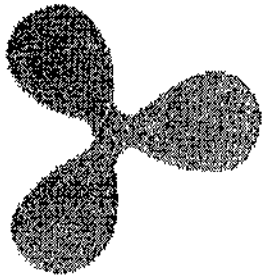
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside piping installation, place repaired piping system back in service.	Places repaired piping system back into service to include: a. Carefully inspects piping installation to insure system is properly closed b. Notifies and updates watch engineer of status of repairs and intent to place system back into service d. Reviews clearing tag out and lock out strategy with watch engineer or equivalent e. Seeks and gains permission from the watch engineer or equivalent to clear the system tag out/lock out in conformance with established procedure f. Completes the required paperwork and documentation g. Removes all associated warning tags h. Opens valves necessary to test system for leaks, if none: i. Places all system valves, breakers, and disconnect switches in normal position as directed by watch engineer j. Notifies and updates watch engineer of status of system as appropriate	Insures system is properly closed before attempt is made to place system back into servide. Consults appropriate vessel piping system schematics, electrical distribution diagrams, watch engineers, or first assistant engineer in developing an appropriate strategy to place system back into service. Changes no valve ot switch positions without the necessary permissions from the officer in charge of the engineering watch to clear system tag out/lock out. In clearing tags, only opens agreed upon valves to pressurize system for leak test purposes. Notifies watch engineer if system leaks. If ystem is tight restores system line-up as specified by the watch engineer. Keeps watch engineer informed of status of system to keep the watch engineer current in terms of operational status of plant.



Specification of minimum standard of competence for ratings forming part of an engineering watch

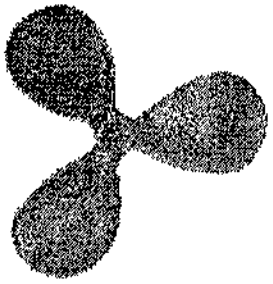
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside power plant, add oil to, remove oil from, and change the oil on an air compressor or small auxiliary diesel engine.	Adds oil to an air compressor or small auxiliary diesel engine to include: a. determines need to add oil b. obtains an adequate amount of proper oil by grade, type etc. c. removes filter cap or plug d. pours oil through oil filler cap or oil filler plug opening e. checks oil level and verifies that oil level bas been brought up to ,specified level f. replaces filler cap or plug Removes oil from an air compressor or small auxiliary diesel engine to include: a. determines need to remove oil b. obtains a suitable container to catch oil and places under crankcase drain c. loosens and backs off but does not remove oil drain plug d. allows oil to slowly drain into container e. periodically checks oil level and verifies that oil level bas been brought down to specified level f. tightens oil drain plug g. properly disposes of oil Changes the oil on an air compressor or small auxiliary diesel engine to include: a. insures oil has been brought up to normal operating temperature b. insures that the compressor or engine is properly isolated, locked out, and tagged out to prevent accidental startup c. follows removal of oil procedure above except that oil plug is completely removed to allow full flow d. replaces drain plug e. follows adding oil procedure above except the specified crankcase capacity for oil is added	Accurately determines oil sump level via dipstick to determine basis for adding or removing oil. For air compressors, the compressor should be shut down for this, and accidental start up prevented. If oil level is high, investigates reason for this. For small auxiliary diesel engines, determines whether dipstick markings are for a running or shutdown engine. All procedures are performed while conforming to local operating procedures and standard engineering practice, and pollution prevention regulations. Seeks clarification from local operating guide, technical manuals and engineering watch supervisors as appropriate. Observes all pertinent safety precautions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

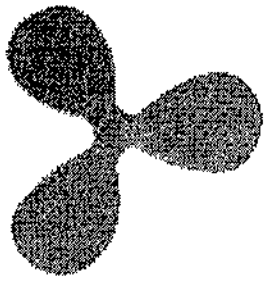
STCW95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside power plant, add grease to grease lubricated bearings with with zirc fittings or grease cups.	Add grease to a zirc fitting equipped grease lubricated bearing to include: a. determines from appropriate lubrication chart the type and grade of grease to be used b. obtains grease gun and appropriate hoses and connectors and charged with the proper grease cartridge c. removes zirc fitting protective covering if fitted d. wipes zirc fitting free of grease and dirt with a rag e. removes air from grease gun hose by slowly squeezing handle until grease starts to exit fitting f. attaches hose fitting to bearing zirc fitting g. slowly pumps in grease until grease just starts to appear at bearing lip seals h. removes hose fitting from bearing zirc fitting i. wipes zirc fitting free of grease with a rag j. replaces zirc fitting protective covering Add grease to a grease cup equipped grease lubricated bearing to include: a. determines from appropriate lubrication chart the type and grade of grease to be used b. obtains sufficient quantity of correct grease c. removes drain plug opposite grease cup and insures hole is free from hardened grease d. removes cap from grease cup e. wipes out grease cup with rag f. fills grease cup with grease g. installs cap onto grease cup forcing grease into bearing housing h. continue and repeat as necessary until grease begins to flow out drain hole i. wipes excess grease from bearing housing with a rag j. reinstalls drain plug	Identifies appropriate grease from lubrication charts or equipment technical manuals. Successfully adds grease to bearing housings fitted with zirc fittings, insuring that not too much grease is added or that not enough pressure is allowed to build up to dislodge the bearing lip seals. Successfully adds grease to bearing housings fitted with grease cups, insuring that not too much grease is added. Observes all pertinent safety precautions associated with rotating machinery to avoid personal injury.



Specification of minimum standard of competence for ratings forming part of an engineering watch

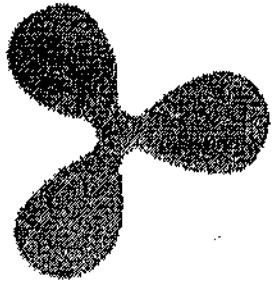
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside power plant, shift sea water duplex strainers.	Shifts and cleans sea water duplex strainers to include: a. ascertains the need for shifting and cleaning the duplex strainer b. fully positions selector handle to former idle element which is now on service. c. loosens idle strainer lid fasteners or hold down dogs as appropriate d. with fasteners or dogs still in place pry lid up to break free e. insures strainer housing is depressurized and that the selector plug valve is not leaking f. removes fasteners or positions dogs clear out of the way g. lifts up strainer lid and sets aside h. lifts up and removes strainer basket i. cleans strainer basket j. reinstalls strainer basket k. inspects housing and lid mating surfaces, scrapes and cleans, and replaces gasket as necessary l. places and aligns lid on top of strainer housing m. hand tightens bolts or snugs hold down dogs n. wrench tightens bolts or firmly tightens hold down dogs o. cracks strainer element selector handle towards idle strainer housing to slowly admit admit sea water and pressurize housing p. checks strainer housing for leaks q. repsoitions selector handle fully towards to strainer housing on service	Determines need for shifting and cleaning duplex sea water strainers when duplex strainer pressure drop exceeds ___psi. Successfully shifts and cleans duplex sea water strainer while conforming to local operating procedures and standard engineering practice. All pertinent safety precautions are observed to avoid personal injury and engineroom flooding. Takes appropriate corrective action if leaks are detected.



Specification of minimum standard of competence for ratings forming part of an engineering watch

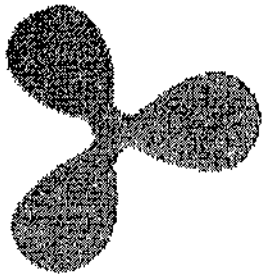
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside power plant, clean basket type sea water strainers.	Cleans simplex basket type sea water strainer to include: a. insures that the simplex sea water strainer is properly isolated, locked out and tagged out b. loosens strainer housing lid fasteners or hold down dogs as appropriate c. with fasteners or dogs still in place pry lid up to break free d. insures strainer housing is depressurized and that isolation valves are not leaking e. removes fasteners or positions dogs clear out of the way f. lifts up strainer lid and sets aside g. lifts up and removes strainer basket and sets aside h. Installs clean spare basket i. inspects housing and lid mating surfaces, scrapes and cleans, and replaces gasket as necessary j. places and aligns lid on top of strainer housing k. hand tightens bolts or snugs hold down dogs l. wrench tightens bolts or firmly tightens hold down dogs m. clears system tagout, unlocks valves, and cuts in water to strainer n. checks strainer housing for leaks o. places strainer back into service p. cleans original strainer basket and hangs as a spare	Determines need for cleaning basket type sea water strainer when pressure drop exceeds ___psi. Successfully cleans basket type sea water strainer while conforming to local operating procedures and standard engineering practice.All pertinent safety precautions are observed to avoid personal injury and engineroom flooding. Takes appropriate corrective action if leaks are detected.



Specification of minimum standard of competence for ratings forming part of an engineering watch

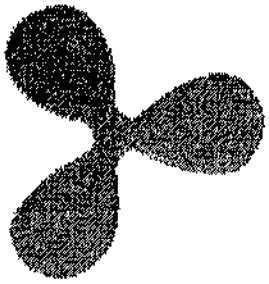
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside power plant, change spin-on and cartridge filters on a small auxiliary diesel engine.	Changes a spin-on filter on a small auxiliary diesel engine to include: a. predetermines the availability of the proper replacement filter and gasket before work is to begin b. insures that the engine is properly isolated, locked out and tagged out to prevent accidental startup c. obtains a suitable container to catch oil drippings and spin-on filter d. loosens oil filter with suitable filter strap wrench e. allows oil to drain into container f. removes spin-on filter assembly g. removes old oil gasket h. inspects gasket mating surfaces and wipes clean as necessary i. coats new gasket with clean oil and places gasket in appropriate groove m. fills filter with clean oil m. installs new filter hand tight n. properly disposes of old filter and oil Changes a cartridge filter eement on a small auxiliary diesel engine to include: a. predetermines the availability of the proper replacement filter and gaskets before work is to begin b. insures that the engine is properly isolated, locked out and tagged out to prevent accidental startup c. obtains a suitable container to catch oil drippings and cartridge filter element d. loosens oil filter housing bolt e. allows oil to drain into container f. removes oil filter housing bolt g. disassembles cartridge filter assembly removing cartridge element, housing gasket, element gasket and bolt gasket h. cleans oil filter housing i. reassembles filter assembly with new cartridge element and gaskets m. fills filter housing with clean oil n. installs filter housing via tightening housing bolt o. properly disposes of old filter element and oil	Successfully obtains the proper filters and gaskets. Insures that the engine is proerly isolated, tagged and locked out to prevent accidental startup. Successfully changes both spin-on and cartridge filters.All procedures are performed while conforming to local operating procedures and standard engineering practice, and pollution prevention regulations. Insures old oil and oily waste is properly disposed of. Seeks clarification from local operating guide, technical manuals and engineering watch supervisors as appropriate. Observes all pertinent safety precautions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

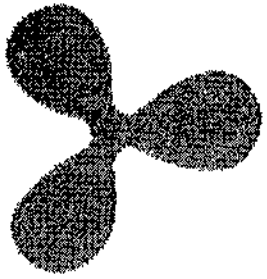
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitably equipped shoreside shop facility, perform basic metalworking skills. Tool availability shall include layout tools, machinist's layout dye, hacksaws, files, squares, measuring tools and instruments, punches, ball peen hammers, drill bit indexes, drill presses, machine tap and die sets, bench grinders, and abrasive cloth.	Performs basic metalworking skills in the fabrication of a mending plate to include: a. lays out rectangular plate as per drawing specifications on flat plate stock large enough to require trimming b. trims plate stock, allowing tolerance for finishing c. squares and finishes rectangular plate d. locates and punches for drilling the center of four corner holes as per drawing specifications e. drills pilot through holes of suitable size f. drills finish through holes g. taps drilled corner holes with machine threads as per drawing specifications h. sands and polishes finished product	Successfully fabricates mending plate as per drawing specifications conforming to all pertinent safe working practices with a particular emphasis on eye protection. The four sides of the rectangular plate are square and within 1/32" tolerance of specified dimensions. Holes are successfully located within 1/64" of specified dimensions and are drilled perpendicular to the plate surface. Threads are fabricated as specified and completely formed and yield a good fit with test bolts. Overall finish is good with minimal scratches.



Specification of minimum standard of competence for ratings forming part of an engineering watch

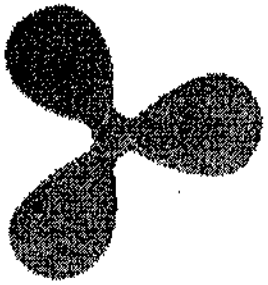
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, suitable shoreside power plant, or suitable mock-up, install new sections of thermal insulation and lagging.	Installs new sections of thermal insulation and lagging to include: a. removes and trims away damaged sections of old insulation to facilitate installation of new section b. cuts, fits, and installs preformed pipe insulation including applications for steam, hot oil, hot and cold water, chilled water, and refrigeration piping c. mixes and molds castable insulating cement around irregular piping system surfaces c. cuts, fits, and installs sheet insulation covering ventilation ductork, tanks, and engine exhaust stacks d. cuts , fits, and installs lagging materials including cloth, tape, sheet metal, and metallic braid e. anchors insulation and lagging including sewing, use of adhesives, insulating cement, and sealing compounds	Successfully removes and trims back damaged sections of insulation. Successfully cuts, fits, installs, and anchors new insulation and lagging for pipe, ventilation, and tanks while conforming to local operating procedures and standard engineering practice and observing all pertinent safety precautions. Takes note of any damaged insulation containing asbestos and does not attempt to repair, but instead informs first assistant or chief engineer of situation, as the ship's policy regarding handling of asbestos is to be strictly adhered to.



