23 September 1999

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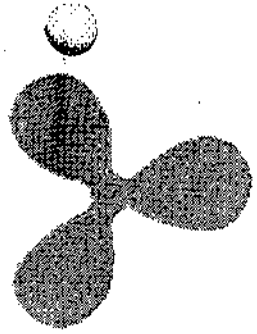
Enclosed is a copy of Working Group #11's Performance Measures for Engineering Ratings. This is largely the work of subcommittee member Eric Malzkuhn of the Harry Lundeberg School who received guidance along the way from Perry Stutman. Recent changes were made to this document based on the work of subcommittee member George Trowbridge of Houston Marine.

Looking forward to seeing you at the meeting.



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

The included **Rating Forming Part of an Engineering Watch** competency tables are a comprehensive expansion and augmentation of the original STCW 95 Table A-III/4. Inasmuch as the original table would occupy no more than three pages as presently formatted in this document, at first glance, one might be overwhelmed by the bulk of this volume.

One contributing factor for this expansion and augmentation of the original table is the content of the table itself. Where the competency "For keeping a boiler watch: maintains correct water levels and steam pressures" is relatively straightforward and specific, another competency "Carry out a watch routine appropriate to the duties of a rating forming part of the engine room watch" is incredibly vague and general in nature. This competency, along with "Performs engine room watch keeping procedures" and "Properly uses terms used in machinery spaces and names of machinery and equipment" beg for refinement and clarification. There is a vast array of machinery, equipment, and systems that make up a modern shipboard engineering plant.

Another contributing factor revolves around the philosophical intent for the demonstration of competencies. Presently competency for licensed officers and unlicensed ratings alike is judged solely by successfully passing a written examination and successfully meeting the sea service requirements. The USCG clearly recognizes that this methodology is insufficient to assure mariner competency. The included competency tables represent an intent to merge the intent of STCW 95 with the 46CFR examination requirements for all ratings forming part of the engineering watch (fireman/watertender, oiler, and junior engineer). With the relevant sections of part 12 of 46CFR related to the unlicensed engine department ratings in dire need of revision, the included competency tables are offered as an attempt to bring unification to STCW 95 and USCG regulatory requirements regarding mariner certification.

Still another contributing factor is the ultimate desire is to allow the integration of a USCG approved **Rating Forming Part of an Engineering Watch** program with a USCG approved **Officer in Charge of the Engineering Watch** program. In accomplishing this program integration, the mechanism of achieving a Third Assistant Engineer unlimited license via the hawsepipe may be preserved despite the arrival of STCW **Officer in Charge of the Engineering Watch** requirements. Obviously if the integration of the two programs is to achieve viability via USCG recognition, the **Rating Forming Part of the Engineering Watch** program must be comprehensive and serve as a suitable training and experience foundation for those desiring to move up the career advancement ladder within the engine room.

Understandably taking such a comprehensive approach has the potential to provoke controversy, for any number of reasons. Comments and suggestions are invited.

Eric Matzkuhn
Paul Hall Center for Maritime Training and Education (SIU)

Assessment title provided here

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Table A