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside plant, replace and adjust the tension on drive belts.	Replaces and adjusts the tension on drive belts to include: a. determines the need for drive belt replacement b. predetermines the availability of the proper size and number of drive belts c. Insures that the system drive motor is properly isolated, locked out and tagged out d. loosens motor baseplate hold-down bolts and jacks motor in the direction to loosen the tension on the drive belts e. removes the drive belts f. installs the new drive belts g. jacks motor in the direction to tighten the tension on the drive belts h. checks tension of belts with a belt tension gauge i. tightens motor baseplate hold-down bolts when tension is proper j. clears tagout and lockout and places drive motor back into operation	Properly isolates, tags out and locks out affected drive motor to prevent accidental start up. Determines the need for belt replacement by inspecting the belts and checking for cracks, fraying, and broken cords. Selects the proper belts for replacement insuring that the replacement belts are a matched set. Successfully replaces and adjusts the drive belt tension while conforming to local operating procedures and standard engineering practice. Seeks clarification from technical manuals and engineering watch supervisors as appropriate.

Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

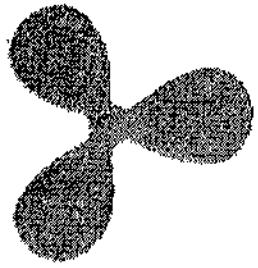
Function: Marine engineering at the support level

Table A-III/4

BASIC STEAM PROPULSION PLANT OPERATIONS PROFICIENCY GROUP

(Requires proficiency based practical demonstration)

1. Assist in preparing for lighting off a main boiler
2. Assist in lighting off a main boiler
3. Manually light off a main boiler
4. Manually maintain proper boiler water levels
5. Manually maintain proper boiler steam pressures
6. Assist in securing a main boiler
7. Assist in starting main turbines
8. Assist in warming up main turbines
9. Assist in operating main turbines during standby and maneuvering
10. Monitor and operate main turbines
11. Assist in securing main turbines
12. Assist in placing condensers and condensate systems into operation
13. Assist in securing condensers and condensate systems
14. Assist in placing feed systems into operation
15. Assist in securing feed systems
16. Assist in starting an SSTG turbine
17. Assist in securing an SSTG turbine
18. Assist in starting a feed pump turbine
19. Assist in securing a feed pump turbine
20. TRACE OUT AND DRAW ONE-LINE PIPING DIAGRAMS



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

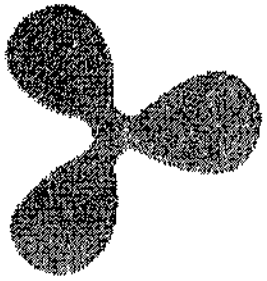
Function: Marine engineering at the support level

Table A-III/4

BASIC STEAM PROPULSION PLANT OPERATIONS PROFICIENCY GROUP, continued

(Requires proficiency based practical demonstration)

20.Monitor main boilers
21.Monitor auxiliary boilers
22.Monitor main condensate systems
23.Monitor main feed systems
24.Monitor auxiliary condensate and feed systems
25.Monitor fuel oil systems
26.Monitor forced draft systems
27.Monitor turbine-gear main lube oil systems
28.Monitor main circulating water systems
29.Monitor propulsion shafting and bearings
30.Monitor steam systems
31.Monitor condensate drain systems
32.Responds to high water level boiler casualty
33.Responds to low water level boiler casualty
34.Responds to boiler water level out of sight
35.Responds to an economizer fire
36.Monitor auxiliary diesel engines
37.Conduct machinery space rounds



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in preparing for lighting off a main boiler.	Inasmuch as the watch engineer is solely responsible for preparation for boiler light off and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the boiler. In a support role, assists the watch engineer in preparing for lighting off a main boiler to include: a. insures boiler is closed prior to filling with water (bottom blow and any header drains functional and closed, handhole and manhole plates secured) b. checks boiler water level gauge glass and pressure gauge root valves open c. checks air cock, superheater vents and superheater drains open d. lines up auxiliary feed system for filling boiler and secure when directed e. checks for water level appearing in gauge glass and report when this occurs f. lines up main feed system for filling boiler and secure when directed g. checks for water level one ot two inches in glass and report when this occurs h. checks for boiler leaks	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully informs the watch engineer when boiler is filled to a level where water just appears in the lower glass for testing auxiliary feed line and is one to two inches in the lower glass for testing the main feed line. Informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.

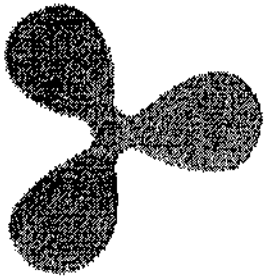


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Table A-III/4

Proficiency based practical demonstration

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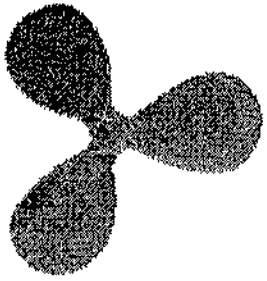
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in lighting off a main boiler.	Inasmuch as the watch engineer is solely responsible for boiler light off and insuring the proper sequential steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the boiler. In a support role, assists the watch engineer for lighting off an automatically fired main boiler to include: a. checks bottom blow, surface blow and any header drains closed and not leaking b. eases off and close steam stops c. checks auxillary and feed checks closed d. checks boiler water level gauge glass open then open and close gauge glass drain noting water movement in glass e. makes up atomizer with small sprayer plate and installs in register f. insures burner and root fuel valves closed g. lines up fuel oil system to recirculate through heater, check fuel oil temperature, and report when at proper temperature as stipulated by the watch engineer h. checks air damper and register doors open prior to pre-purging furnace I. opens burner and root valves on most centrally located burner prior to light off j. Inspects fire through peephole k. secures fuel oil recirculating line l. reports when boiler pressure rises to 15 to 20 psi and close air cock and throttle superheater drains m. monitors gauge glass and report if water level rises to top	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully informs the watch engineer if no movement is noted in the boiler water level gauge glass when drain is opened and closed. informs the watch engineer when the boiler pressure rises to 15 to 20 psi and when and if the water level rises to the top of the glass. Informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.



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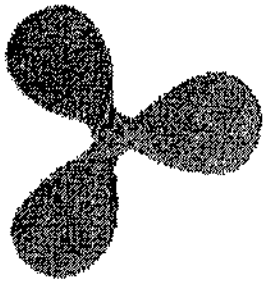
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator, manually light off a main boiler.	Manually lights off a main boiler to include: a. checks bottom blow, surface blow and any header drains closed and not leaking b. eases off and close steam stops c. checks auxiliary and feed checks closed d. checks boiler water level gauge glass open then open and close gauge glass drain noting water movement in glass e. makes up atomizer with small sprayer plate and installs in register f. insures burner and root fuel valves closed g. lines up fuel oil system to recirculate through heater, check fuel oil temperature, and report when at proper temperature as stipulated by the watch engineer h. adjusts fuel oil mpressure I. checks air damper and register doors j. prepurges furnace k. opens root valve on most centrally located burner l. lights torch m. Inserts torch through manual light off opening n. Stands clear of open register doors o. Holds torch near and just under atomizer tip p. cracks open burner valve q. checks for ignition r. opens burner valve wide when ignition occurs and fire stays lit (closes burner valve and purges furnace if ignition does not occur or if fire goes out) s. withdraws torch t. inspecsts fire through peephole u. securesfuel oil recirculating line v. checks periscope for smoke w. adjusts air damper for proper air-fuel ratio x. reports when boiler pressure rises to 15 to 20 psi and close air cock and throttle superheater drains y. monitors gauge glass and reports if water level rises to top	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully informs the watch engineer if no movement is noted in the boiler water level gauge glass when drain is opened and closed. Fuel pressure is properly set. Insures furnace is prepurged before attempting lightoff. Insures burner valve is only cracked on attempted lightoff. Closes burner valve promptly if ignition is not successfully achieved within a few seconds and purges furnace before another attempt is made. Once ignition has occurred, insures that the air damper is adjusted to obtain proper air-fuel ratio. Informs the watch engineer when the boiler pressure rises to 15 to 20 psi and when and if the water level rises to the top of the glass. Informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

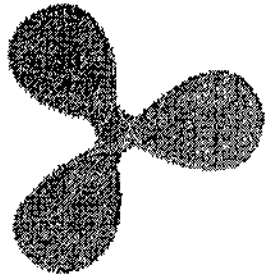
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in cutting in a main boiler.	Inasmuch as the watch engineer is solely responsible for cutting in main boilers and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the boiler. In a support role, assists the watch engineer in cutting in a main boiler to include: a. monitors water level and lower level to half a glass with the surface blow valve by opening the blowdown skin valve and then opening the surface blow valve b. opens the boiler main and auxiliary steam line drains c. monitors boiler pressure and report when 5 psi above the main steam header pressure d. opens bypass valve around the auxiliary steam stop to warm up and equalize pressure on either side e. observes auxiliary steam line drain and throttle drain when free of moisture and steam issues from drain f. observes pressures on either side of auxiliary steam stop and slowly open when pressures are equalized g. closes the auxiliary steam bypass valve and the auxiliary steam line drain valve h. closes superheater vent valve I. repeatssteps d through g for the main steam stop valve	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Informs the watch engineer when the water level has been successfully lowered to half a glass via the surface blow line. Informs the watch engineer when the boiler pressure exceeds line pressure by 5 psi. Successfully informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.



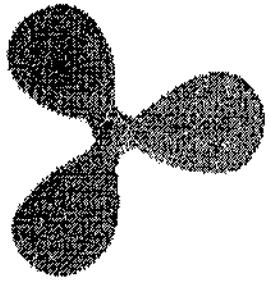
Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4 **Proficiency based practical demonstration**

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures. For keping a boiler watch: maintains correct water levels and steam pressures. Safely operates boilers.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in maintaining proper boiler water levels in the main boilers.	Inasmuch as the watch engineer is solely responsible for maintaining proper boiler water levels and that these levels are normally maintained automatically by the automatic feedwater regulator, the rating forming part of the engineering watch merely provides operational support should it be desired to maintain these levels manually. In a support role, assists the watch engineer in maintaining proper boiler water levels to include as appropriate: a. with the feedwater regulator mode transfer control mechanism in the manual mode, adjusts the manual air load pilot pressure to maintain the boiler water level at or very near the normal level at half a glass OR b. with the feedwater regulator bypassed or jacked open, adjusts the degree of opening of the main or auxiliary feed check stop valve to maintain the boiler water level at or very near the normal level at half a glass	Correctly maintains the boiler water level within __ inches of normal at half a glass by whichever method is deemed appropriate under the conditions of the assessment. Seeks clarification from the watch engineer if maintained level paramater requirements are not initially clearly understood. Responds to an increased steam demand with an increase in feed even though the increase in demand causes a temporary "swell" and rise in water level. Responds to a decreased steam demand with a decrease in feed even though the decrease in demand causes a temporary "shrink" and drop in water level.



Specification of minimum standard of competence for ratings forming part of an engineering watch

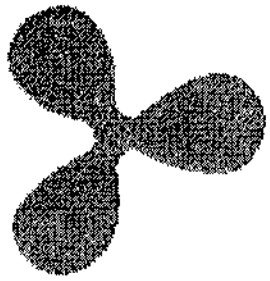
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures. For keping a boiler watch: maintains correct water levels and steam pressures. Safely operates boilers.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in maintaining proper steam pressures on the main boilers.	Inasmuch as the watch engineer is solely responsible for maintaining proper boiler steam pressures and that these levels are normally maintained automatically by the automatic combustion control system, the rating forming part of the engineering watch merely provides operational support should it be deisred to maintain these pressures manually. In a support role, assists the watch engineer in maintaining proper boiler steam pressures to include as appropriate: a. with the automatic combustion control system disabled, manually adjusts the firing rate to maintain the boiler steam at or very near the normal pressure by one of the ollowing methods: 1. changing the fuel pressure and degree of air damper opening 2. changing the number of burners in use and degree of air damper opening b. adjusts the air fuel ratio as necessary to attain acceptable combustion efficiency	Correctly maintains the boiler steam pressure within __ psi of normal by whichever method is deemed appropriate under the conditions of the assessment. Seeks clarification from the watch engineer if maintained pressure paramater requirements are not initially clearly understood. Responds to an increased steam demand and subsequent drop in steam pressure with an increase in air delivery followed by an increase in fuel delivery. Responds to a decreased steam demand and subsequent rise in steam pressure with a decrease in fuel delivery followed by a decrease in air delivery. Checks periscope for stack condition to insure proper combustion efficiency and a light brown haze.



Specification of minimum standard of competence for ratings forming part of an engineering watch

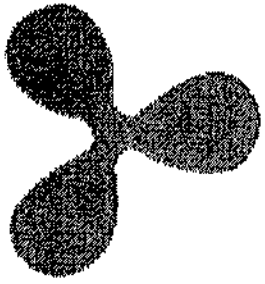
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in securing a main boiler.	Inasmuch as the watch engineer is solely responsible for securing boilers and insuring the proper sequential steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the boiler. In a support role, assists the watch engineer in securing a main boiler to include: a. cracks open the supoerheater vent valve b. secures the fuel to each burner individually by closing the burner and root valves while closing the air register doors to each burner c. secures air supply to boiler windbox by closing damper d. monitors boiler pressure and report when pressure drops below line pressure e. closes auxiliary steam and main steam stop valves f. removes, cleans, and stores atomizers g. monitors water level and continue to feed water as necessary to maintain a normal water level h. monitors steam pressure and report when pressure drops to approximately 15 psi. i. opens the air cock	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully informs the watch engineer when the boiler pressure drops below line pressure. Successfully informs the watch engineer when the boiler pressure drops to approximately 15 psi. Informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

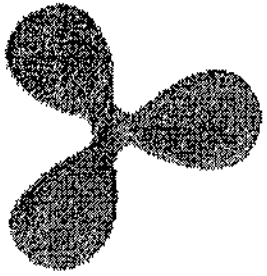
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in starting a main turbine.	Inasmuch as the watch engineer is solely responsible for starting a propulsion turbine and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the main turbine. In a support role, assists the watch engineer in starting a main turbine to include: a. opens main steam line drains and turbine casing drains b. eases off all main steam valves at turbine c. checks open root valves to pressure and vacuum gauges d. checks main lube oil tank level sufficiently high to operate e. checks oil temperature and report if less than 90 degrees F f. lines up main circulating water system g. checks oil pressure at all turbine bearings and report if insufficient h. opens recirc line from DFT back to main to main condenser i. cracks open main steam stop and warms main steam line j. cuts in second stage of air ejector k. checks main condenser vacuum and reports when in a vacuum l. cuts in gland sealing steam m. cracks open maneuvering valve to roll turbine n. listens for unusual sounds or rubbing and reports if heard o. monitors main condenser vacuum and reports if deviates significantly from approximately 10 " Hg	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully informs the watch engineer if lube oil tank has an unsufficient level to operate and bearing lube oil pressure is inadequate as specified by the watch engineer. Successfully informs the watch engineer when the main condenser begins to pull into a vacuum once second stage air ejector is cut in and informs the watch engineer if the main condenser vacuum deviates significantly from 10 " Hg or as specified by the watch engineer. Informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

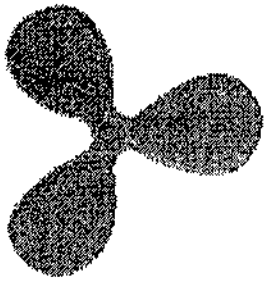
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in warming up a main turbine.	Inasmuch as the watch engineer is solely responsible for warming up a propulsion turbine and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the main turbine. In a support role, assists the watch engineer in warming up a main turbine to include: a. alternately opens the ahead and astern maneuvering valves to roll the turbine slowly alternately in the ahead and astern directions b. cuts in the first stage air ejector c. monitors the main condenser vacuum and reports when normal d. cuts in cooling water to main lube oil cooler e. monitors main lube oil temperature leaving main lube oil cooler f. throttles sea water flow to maintain proper lube oil temperature leaving the lube oil cooler	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully informs the watch engineer when the main condenser vacuum is adequate as specified by the watch engineer. Successfully maintains a lube oil temperature leaving the lube oil cooler of 110 to 120 degrees F or as specified by the watch engineer. Informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

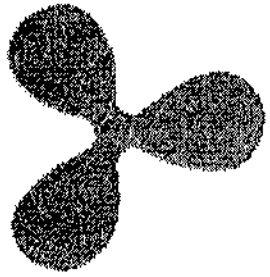
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in operating the main turbines during standby and manuevering.	Inasmuch as the watch engineer is solely responsible for operating a propulsion turbine during standby and maneuvering and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the main turbine. In a support role, assists the watch engineer in operating a main turbine during standby and maneuvering to include: a. alternately opens the ahead and astern maneuvering valves to roll the turbine slowly alternately in the ahead and astern directions during standby b. opens recirculating line from DFT to main condenser to main adequate condensate flow through the air ejector condensers c. monitors main lube oil temperature leaving main lube oil cooler d. throttles sea water flow to maintain proper lube oil temperature leaving the lube oil cooler	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully maintains a lube oil temperature leaving the lube oil cooler of 110 to 120 degrees F or as specified by the watch engineer. Informs the watch engineer of any leaks or malfunctioning valves. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

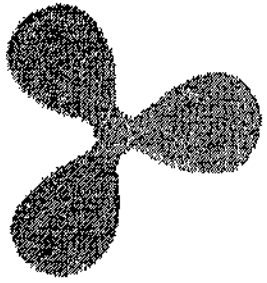
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring and operating the main turbines while answering bells underway as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Inasmuch as the watch engineer is solely responsible for monitoring and operating a propulsion turbine underway while answering bells and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the main turbine. In a support role, assiststhe watch engineer in monitoring and operating a main turbine underway while answering bells to include: a. closes recirculating line from DFT to main condenser b. closes all main steam line and turbine casing drains c. monitors main lube oil temperature entering and leaving the main lube oil cooler d. throttles sea water flow to maintain proper lube oil temperature leaving the lube oil cooler e. monitors the main lube oil tank level or condition of overflow as appropriate f. monitors the lube oil pressure available at the bearings g. monitors steam supply pressure gland sealing steam pressure and main condenser vacuum	Monitors main propulsion turbines during the course of machinery space rounds. Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Successfully maintains a lube oil temperature leaving the lube oil cooler of 110 to 120 degrees F or as specified by the watch engineer. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Informs the watch engineer of any out of specification parameters. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

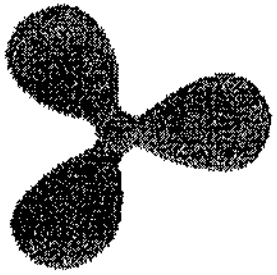
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in securing the main turbines.	Inasmuch as the watch engineer is solely responsible for securing a propulsion turbine and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the main turbine. In a support role, assists the watch engineer in securing a turbine to include: a. secures the air ejectors b. closes of steam supply to gland sealing steam c. closes main steam stop valve d. opens all main steam line and turbine casing drains e. engages the jacking gear	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Reports any unusual or unsafe conditions.



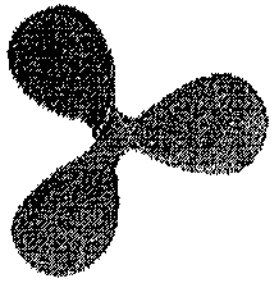
Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4 **Proficiency based practical demonstration**

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in placing the main condensers and condensate systems of a steam propulsion plant into operation.	Inasmuch as the watch engineer is solely responsible for placing the main condenser and main condensate system into operation and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the lower level of the engine room. In a support role, assists the watch engineer in placing the main condenser and main condensate system into operation to include: a. lines up main circulating sea water system to circulate water through the main condenser b. cuts in air ejectors to raise condenser vacuum c. lines up main condensate system for recirculation from the DFT back to the main condenser or for normal operation as required d. lines up make-up feed system to take a suction on a make-up feed tank via vacuum drag as required	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Reports any unusual or unsafe conditions.



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Function: Marine engineering at the support level

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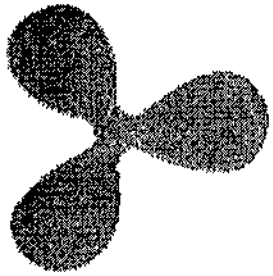
Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in the securing of the main condensers and condensate systems of a steam propulsion plant.	Inasmuch as the watch engineer is solely responsible for securing the main condenser and main condensate system and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the lower level of the engine room. In a support role, assists the watch engineer in securing the main condenser and main condensate system to include: a. closes valves associated with circulating sea water system b. secures the main air ejectors c. lines up main condensate system for recirculation from the DFT back to the main condenser d. secures valves associated with main condensate system	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Reports any unusual or unsafe conditions.



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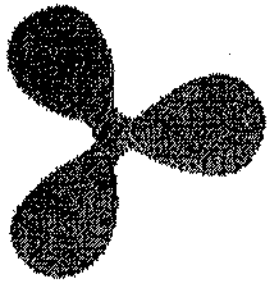
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in placing the feed system of a steam propulsion plant into operation.	Inasmuch as the watch engineer is solely responsible for placing the main feed system into operation and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps in the engine room. In a support role, assists the watch engineer in placing the feed system into operation to include: a. lines up make-up feed system to add water to the dearating feed tank b. opens dearating feed tank vent c. cuts in auxiliary exhaust steam to dearating feed tank d. lines up feed feed pump to take a suction on the dearating feed tank and to recirculate back to the dearating feed tank e. cuts in high pressure drains to the dearating feed tank f. lines up feed pump to feed the feed line to a steaming boiler	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Heating of and dearation of feed water in the dearating feed tank is to be accomplished very gradually, therefore changes in heating steam flow and feed recirculating flow should be accomplished in small increments. Reports any unusual or unsafe conditions.



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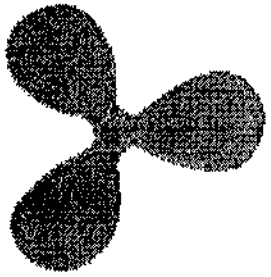
STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in securing the feed system of a steam propulsion plant.	Inasmuch as the watch engineer is solely responsible for securing the main feed system and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps in the engine room. In a support role, assists the watch engineer in securing the feed system to include: a. secures feed line to boiler b. lines up feed feed to recirculate back to the dearating feed tank c. closes high pressure drains to the dearating feed tank d. secures auxiliary exhaust steam to the dearating feed tank e. closes dearating feed tank vent f. secures feed recirculation line back to the dearating feed tank and secures feed pump	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Reports any unusual or unsafe conditions.



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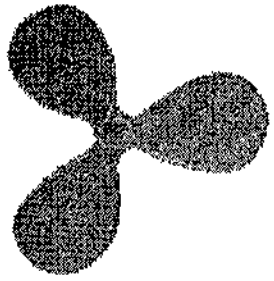
Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in starting a ship's service turbogenerator turbine.	Inasmuch as the watch engineer is solely responsible for starting an SSTG turbine and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the SSTG turbine. In a support role, assists the watch engineer or equivalent in starting a ship's service turbogenerator turbine to include: a. checks lube oil sump level and adds oil as necessary b. opens steam line drains and turbine casing drains c. lines up auxiliary circulating water system for auxiliary condenser d. cuts in auxiliary air ejectors d. cuts in gland sealing steam e. operates hand oil pump and flood all bearings with oil f. opens throttle valve g. closes steam line drains and turbine casing drains	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. If upon opening the throttle valve, immediately recloses if violent vibration or unusual rubbing noises do occur. The SSTG turbine requires no warming, and as such the turbine should be brought up to speed within two minutes of cutting in gland sealing steam. Assists watch engineer in accomplishing this. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

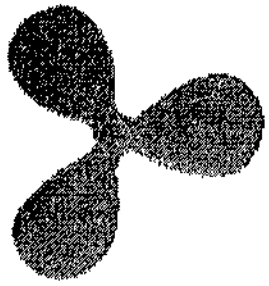
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in securing an SSTG turbine.	Inasmuch as the watch engineer is solely responsible for securing an SSTG turbine and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the SSTG turbine. In a support role, assists the watch engineer in securing an SSTG turbine to include: a. secures the auxiliary air ejectors b. closes steam supply to gland sealing steam c. closes main steam stop valve d. opens all main steam line and turbine casing drains e. secures auxiliary circulating water system	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

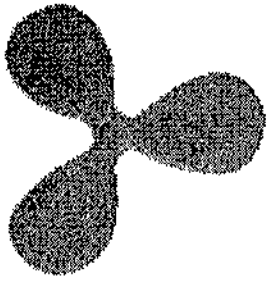
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in starting a feed pump turbine.	Inasmuch as the watch engineer is solely responsible for starting a feed pump turbine and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the feed pump turbine. In a support role, assists the watch engineer or equivalent in starting a feed pump turbine to include: a. Opens steam line drains and turbine casing drains b. lines up bearing cooling water if so equipped c. closes turbine casing drain d. opens turbine exhaust e. opens throttle valve and warms turbine f. observe oil rings if so equipped or observe oil pressure if an oil pump is fitted	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. If upon opening the throttle valve, immediately recloses if clicking or unusual rubbing noises do occur. Reports any unusual or unsafe conditions.



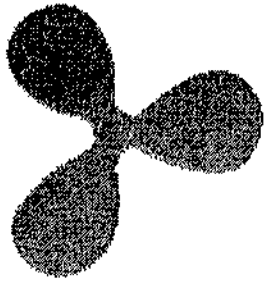
Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4 **Proficiency based practical demonstration**

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in securing a feed pump turbine.	Inasmuch as the watch engineer is solely responsible for securing a feed pump turbine and insuring the proper steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the feed pump turbine. In a support role, assists the watch engineer or equivalent in securing a feed pump turbine to include: a. closes steam stop valve b. opens all steam line and turbine casing drains c. closes turbine exhaust valve d. secures bearing cooling water if so equipped	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

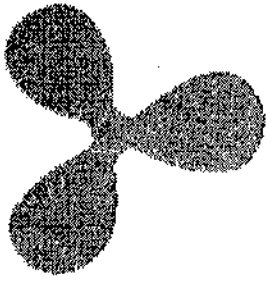
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable steam plant simulator, monitor a main propulsion boiler.	Monitors main propulsion boilers to include: a. checks plant operational mode status. b. checks main boiler steam drum pressure. c. checks master controller pilot air pressure d. checks main boiler water level. e. checks boiler feed line pressure. f. checks boiler feed line temperature. g. checks superheater outlet temperature. h. checks superheater inlet pressure h. checks superheater outlet pressure i. checks fuel manifold supply or return pressure j. checks fuel oil supply temperature k. checks fuel pressure regulator pilot air pressure l. checks forced draft damper position m. checks air volume regulator pilot air pressure n. checks windbox/draft air pressure o. checks flame condition through peephole. l. checks exhaust stack temperature. m. observes stack gas via periscope n. checks stack gas analyzers o. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main propulsion boilers during the course of machinery space rounds. Correctly determines main propulsion boiler pressures and water levels, feed line pressures and temperatures, superheater pressures ands temperatures, fuel pressures and temperatures, windbox and forced draft pressures, automatic combustion control device pilot air pressures, and stack gas concentrations. Through peep hole checks condition of flame, evidence of clinkers, or fuel accumulations on the furnace floor. Reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Checks for fuel leaks, air leaks and any waterside leaks. Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Sputtering or pulsating fires and a flame condition other than brilliant golden yellow are reported to the watch engineer. Any persistent stack condition other than a light brown haze is reported to the watch engineer. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

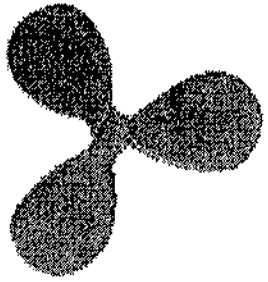
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating ship, school training vessel, or suitable engine room simulator and in a support role, assist the watch engineer or equivalent in monitoring auxiliary boilers as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors auxiliary boilers to include: a. checks plant operational mode status. b. checks auxiliary boiler steam pressure. c. checks auxiliary boiler water level. d. checks boiler feed pump discharge pressure. e. checks condensate return inspection tank level. f. checks feedwater hotwell level. g. checks make-up feed pump discharge pressure. h. checks make-up feed tank level. i. checks burner fuel pump discharge pressure. j. checks forced draft damper position. k. checks flame condition through peephole. l. checks exhaust stack temperature. m. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of auxiliary boiler operation, the boiler may not be fired or the feed pump may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors auxiliary boilers during the course of machinery space rounds. Correctly determines auxiliary boiler pressures and water levels, feed pump and make-up feed pump discharge pressures, condensate return, hotwell, and make-up feed tank levels. Corectly determines fuel pressure and air damper position and checks condition of flame. Reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Sputtering or pulsating fires and a flame condition other than brilliant golden yellow are reported to the watch engineer. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

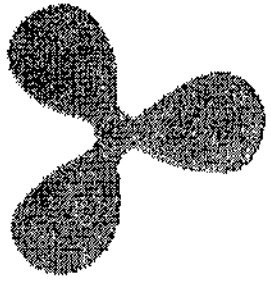
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the main condensate systems of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces	Monitors main condensate system to include: a. checks main condenser hot well level b. checks main condenser hot well condensate temperature c. checks main condenser vacuum d. checks main condensate pump suction and discharge pressures e. checks main condensate pump packing gland for proper leakoff or mechanical seal for no leakage as appropriate f. checks condensate temperatures leaving the inter condenser, after condenser, drains cooler, first stage heater, gland exhaust condenser, and any other regenerative heat exchangers as appropriate g. checks inter condenser and after condenser shell vacuums h. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main condensate systems during the course of machinery space rounds. Correctly determines main condensate system pressures, vacuums, temperatures, levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

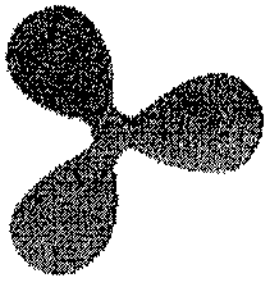
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping. procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equialent in monitoring the feed system of a steam propulsion plant with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main feed system to include: a. checks dearating feed tank level b. checks dearating feed tank feed water temperature c. checks dearating feed tank pressure d. checks main feed pump suction and discharge pressures and also pressures for feed booster pump if present e. checks main feed pump packing gland for proper leakoff or mechanical seal for no leakage as appropriate and also shaft seal inspection for feed booster pump if present f. checks main feed temperatures leaving the third stage feed heater, and any other regenerative heat exchangers as appropriate g. checks automatic feedwater regulator position h. checks boiler feed pressure i. checks boiler feed temperature j. checks boiler steam drum levels k. checks boiler steam pressures l. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main feed systems during the course of machinery space rounds. Correctly determines main feed system and boiler pressures, temperatures, and levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

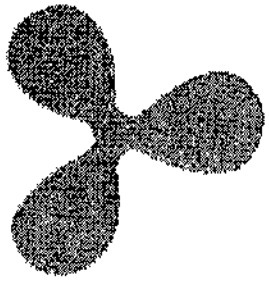
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the auxiliary condensers, auxiliary condensate and auxiliary feed systems of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors auxiliary condensers, condensate and feed systems to include: a. checks auxiliary condenser vacuum b. checks auxiliary condenser hot well level c. checks auxiliary condensate pump suction and discharge pressures d. checks auxiliary condensate pump packing gland for proper leakoff or mechanical seal for leakage e. checks auxiliary condenser hot well temperature f. checks auxiliary inter and after condenser shell vacuums g. checks auxiliary condensate temperatures leaving the auxiliary inter and after condensers h. checks dearating feed tank level i. checks dearating feed tank feedwater temperature j. checks dearating feed tank pressure k. checks auxiliary/emergency feed pump suction and discharge pressures l. checks auxiliary feed line temperature m. checks boiler steam drum level n. checks boiler pressure o. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors auxiliary condensers and auxiliary condensate and feed systems during the course of machinery space rounds. Correctly determines auxiliary condenser, auxiliary condensate and feed system and boiler pressures, temperatures, and levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

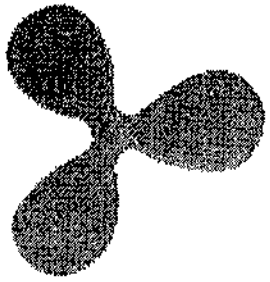
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the fuel oil service system of a main propulsion steam plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors fuel oil service system to include: a. checks plant operational mode status. b. checks fuel oil settling and fuel oil service tank levels c. checks suction and discharge pressures for fuel oil service pump. d. checks differential pressure across fuel oil service strainers and filters. e. checks fuel oil temperatures entering and leaving fuel oil heater g. takes supply and return fuel oil meter readings. h. checks fuel oil service pump shaft seal for leakage. i. checks fuel oil header pressure at supply manifold and/or return manifold as appropriate. j. checks fuel pressure regulator pilot air pressure k. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors fuel oil service systems during the course of machinery space rounds. Correctly determines fuel oil system pressures, temperatures, meter readings, and levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



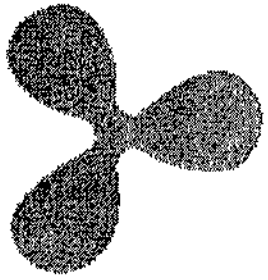
Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4 Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the forced draft system of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors forced draft system to include: a. checks plant operational mode status. b. checks forced draft fan damper and air regulator position. c. checks air register doors wide open. d. checks air damper linkage from air positioner for freedom from binding. e. checks boiler windbox pressure f. checks furnace draft pressure. g. checks windbox air temperature. h. checks air volume regulator air pilot pressure. i. checks for any unusual conditions. threatening the operational integrity of the plant or personal safety.	Monitors forced draft systems during the course of machinery space rounds. Correctly determines forced draft system pressures, temperatures, and various positions and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

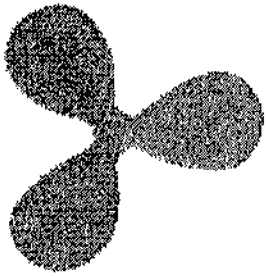
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a suppoprt role, assist the watch engineer or equivalent in monitoring the main lube oil system of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main lube oil system to include: a. checks plant operational mode status. b. checks main lube oil sump, and overflow tank levels as appropriate. c. checks suction and discharge pressures for main lube oil pump. d. checks differential pressure across main lube oil strainers. e. checks lube oil entering and leaving lube oil cooler temperatures as appropriate. f. checks main lube oil pump shaft seals for leakage. g. checks oil flow at spinners, gravity overflow tank and any other viewing glasses. h. checks oil pressures at lube oil supply header and at remote bearing as appropriate. i. checks temperatures entering and leaving turbine and reduction gear bearings. f. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors turbine-gear main lube oil systems during the course of machinery space rounds. Correctly determines main lube oil, system pressures, temperatures, levels, and flow conditions as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

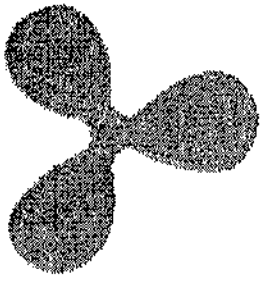
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer in monitoring the sea water circulating systems of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main sea water circulating system to include: a. checks plant operational mode status. b. checks sea water cooling pump suction and discharge pressures. c. checks sea suction strainer pressure drop. e. checks sea water injection temperature. f. checks sea water temperatures leaving the following heat exchangers as appropriate and available: main condenser and main lube oil cooler g. checks sea water cooling pump packing gland for proper leakoff or mechanical seal for any leakage as appropriate. f. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main sea water circulating systems during the course of machinery space rounds. Correctly determines sea water cooling system pressures and temperatures as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

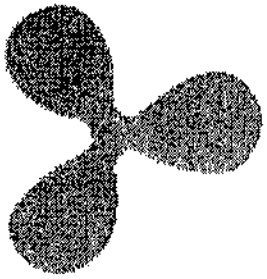
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the propulsion shafting of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion shafting and bearings to include: a. checks all line shaft bearing sump oil levels b. checks all line shaft bearing oil temperatures c. checks independent thrust bearing sump level where appropriate d. checks independent thrust bearing lube oil sump temperature where appropriate d. checks independent thrust bearing lube oil cooler inlet and outlet temperatures where appropriate e. checks independent thrust bearing lube oil supply pressure where appropriate f. checks independent thrust bearing gravity head tank level where appropriate g. checks water lubricated stern tube stuffing box for proper leak-off where appropriate h. checks oil lubricated stern tube lube sump tank level where appropriate i. checks oil lubricated stern tube lube oil supply pressure where apprpriate j. checks oil lubricated stern tube oil temperatures where appropriate k. checks oil lubricated stern tube inboard shaft seal for leakage if appropriate	Monitors propulsion shafting and bearings during the course of machinery space rounds. Successfully determines line shaft bearing, independent thrust bearing, and stern tube bearing oil levels, temperatures, and pressures as appropriate to the installation. Some performance measures will not apply to some shipboard installations. Seeks clarification from operating guides, operating instructions, technical manuals, engineering watch supervisors, when unsure of normal parameter ranges. Reports any out of specification parameters and any unusual or unsafe conditions. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.



Specification of minimum standard of competence for ratings forming part of an engineering watch

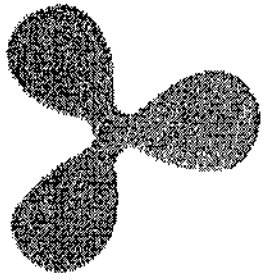
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the steam systems of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors steam systems to include: a. checks main (superheated) steam system pressure b. checks main (superheated) steam system temperature c. checks auxiliary (saturated or desuperheated) steam system pressure d. checks various reduced pressure auxiliary steam system pressures: for example, steam supplying air ejector and other similar auxiliaries; steam supplying fuel oil heaters, fuel oil storage, fuel oil settling, and fuel oil service tank heating coils and other similar auxiliaries e. checks auxiliary exaust steam system pressure f. checks various steam system piping for leaks	Monitors steam systems during the course of machinery space rounds. Correctly determines various steam system pressures and temperatures as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



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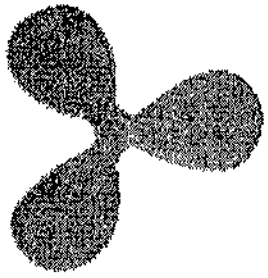
Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the condensate drain systems of a steam propulsion plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors condensate drain systems to include: a. checks atmospheric drains tank level b. checks operating status of atmospheric drains pump c. checks atmospheric drains pump discharge pressure d. checks atmospheric drains pump packing gland for proper leakoff or mechanical seal for leakage as appropriate e. checks for excessive issuance of steam from the atmospheric drains tank vent f. checks conmtaminated drains tank level g. checks contaminated drains tank for evidence of oil contamination h. checks contaminated drains pump discharge pressure i. checks contaminated drains pump packing gland for proper leakoff or mechanical seal for leakage as appropriate j. checks for excessive issuance of steam from the contaminated drains tank vent Note: due to the cyclic nature of atmospheric and contaminated condensate drain pumps operation, the pumps may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors condensate drain systems during the course of machinery space rounds. Correctly determines condensate drain system levels and pressures as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

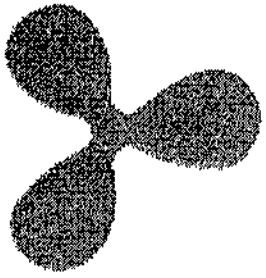
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator, takes appropriate action in response to a high water level boiler casualty.	Inasmuch as the watch engineer is solely responsible for taking appropriate action is response to a high water level boiler casualty, the rating forming part of the engineering watch may be called upon to provide essential operational support under conditions of duress. Upon direction and in a support role, assists the watch engineer in responding to a high water level boiler casualty to include: a. shuts off the oil supply to all burners via the quick closing valves b. closes the feed check valve c. opens superheater vent valve d. closes boiler main steam stop valve e. closes all burner register doors f. secures forced draft fan g. opens blowdown skin valve and surface blowdown valve h. monitors water level in sight glass i. closes surface blow valve and skin valve when boiler level falls to normal j. opens superheater drains to expel any carry over	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Informs the watch engineer when the water level has been successfully brought to a normal level via the surface blow line. Informs the watch engineer when superheater drains no longer issue moisture.



Specification of minimum standard of competence for ratings forming part of an engineering watch

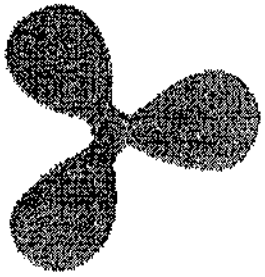
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator, takes appropriate action in response to a low water level boiler casualty.	Inasmuch as the watch engineer is solely responsible for taking appropriate action is response to a low water level boiler casualty, the rating forming part of the engineering watch may be called upon to provide essential operational support under conditions of duress. Upon direction and in a support role, assists the watch engineer in responding to a low water level boiler casualty to include: a. shuts off the oil supply to all burners via the quick closing valves b. closes the feed check valve c. opens superheater vent valve d. closes boiler main steam stop valve e. cautiously opens the safety valves by hand f. gradually relieves the boiler pressure g. closes all burner register doors h. secures forced draft fan	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Under no circumstances is water to be introduced into the boiler as the boiler must be allowed to cool very gradually.



Specification of minimum standard of competence for ratings forming part of an engineering watch

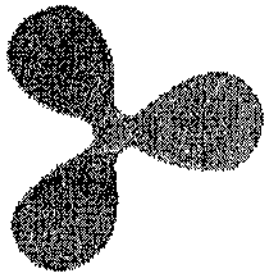
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator, takes appropriate action in response to a boiler water level out of sight casualty.	Inasmuch as the watch engineer is solely responsible for taking appropriate action is response to a boiler water level out of sight casualty, the rating forming part of the engineering watch may be called upon to provide essential operational support under conditions of duress. Upon direction and in a support role, assists the watch engineer in responding to a boiler water level out of sight casualty to include: a. shuts off the oil supply to all burners via the quick closing valves b. closes the feed check valve c. opens superheater vent valve d. closes boiler main steam stop valve e. blows down the boiler water gauge glass to determine whether the boiler is full or empty IF EMPTY f. cautiously opens the safety valves by hand and gradually relieves boiler pressure g. closes all burner register air doors and secures forced draft fan IF FULL f. closes all burner register doors and secures forced draft fan g. opens surface blow valve to restore a normal level h. opens superheater drains to drain any moisture carry over.	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. If the water gauge glass is determined to be full, informs the watch engineer when the water level has been successfully brought to a normal level via the surface blow line. Informs the watch engineer when superheater drains no longer issue moisture. If the water gauge glass is determined to be empty, under no circumstances is water to be introduced into the boiler as the boiler must be allowed to cool very gradually.



Specification of minimum standard of competence for ratings forming part of an engineering watch

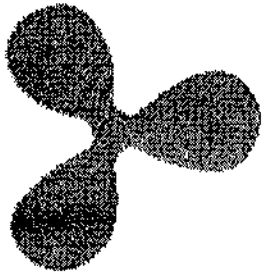
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures	Given an operating steamship, steam propelled school training vessel, suitable shoreside steam plant, or suitable engine room steam plant simulator, takes appropriate action in response to a boiler economizer fire.	Inasmuch as the watch engineer is solely responsible for taking appropriate action is response to a boiler economizer fire, the rating forming part of the engineering watch may be called upon to provide essential operational support under conditions of duress. Upon direction and in a support role, assists the watch engineer in responding to a boiler economizer fire to include: a. shuts off the oil supply to all burners via the quick closing valves b. closes all burner register doors c. secures forced draft fan d. closes boiler main steam stop valve e. opens superheater vent valve f. opens blowdown skin valve and surface blowdown valve to prevent boiler from over-filling g. operates steam soot blowers in the economizer area h. opens an uptake door above the economizer i. discharges CO_2 fire extinguisher into the uptake to extinguish fire	Correctly performs individual tasks as verbally directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood.



Specification of minimum standard of competence for ratings forming part of an engineering watch

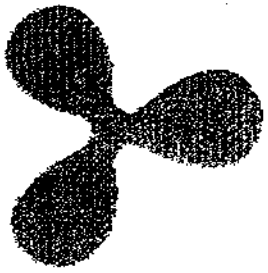
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating ship, school training vessel, or suitable engine room simulator, conduct machinery space rounds as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Conducts machinery space rounds to include: a. inspects, monitors, and checks system parameters for all auxiliary systems and machinery b. inspects, monitors, and checks system parameters for all steam propulsion machinery as applicable c. inspects, monitors, and checks system parameters for all motor propulsion machinery as applicable d. inspects bilges, pumping as necessary e. checks machinery spaces for all signs of fire, flooding, and electric shock hazard f. wipes up all oil accumulations g. inspects all systems and machinery and checks for all signs of piping system and machinery leakage h. monitors all applicable strainer and filter pressure drops and shifts and cleans as indicated i. checks electric motors and machinery bearings for signs of overheating j. investigates any abnormal sounds, vibrations, odors, or visual cues k. checks for any gear adrift or machinery guards not in place l. checks all conventionally packed pumps for proper stuffing box packing leak-off rates and pumps fitted with mechanical seals for leakage m. takes up on valve stuffing boxes as necessary to stop stem to bonnet leaks n. checks for any abnormal, unusual, or unsafe conditions threatening personal safety, engineering plant or vessel integrity	Completes machinery spaces rounds at least on an hourly basis. Records any parameters as requested by the watch engineer. Assists the watch engineer in comparing parameter readings taken on location at the equipment to those readings taken remotely from the control room operating console. Reports any out of specification parameters.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Keeps oil drippings wiped up and keeps decks, and structures free of oil accumulations. Keeps bilges pumped. Makes use of tactile sense in checking motors and bearings for overheat conditions. Promptly reports any unusual or unsafe conditions. Keeps the watch engineer informed of whereabouts.



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Understand orders and be understood in matters relevant to watchkeeping duties: Properly uses terms used in machinery spaces and names of machinery and equipment.	Given an operating steam ship, steam propelled school training vessel, or suitable shoreside piping systems and machinery arrangements comparable to shipboard steam propulsion plant systems, trace out and draw one-line piping system schematic diagrams for shipboard steam propulsion plant systems and machinery.	Trace out and draw one-line piping system schematic diagrams for shipboard steam propulsion plant systems to include: a. main steam b. auxiliary steam c. auxiliary exhaust steam d. atmospheric condensate drains e. contaminated condensate drains f. main feed g. main condensate h. gland sealing steam i. main circulating sea water j. turbine-gear main lube oil k. fuel oil service l. make-up reserve feed m. main boiler external arrangement n. auxiliary boiler external arrangement o. main turbine, reduction gear, and propulsion shafting arrangement p. main condenser external arrangement q. main ejector arrangement r. dearating feed tank external arrangement	Completed drawing is an accurate and logical representation of the actual installation, using the correct symbols for the various piping system components. Components to be included in each drawing of the drawing set include only as as applicable for the pertinent system: sea suctions, overboards, pumps, air ejectors, vented tanks, pressure vessels, manually operated and power actuated valves, manifolds, strainers and filters, steam traps, and heat exchangers. Propulsion machinery arrangement drawings accurately represent machinery layout and individual component arrangements accurately represent the layout of all external piping connections.

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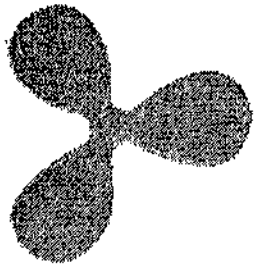


Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

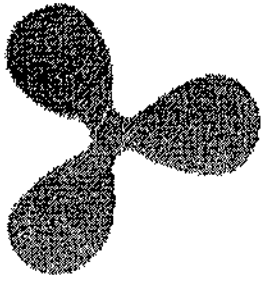
Function: Marine engineering at the support level

Table A-III/4

BASIC MOTOR PROPULSION PLANT MAINTENANCE PROFICIENCY GROUP

(Requires proficiency based practical demonstration)

1. Perform routine charge air and scavenging system maintenance
2. Perform routine fuel oil system maintenance
3. Perform routine lube oil system maintenance
4. Perform routine start and clutch air system maintenance



Specification of minimum standard of competence for ratings forming part of an engineering watch

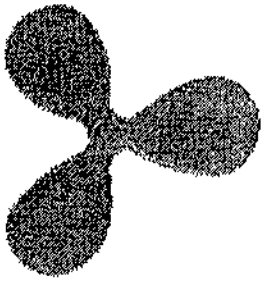
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating motorvessel, diesel propelled school training vessel, or suitable shoreside motor plant, perform routine diesel engine intake, exhaust, and scavenging system maintenance.	Drains scavenging air receivers of oil accumulation to include: a. places suitable container at scavenging air receiver drain to collect oil drippings b. one by one, cracks open scavenging air receiver drains c. observes ouflow from drain d. closes drain when oil ceases to flow e. removes oil drippings container and properly disposes of oil Drains charge air coolers of moisture condensation to include: a. cracks open charge air cooler drains b. observes outflow from drain c. closes drain when condensation ceases to flow	Successfully drains scavenging air receivers of oil acculumation while conforming to local operating procedures, standard engineering practice, and applicable oil pollution prevention regulations. Reports location of any scavenging air receiver drainage resulting in abnormal amounts of oil accumulation to the watch engineer. Successfully drains charge air coolers of moisture condensation while conforming to local operating procedures and standard engineering practice. Reports charge air cooler drainage resulting in abnormal amounts of water or condensation accumulation to the watch engineer.



Specification of minimum standard of competence for ratings forming part of an engineering watch

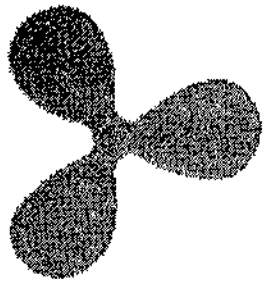
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating motorvessel, diesel propelled school training vessel, or suitable shoreside motor plant, perform routine fuel oil service system maintenance.	Shifts and cleans fuel oil service system duplex suction and discharge strainers to include: a. ascertains the need for shifting and cleaning the duplex strainer b. cracks open vent valve on idle strainer lid c. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel d. observes vent valve e. closes vent valve when clear fuel issues from vent valve f. fully positions selector handle to former idle element which is now on service. g. cracks open vent valve on former strainer on service lid which is now idle. h. observes vent valve i. relieves pressure on idle strainer element housing which is now isolated by opening vent valve j. loosens idle strainer lid bolts or hold down dogs as appropriate k. lifts up strainer lid and sets aside l. lifts up and removes strainer basket m. cleans strainer basket n. reinstalls strainer basket o. inspects housing and lid mating surfaces, scrapes and cleans, and replaces gasket as necessary p. places and aligns lid on top of strainer housing q. hand tightens bolts or snugs hold down dogs r. wrench tightens bolts or firmly tightens hold down dogs s. closes vent valve, then cracks open vent valve on idle strainer lid t. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel u. observes vent valve v. closes vent valve when clear fuel issues from vent valve w. checks strainer housing for leaks x. repsoitions straner element selector handle fully towards to strainer housing on service	Determines need for shifting and cleaning duplex strainers when duplex suction strainer pressure drop exceeds ___psi and duplex discharge strainer pressure drop exceeds ___psi. Successfully shifts and cleans fuel oil duplex suction and discharge strainers while conforming to local operating procedures and standard engineering practice. All pertinent safety precautions are observed to avoid personal injury, especially with regard to possible exposure to extremely hot oil. Provides a catch container to collect drippings from vent valves, strainer housings, and basket to prevent any fuel from dripping into the bilges. Properly disposes of oil drippings by pouring into a waste oil or sludge tank as appropriate. Takes appropriate corrective action if leaks are detected.



Specification of minimum standard of competence for ratings forming part of an engineering watch

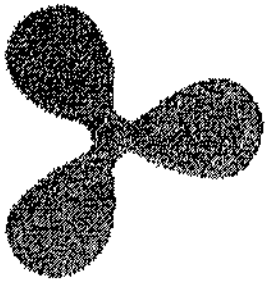
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating motorvessel, diesel propelled school training vessel, or suitable shoreside motor plant, perform routine lube oil system maintenance.	Shifts and cleans lube oil system duplex suction and discharge magnetic strainers to include: a. ascertains the need for shifting and cleaning the duplex strainer b. cracks open vent valve on idle strainer lid c. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel d. observes vent valve e. closes vent valve when clear fuel issues from vent valve f. fully positions selector handle to former idle element which is now on service. g. cracks open vent valve on former strainer on service lid which is now idle. h. observes vent valve i. relieves pressure on idle strainer element housing which is now isolated by opening vent valve j. loosens idle strainer lid bolts or hold down dogs as appropriate k. lifts up strainer lid and sets aside l. lifts up and removes strainer basket m. cleans strainer basket, noting any metal shavings or particles adhering to the magnet n. reinstalls strainer basket o. inspects housing and lid mating surfaces, scrapes and cleans, and replaces gasket as necessary p. places and aligns lid on top of strainer housing q. hand tightens bolts or snugs hold down dogs r. wrench tightens bolts or firmly tightens hold down dogs s. closes vent valve, then cracks open vent valve on idle strainer lid t. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel u. observes vent valve v. closes vent valve when clear fuel issues from vent valve w. checks strainer housing for leaks x. repsoitions straner element selector handle fully towards to strainer housing on service	Determines need for shifting and cleaning duplex strainers when duplex suction magnetic strainer pressure drop exceeds ___psi and duplex discharge magnetic strainer pressure drop exceeds ___psi. Successfully shifts and cleans lube oil duplex suction and discharge strainers while conforming to local operating procedures and standard engineering practice. All pertinent safety precautions are observed to avoid personal injury, especially with regard to possible exposure to warm to hot oil. Reports if any metal shavings or particles are adhering to the strainer magnet to the watch engineer and shows watch engineer such evidence if requested. Provides a catch container to collect drippings from vent valves, strainer housings, and basket to prevent any lube oil from dripping into the bilges. Properly disposes of oil drippings by pouring into a waste oil or sludge tank as appropriate. Takes appropriate corrective action if leaks are detected.



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating motorvessel, diesel propelled school training vessel, or suitable shoreside motor plant, perform routine start and clutch air system maintenance.	Performs routine start and clutch air system maintenance to include: a. checks operation of automatic moisture separators b. manually drains moisture separators by cracking drain valve. c. observes condition of drainage if possible to detect any evidence of oil/water emulsions d. manually drains moisture from start air and clutch air tanks by cracking moisture drain valves. e. blows down any wye type compressed air strainers to expel entrained dirt and scale	Adheres to standard engineering and safety practices when draining moisture from separators and start and clutch air tanks and blowing down wye strainers. Reports any particularly heavy oil/water emulsions to the watch engineer.

Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

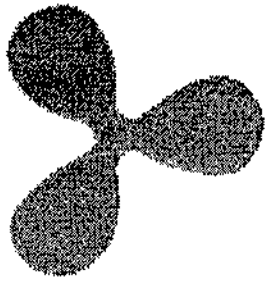
Function: Marine engineering at the support level

Table A-III/4

BASIC STEAM PROPULSION PLANT MAINTENANCE PROFICIENCY GROUP

(Requires proficiency based practical demonstration)

1. Perform routine boiler waterside maintenance
2. Perform routine boiler fireside maintenance
3. Perform routine boiler atomizer maintenance
4. Perform routine fuel oil service system maintenance
5. Perform routine lube oil system maintenance



Specification of minimum standard of competence for ratings forming part of an engineering watch

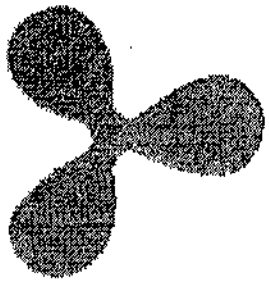
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating steamship, steam propelled school training vessel, or suitable shoreside steam plant, perform routine boiler waterside maintenance.	Performs steam drum water level gauge glass blowdown to include: a. closes the top gauge glass isolation valve b. opens gauge glass drain valve c. observes water draining from gauge glass d. when drain blows water freely, closes the bottom gauge glass isolation valve e. opens the top gauge glass isolation valve f. observes water draining and then steam blowing from gauge glass g. when drain blows steam freely, closes the gauge glass drain valve h. opens the lower gauge glass isolation valve i. observes the water level in the gauge glass Performs surface blowdown to include: a. raises the water level in the steam drum to a level approximately 2 to 3 inches above the surface blow pipe or scum pan b. opens boiler blowdown skin valve c. rapidly opens surface blowdown valve d. observes water level in steam drum e. closes surface blowdown valve when water level stops dropping as seen in steam drum water level gauge glass f. closes boiler blowdown skin valve	Steam drum water level gauge glass is successfully blown down while conforming to local operating procedures and standard engineering practice. Steps must be accomplished in the prescribed sequential order. Insures that after the gauge glass blowdown is accomplished that the gauge glass responds appropriately (not sluggish) and that the level shown indicates true boiler water level. Boiler surface blow down is successfully accomplished while conforming to local operating procedures and standard engineering practice. After the surface blow is successfully accomplished checks surface blow line for evidence that the surface blow and skin valves are leaking (failure to eventually cooldown). For both procedures, all pertinent safety precautions are observed to avoid personal injury.



Specification of minimum standard of competence for ratings forming part of an engineering watch

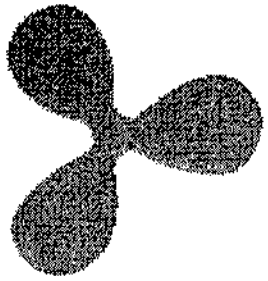
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating steamship, steam propelled school training vessel, or suitable shoreside steam plant, perform routine boiler fireside maintenance.	Blows boiler tubes free of soot with soot blowers to include: a. Increases forced draft pressure for steam blowing system only: b. checks soot blower manifold drains open c. slowly opens soot blower steam root valve d. observes drain manifold drains e. closes in but leaves cracked the drain valves when drains are hot and blowing clear steam for steam or air blowing sysem: f. opens fully soot blower root valve g. operates soot blowers in proper sequence h. rotates soot blower elements slowly through full rotation i. checks periscope for clear condition after each soot blower element rotation j. repeats soot blower element rotation until periscope indicates clear k. completes proper soot blower element operation sequence l. closes soot blower root valve m. opens soot blower manifold drain valves (steam blowing system only) n. decreases forced draft pressure o. informs watch engineer when boiler tubes are blown	Boiler tubes are successfully blown free of soot with soot blowers while conforming to local operating procedures and standard engineering practice. All pertinent safety precautions are observed to avoid personal injury. Seeks clarification from local operating guide, manufacturer technical manuals and engineering watch supervisors as appropriate. Insures that steam used to blow tubes is dry and free of condensate and drain manifold is hot when steam is used. Insures that soot blower elements are rotated in the proper direction of rotation and not stopped in rotation until cam shuts off steam or air supply. Insures that soot blower operation sequence is that recommended by the boiler manufacturer. Insures that normal boiler air-fuel ratios are restored.



Specification of minimum standard of competence for ratings forming part of an engineering watch

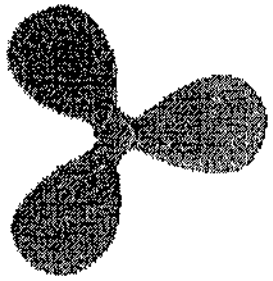
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating steamship, steam propelled school training vessel, or suitable shoreside steam plant fitted with a suitably equipped burner bench, perform routine boiler atomizer maintenance.	Performs routine boiler atomizer maintenance to include: a. secures burner on a firing boiler by closing burner root valve and closing air register doors b. positions safety shutoff device for atomizer barrel assembly withdrawal c. disconnects fuel lines from atomizer d. loosens yoke and withdraws atomizer barrel assembly e. allows burner barrel assembly to cool at the burner bench f. disassembles by removing sprayer plates, orifices, adapter plates, and nozzles and soaking in kerosene to soften carbon g. cleans various slots and holes with properly fitted wooden cleaning sticks h. polishes the orifices, whirling chambers of sprayer plates, the annular grooves of the nozzles, and the faces of all parts with wooden sticks and light lubricating oil. i. wipes atomizer parts with heavy lubricating oil j. reassembles atomizer barrel assembly k. places atomizer barrel assembly in atomizer rack l. inserts atomizer barrel assembly into burner m. tightens yoke n. connects fuel lines to atomizer o. positions safety shutoff device for normal boiler operation	Burner atomizers are successfully withdrawn, disassembled, cleaned, and reassembled while conforming to local operating procedures and standard engineering practice. All pertinent safety precautions are observed to avoid personal injury. Seeks clarification from local operating guide, manufacturer technical manuals and engineering watch supervisors as appropriate. Insures against using any hard metals or abrasives in cleaning and polishing atomizer parts. Strictly adheres to safety shutoff device use procedures to avoid fireroom and burner front fires.



Specification of minimum standard of competence for ratings forming part of an engineering watch

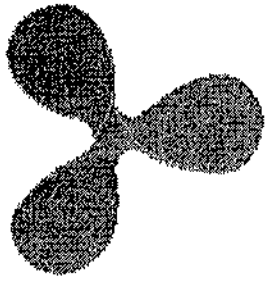
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating steamship, steam propelled school training vessel, or suitable shoreside steam plant, perform routine fuel oil service system maintenance.	Shifts and cleans fuel oil service system duplex suction strainers (cold) and duplex discharge strainers (hot) to include: a. ascertains the need for shifting and cleaning the duplex strainer b. cracks open vent valve on idle strainer lid c. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel d. observes vent valve e. closes vent valve when clear fuel issues from vent valve f. fully positions selector handle to former idle element which is now on service. g. cracks open vent valve on former strainer on service lid which is now idle. h. observes vent valve i. relieves pressure on idle strainer element housing which is now isolated by opening vent valve j. loosens idle strainer lid bolts or hold down dogs as appropriate k. lifts up strainer lid and sets aside l. lifts up and removes strainer basket m. cleans strainer basket n. reinstalls strainer basket o. inspects housing and lid mating surfaces, scrapes and cleans, and replaces gasket as necessary p. places and aligns lid on top of strainer housing q. hand tightens bolts or snugs hold down dogs r. wrench tightens bolts or firmly tightens hold down dogs s. closes vent valve, then cracks open vent valve on idle strainer lid t. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel u. observes vent valve v. closes vent valve when clear fuel issues from vent valve w. checks strainer housing for leaks x. repsoitions straner element selector handle fully towards to strainer housing on service	Determines need for shifting and cleaning duplex strainers when duplex suction strainer pressure drop exceeds ____psi and duplex discharge strainer pressure drop exceeds ___psi. Successfully shifts and cleans fuel oil duplex suction and discharge strainers while conforming to local operating procedures and standard engineering practice. All pertinent safety precautions are observed to avoid personal injury, especially with regard to possible exposure to extremely hot oil. Provides a catch container to collect drippings from vent valves, strainer housings, and basket to prevent any fuel from dripping into the bilges. Properly disposes of oil drippings by pouring into a waste oil or sludge tank as appropriate. Takes appropriate corrective action if leaks are detected.



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Employ safe working practices as related to engine-room operations.	Given an operating steamship, steam propelled school training vessel, or suitable shoreside steam plant, perform routine lube oil system maintenance.	Shifts and cleans lube oil system duplex suction and discharge magnetic strainers to include: a. ascertains the need for shifting and cleaning the duplex strainer b. cracks open vent valve on idle strainer lid c. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel d. observes vent valve e. closes vent valve when clear fuel issues from vent valve f. fully positions selector handle to former idle element which is now on service. g. cracks open vent valve on former strainer on service lid which is now idle. h. observes vent valve i. relieves pressure on idle strainer element housing which is now isolated by opening vent valve j. loosens idle strainer lid bolts or hold down dogs as appropriate k. lifts up strainer lid and sets aside l. lifts up and removes strainer basket m. cleans strainer basket, noting any metal shavings or particles adhering to the magnet n. reinstalls strainer basket o. inspects housing and lid mating surfaces, scrapes and cleans, and replaces gasket as necessary p. places and aligns lid on top of strainer housing q. hand tightens bolts or snugs hold down dogs r. wrench tightens bolts or firmly tightens hold down dogs s. closes vent valve, then cracks open vent valve on idle strainer lid t. cracks strainer element selector handle towards idle strainer housing to slowly admit fuel u. observes vent valve v. closes vent valve when clear fuel issues from vent valve w. checks strainer housing for leaks x. repsoitions straner element selector handle fully towards to strainer housing on service	Determines need for shifting and cleaning duplex strainers when duplex suction magnetic strainer pressure drop exceeds ___psi and duplex discharge magnetic strainer pressure drop exceeds ___psi. Successfully shifts and cleans lube oil duplex suction and discharge strainers while conforming to local operating procedures and standard engineering practice. All pertinent safety precautions are observed to avoid personal injury, especially with regard to possible exposure to warm to hot oil. Reports if any metal shavings or particles are adhering to the strainer magnet to the watch engineer and shows watch engineer such evidence if requested. Provides a catch container to collect drippings from vent valves, strainer housings, and basket to prevent any lube oil from dripping into the bilges. Properly disposes of oil drippings by pouring into a waste oil or sludge tank as appropriate. Takes appropriate corrective action if leaks are detected.

Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

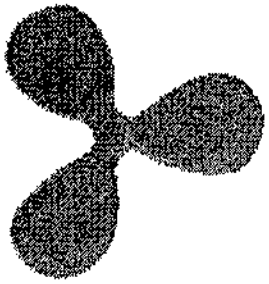
Function: Marine engineering at the support level

Table A-III/4

BASIC MOTOR PROPULSION PLANT OPERATIONS PROFICIENCY GROUP

(Requires proficiency based practical demonstration)

1. Assist in preparing for and starting main diesel engines
2. Assist in securing main diesel engines
3. Monitor main diesel engines
4. Monitor air intake, exhaust, and crankcase ventilation systems
5. Monitor sea water cooling systems
6. Monitor closed fresh water cooling systems
7. Monitor lubricating oil systems
8. Monitor fuel oil service systems
9. Monitor start, clutch, and control air systems
10. Monitor reduction gears, clutches, and propulsion shafting
11. Monitor controllable pitch propeller systems
12. Monitor SSDG and auxiliary diesel engines
13. Monitor waste heat boilers
14. Conduct machinery space rounds
15. TRACE OUT AND DRAW ONE-LINE PIPING DIAGRAMS



Specification of minimum standard of competence for ratings forming part of an engineering watch

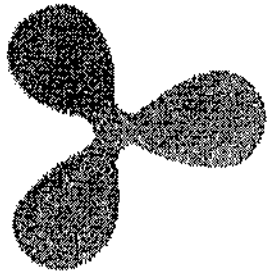
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, suitable shoreside power plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in preparing for and starting main propulsion diesel engines.	Inasmuch as the watch engineer is solely responsible for engine startup and insuring the proper sequential steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the engine. In a support role, assists the watch engineer in preparing for and starting main propulsion diesel engines to include: a. checking start air and clutch air tank pressures b. draining start and clutch air tanks, charge air coolers, scavenging air receivers, and turbocharger casings of moisture c. checking various lube oil sump and tank levels, various fuel oil tank levels, and various closed fresh water system expansion tank and inspection tank levels d. opening of any valves associated with bringing in a system into service such as sea water cooling, various fresh water cooling, various lube oil, and various fuel, starting, clutch, and control air e. checking various temerpatures such as lube oil sump, jacket water, and fuel oil tank and supply f. performing any manual pre-lubing of engine via pre-lube priming pumps and mechanical lubricators g. opening of indicator cocks h. standing by and checking for issuance of moisture upon engine rollover i. re-closing of indicator cocks prior to engine startup j. checking and verifying of engine parameters upon start up	Correctly performs individual tasks as directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Adheres to standard safety practices when draining moisture from start air and clutch air tanks, and takes adequate safety precautions when standing by and checking for issuance of moisture from indicator cocks upon engine rollover. Checks of fluid levels to include all pertinent lube oil levels, fuel oil levels, and cooling water levels. Checks of engine parameters to include, lube oil header pressures, jacket water pump discharge pressures, and fuel oil header pressures.



Specification of minimum standard of competence for ratings forming part of an engineering watch

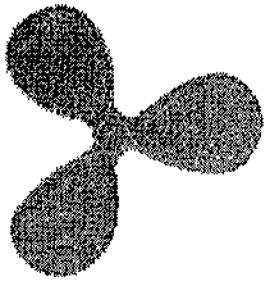
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, suitable shoreside power plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in securing the main propulsion diesel engines.	Inasmuch as the watch engineer is solely responsible for engine shutdown and insuring the proper sequential steps are performed, the rating forming part of the engineering watch merely provides operational support. The engineer normally performs all critical steps, particularly those manipulating controls. Upon direction, the rating shall normally perform various labor intensive steps at the engine. In a support role, assists the watch engineer in securing main propulsion diesel engines to include: a. draining start and clutch air tanks, charge air coolers, scavenging air receivers, and turbocharger casings of moisture c. checking various lube oil sump and tank levels, various fuel oil tank levels, and various closed fresh water system expansion tank and inspection tank levels d. opening of indicator cocks e. checking and verifying of engine parameters upo n load reduction, idling, engine shutdown, and eventual securing of auxiliary support systems f. closing of any valves associated with securing a system such as sea water cooling, various fresh water cooling, various lube oil, and various fuel, starting, clutch, and control air	Correctly performs individual tasks as directed and prompted by the watch engineer while conforming to local operating procedures and standard engineering practice. Acknowledges completion of tasks if acknowledgement is requested. Seeks clarification from watch engineer if instructions are not initially clearly understood. Adheres to standard safety practices when draining moisture from start air and clutch air tanks, charge air coolers, scavenging air receivers, turbocharger casings, and indicator cocks.



Specification of minimum standard of competence for ratings forming part of an engineering watch

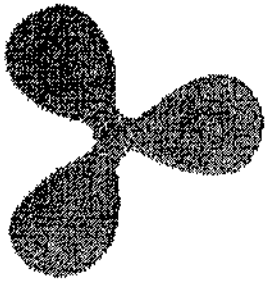
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel,suitable shoreside power plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the main propulsion diesel engines as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion diesel engines to include: a. checks engine rpm and operating hours b. checks exhaust temperature for each cylinder c. checks jacket water outlet temperature for each cylinder d. checks exhaust trunk temperature and pressure e. checks fuel injector pump rack positions f. checks engine bearing temperatures g. checks engine crankcase mist concentration and crankcase pressure h. checks charge air pressure and temperature i. checks all pertinent lube oil header pressures j. checks all pertinent lube oil sump levels k. checks lube oil temperature entering and leaving the engine l. checks all pertinent jacket water pump discharge pressures m. checks all pertinent jacket water expansion or inspection tank levels n. checks for any oil contaomination of piston cooling water or fuel injector nozzle body cooling water as appropriate via sight glasses and inspection tank windows o. checks sea water circulating pump discharge pressure p. checks fuel oil supply header pressure, temperature, and viscosity q. checks fuel oil service tank level r. checks start and clutch air pressures s. checks all fuel oil strainer and filter pressure drops t. checks all lube oil strainer and filter pressure drops u. checks for any unusual conditions threatening the operational integrity of the engine or plant or personal safety.	Monitors main propulsion diesel engines during the course of machinery space rounds. Correctly determines main propulsion engine rpm and all associated system pressures, temperatures, levels, and flow conditions as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

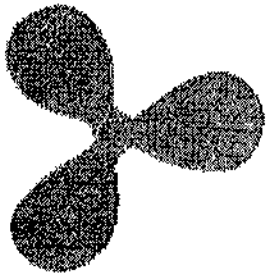
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, suiable shoreside power plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the air intake, exhaust, and crankcase ventilation systems of the main propulsion diesel engines as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propusion air intake, exhaust, and crankcase ventilation systems to include: a. checks air intake pressure and/or air intake filter pressure drop indicator b. checks charge air pressure and charge air temperature c. checks individual cylinder exhaust temperatures and combined exhaust trunk temperatures d. checks exhaust trunk pressure e. checks crankcase pressure f. checks crankcase mist concentration g. checks airbox or scavenging air receiver drains for excessive oil accumulation h. checks scavenging air blowers, turbochargers, and crankcase ventilation fans for unusual noise or vibration h. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main propulsion air intake, exhaust, and crankcase ventilation systems during the course of machinery space rounds. Correctly determines air intake, exhaust, and crankcase ventilation system pressures and temperatures as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

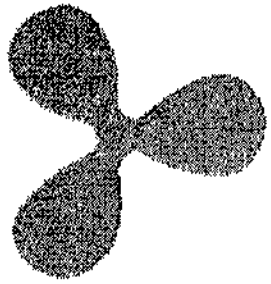
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the sea water cooling systems of the main propulsion diesel engines as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion sea water cooling systems to include: a. checks plant operational mode status. b. checks identity of sea water cooling pump point of suction (sea chest). c. checks sea water cooling pump suction and discharge pressures. d. checks sea suction strainer pressure drop. e. checks sea water injection temperature. f. checks sea water temperatures leaving the following heat exchangers as appropriate and available: main lube oil cooler, reduction gear lube oil cooler, cylinder jacket water cooler, fuel injector nozzle body cooler, piston cooling water cooler, and charge air cooler. g. checks sea water cooling pump packing gland for proper leakoff or mechanical seal for any leakage as appropriate. f. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main propulsion sea water cooling systems during the course of machinery space rounds. Correctly determines sea water cooling system pressures and temperatures as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

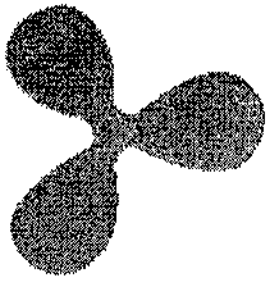
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, suitable shoreside popwer plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the various closed fresh water cooling systems of the main propulsion diesel engines as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion closed fresh water cooling systems to include: a. checks plant operational mode status. b. checks expansion or inspection tank levels for cylinder jacket, fuel injector nozzle body, and piston cooling fresh water circuits as appropriate. c. checks jacket water, injector, and piston cooling pump suction and discharge pressures. d. checks water entering and water leaving temperatures for jacket water, injector, and piston cooling water coolers. e. checks jacket water, fuel injector, and piston cooling water pump packing glands cooling pump for proper leakoff or mechanical seals for any leakage as appropriate. f. checks fuel injector and piston cooling water inspection tanks for any oil contamination atop the water as viewed through inspection windows. f. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main propulsion closed fresh water cooling systems during the course of machinery space rounds. Correctly determines closed fresh water cooling system pressures and temperatures, and levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions. Due to the variation in closed fresh water system installations particularly with specialized systems, some performance measures may not apply to certain installations.



Specification of minimum standard of competence for ratings forming part of an engineering watch

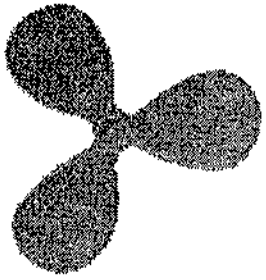
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, suitable shoreside power plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring and operating the lubricating oil systems of the main propulsion diesel engines as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion lube oil systems to include: a. checks plant operational mode status. b. checks engine lube oil sump, lube oil sump tank, turbocharger lube oil sump, rocker arm lube oil sump, cylinder lube oil measuring tank, and governor lube oil sump levels c. checks discharge pressures for engine lube oil, turbocharger lube oil, rocker arm lube oil, and cylinder lube oil pumps d. checks differential pressure across engine lube oil, turbocharger lube oil, rocker arm lube oil, and cylinder lube oil filters e. checks lube oil entering and leaving temperatures for engine lube oil, turbocharger lube oil, and rocker arm lube oil coolers f. checks engine lube oil, turbocharger lube oil, rocker arm lube oil, and cylinder lube oil pump shaft seals for leakage. g. checks oil flow rate for any mechanical lubricators. h. checks engine lube oil, turbocharger lube oil, rocker arm lube oil, cylinder lube oil, crosshead lube oil, and control oil header pressures f. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main propulsion lube oil systems during the course of machinery space rounds. Correctly determines engine lube oil, turbocharger lube oil, rocker arm lube oil, and cylinder lube oil system pressures, temperatures, and levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions. Due to the variation in lube oil system installations particularly with specialized systems, some performance measures may not apply to certain installations.



Specification of minimum standard of competence for ratings forming part of an engineering watch

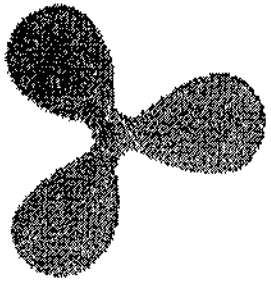
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, suitable shoreside power plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring and operating the fuel oil service systems of the main propulsion diesel engines as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion fuel oil service systems to include: a. checks plant operational mode status. b. checks heavy fuel oil settling, heavy fuel oil service, diesel oil settling, and diesel oil service tank levels as appropriate. c. checks suction and discharge pressures for fuel oil service pump. d. checks differential pressure across fuel oil service strainers and filters. e. checks fuel oil temperatures entering and leaving fuel oil heater f. checks fuel oil viscosity to fuel supply header as appropriate. g. takes supply and return fuel oil meter readings. h. checks fuel oil service pump shaft seal for leakage. g. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: dut to the generic nature of the performance measures, some checks need not be performed if not applicable to the actual installation	Monitors main propulsion fuel oil service systems during the course of machinery space rounds. Correctly determines fuel oil system pressures, temperatures, viscosities, meter readings, and levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

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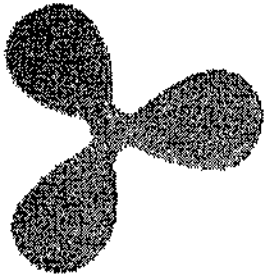
Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, suitable shoreside power plant, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the compressed air systems of the main propulsion diesel engines as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion start and clutch air systems to include: a. checks plant operational mode status. b. checks start air compressor oil level. c. checks start air compressor oil pressure if applicable. d. checks start air compressor suction pressure or air inlet filter pressure differential indication as appropriate. e. checks start air compressor discharge air pressure and start air and clutch air service tank pressures, and control air header pressures. f. checks start air compressor air discharge temperature. g. checks start air compressor load/unload status. h. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors main propulsion start and clutch air systems during the course of machinery space rounds. Correctly determines plant operational mode status and compressor load/unload status. Stops compressor before checking oil level if required. Correctly determines compressed air plant pressures and temperatures and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, engineering watch supervisors, when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



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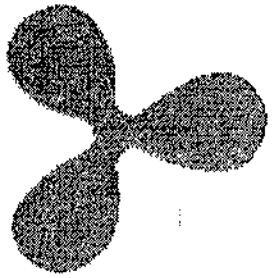
Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the reduction gears, clutches, and propulsion shafting of the main diesel propulsion power plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors main propulsion reduction gears, clutches, and propulsion shafting to include: a. checks reduction gear oil sump levels b. checks reduction gear lube oil emperatures entering and leaving the lube oil cooler c. checks reduction gear oil flow sight indicators d. checks reduction gear lube oil supply pressure e. checks clutch air supply pressure f. checks reversing air supply pressure g. checks all line shaft bearing sump oil levels h. checks all line shaft bearing oil temperatures I. checks independent thrust bearing sump level where appropriate j. checks independent thrust bearing lube oil sump temperature where appropriate k. checks independent thrust bearing lube oil cooler inlet and outlet temperatures where appropriate l. checks independent thrust bearing lube oil supply pressure where appropriate m. checks independent thrust bearing gravity head tank level where appropriate n. checks water lubricated stern tube stuffing box for proper leak-off where appropriate o. checks oil lubricated stern tube lube sump tank level where appropriate p. checks oil lubricated stern tube lube oil supply pressure where apprpriate q. checks oil lubricated stern tube oil temperatures where appropriate r. checks oil lubricated stern tube inboard shaft seal for leakage where appropriate	Monitors main propulsion reduction gears, clutches, and propulsion shafting during the course of machinery space rounds. Successfully determines reduction gear oil sump levels, temperatues, and pressures as well as clutch and reversing supply air pressures. Successfully determines line shaft bearing, independent thrust bearing, and stern tube bearing oil levels, temperatures, and pressures as appropriate to the installation. Some performance measures will not apply to some shipboard installations. Seeks clarification from operating guides, operating instructions, technical manuals, engineering watch supervisors, when unsure of normal parameter ranges. Reports any out of specification parameters and any unusual or unsafe conditions. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.



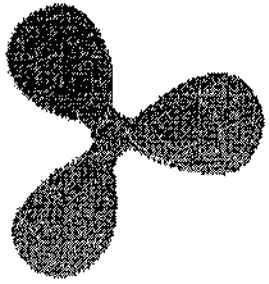
Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4 **Proficiency based practical demonstration**

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating motorvessel, diesel propelled school training vessel, or suitable engine room motor plant simulator and in a support role, assist the watch engineer or equivalent in monitoring the controllable pitch propeller systems of the main diesel propulsion power plant as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors controllable pitch propeller systems to include: a. checks system operating ststus mode b. checks lower oil sump and gravity head tank levels c. checks pitch oil temperatures d. checks hydraulic pump discharge pressures (HP) and control oil pressures e. checks gravity head tank overflow sight glass indicators f. checks pitch oil strainer and pitch oil filter pressure drops	Monitors controllable pitch propeller systems during the course of machinery space rounds. Successfully determines pitch oil sump and gravity head tank levels, pitch oil system temperatues and pressures. Seeks clarification from operating guides, operating instructions, technical manuals, engineering watch supervisors, when unsure of normal parameter ranges. Reports any out of specification parameters and any unusual or unsafe conditions. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.



Specification of minimum standard of competence for ratings forming part of an engineering watch

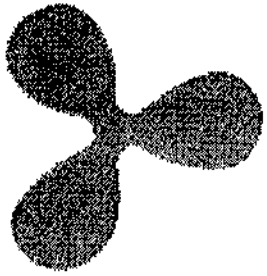
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating ship, school training vessel, suitable shoreside power plant, suitable shoreside power plant, or suitable engine room electricity generating plant simulator and in a support role, assist the watch engineer or equivalent in monitoring main, auxiliary and emergency diesel generators as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors ships' service diesel generator and emergency diesel generator set engines to include: a. checks engine rpm and operating hours b. checks lube oil supply header pressures c. checks lube oil temperatures entering and leaving the engine d. checks lube oil sump tank levels e. checks jacket water pump discharge pressures f. checks jacket water temperatures entering and leaving the engine g. checks jacket water expansion tank levels h. checks fuel oil supply header pressures i. checks fuel oil service tank levels	Monitors ship's service diesel generator and auxiliary diesel engines during the course of machinery space rounds. Correctly determines auxiliary diesel engine rpm and all associated system pressures, temperatures, levels, and flow conditions as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

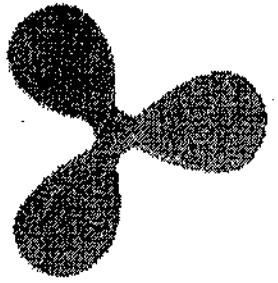
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating ship school training vessel, or suitable engine room simulator, assist the watch engineer or equivalent in monitoring waste heat boilers as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors waste heat boilers to include: a. checks plant operational status mode b. checks exhaust gas economizer inlet and outlet temperatures c. checks exhaust gas economizer inlet and outlet draft pressures d. checks low pressure and high pressure separator levels e. checks low pressure generator, high pressure generator, and superheater pressures f. checks feed inlet pressures and temperatures g. checks superheater inlet and outlet temperatures h. checks desuperheater outlet temperatures	Monitors waste heat boilers during the course of machinery space rounds. Correctly determines waste heat boiler exhaust gas economizer pressures, temperatures, levels as appropriate and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions.



Specification of minimum standard of competence for ratings forming part of an engineering watch

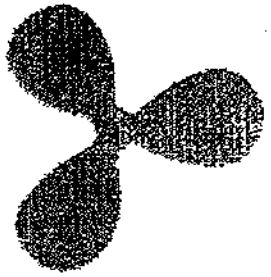
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch: Performs engine-room watch keeping procedures.	Given an operating ship, school training vessel, or suitable engine room simulator, conduct machinery space rounds as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Conducts machinery space rounds to include: a. inspects, monitors, and checks system parameters for all auxiliary systems and machinery b. inspects, monitors, and checks system parameters for all steam propulsion machinery as applicable c. inspects, monitors, and checks system parameters for all motor propulsion machinery as applicable d. inspects bilges, pumping as necessary e. checks machinery spaces for all signs of fire, flooding, and electric shock hazard f. wipes up all oil accumulations g. inspects all systems and machinery and checks for all signs of piping system and machinery leakage h. monitors all applicable strainer and filter pressure drops and shifts and cleans as indicated I. checks electric motors and machinery bearings for signs of overheating j. investigates any abnormal sounds, vibrations, odors, or visual cues k. checks for any gear adrift or machinery guards not in place l. checks all conventionally packed pumps for proper stuffing box packing leak-off rates and pumps fitted with mechanical seals for leakage m. takes up on valve stuffing boxes as necessary to stop stem to bonnet leaks n. checks for any abnormal, unusual, or unsafe conditions threatening personal safety, engineering plant or vessel integrity	Completes machinery spaces rounds at least on an hourly basis. Records any parameters as requested by the watch engineer. Assists the watch engineer in comparing parameter readings taken on location at the equipment to those readings taken remotely from the control room operating console. Reports any out of specification parameters.Seeks clarification from operating guides, operating instructions, technical manuals, and engineering watch supervisors when unsure of normal parameter ranges. Keeps oil drippings wiped up and keeps decks, and structures free of oil accumulations. Keeps bilges pumped. Makes use of tactile sense in checking motors and bearings for overheat conditions. Promptly reports any unusual or unsafe conditions. Keeps the watch engineer informed of whereabouts.



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4 **Proficiency based practical demonstration**

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Understand orders and be understood in matters relevant to watchkeeping duties: Properly uses terms used in machinery spaces and names of machinery and equipment.	Given an operating ship, school training vessel, or suitable shoreside piping systems comparable to shipboard auxiliary systems, trace out and draw one-line piping system diagrams for shipboard auxiliary systems.	Trace out and draw one-line piping system diagrams for shipboard auxiliary systems to include: a. bilge b. ballast c. firemain d. priming e. fresh water storage, filling, & transfer f. fuel oil storage, filling, & transfer g. lube oil storage, filling & transfer h. potable water i. sanitary flushing water j. general service sea water k. sewage waste treatment plant l. sanitary gray water m. oily water separator n. lube oil purification plant o. fuel oil treatment plant p. compressed air plant q. refrigeration plant r. air conditioning plant s. distilling plant t. hydraulic steering gear	Completed drawing is an accurate representation of the actual installation, using the correct symbols for the various piping system components. Components to be included in each drawing of the drawing set include only as as applicable for the pertinent system: sea suctions, overboards, pumps, compressors, air ejectors, vented tanks, pressure vessels, manually operated and power actuated valves, manifolds, strainers and filters, steam traps, heat exchangers, actuators, and deck hose connections.

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Specification of minimum standard of competence for ratings forming part of an engineering watch

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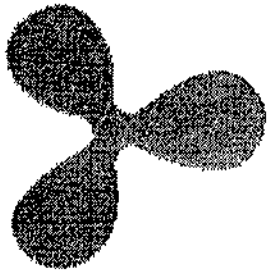
Function: Marine engineering at the support level

Table A-III/4

EMERGENCY PROCEDURES PROFICIENCY GROUP

(Requires proficiency based practical demonstration)

1. Locate engine room fire fighting equipment
2. Perform an emergency escape from the engine room
3. Pressurize the firemain



Specification of minimum standard of competence for ratings forming part of an engineering watch

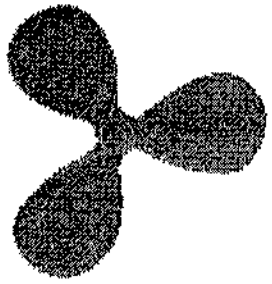
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Operate emergency equipment and apply emergency procedures.	Given an operating ship or school training vessel locate all engine room firefighting and fire suppression equipment and explain their operation.	Locates and explains the operation and use of engine room firefightinmg equipment is to include: a. portable fire extingishers, citing type and applicability for fire type as well as deployment procedures b. semi-portable fire extinguishers, citing type and applicability for fire type as well as deployment procedures c. fixed fire extinguishing smothering system activation points, citing type and applicability as well as activation procedures d. fire pumps and associated control stations e. fire and smoke alarms and associated annunicator panels f. fire stations and associated equipment	Successfully locates all fire fighting equipment in the engine room. Correctly identifies the types of fire for which each extinguishing agent is used. Explains the deployment procedures for all portable and semi-portable extinguishers. Successfully locates all fire protection system annunciator panels and fixed smothering agent release activation points associated with the engineering machinery spaces.



Specification of minimum standard of competence for ratings forming part of an engineering watch

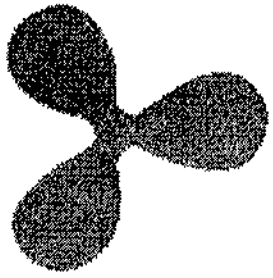
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Operate emergency equipment and apply emergency procedures.	Given an operating ship, school training vessel, or suitable shoreside mockup trainer, locate all engine room emergency escape routes, explain emergency escape procedures, and perform an escape.	Locates all engine room emergency escape routes, explains emergency escape procedures, and performs an escape to include: a. locates all emergency escape routes pertinent to the assessment platform b. identifies the mechanism by which the emergency escape apparatus functions to open c. orally explains the actual operating of the emergency escape apparatus d. under conditions of realism, demonstrates the ability to perform an actual escape	Correctly locates all emergency escape routes. Identifies and explains the operation of the emergency escape apparatus. Embarks upon the actual escape from a position determined at random by the assessor under dark conditions, with all machinery space or mock up lights extinguished. Successfully exits from the darkened machinery space or mock up within __ minutes of commencing escape. After a thorough briefing on procedural requirements, procedure must be accomplished from memory since procedure is to be performed in response to shipboard drills and emergencies.



Specification of minimum standard of competence for ratings forming part of an engineering watch

STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Operate emergency equipment and appoly emergency procedures.	Given an operable firemain system onboard ship or a school training vessel, pressurize the firemain as directed.	Pressurizes firemain to include: a. lines up fire pump suction manifold and/or suction piping to take a suction on an appropriate sea chest. b. lines up fire pump discharge manifold and/or discharge piping to discharge to the firemain. c. starts fire pump. d. monitors fire main pressure. e. reports to the watch engineer or equivalent when the firemain is pressurized. f. secures fire pump and restores all firemain system piping back to normal when directed.	Reports to the assessor in a clear and audible voice when fire pump discharge pressure has risen to at least __ psig. Firemain is successfully pressurized within __ minutes. Pressurization procedures are in conformance with local operating procedures. After a thorough briefing on procedural requirements, procedure must be accomplished from memory since procedure is to be performed in response to shipboard drills and emergencies.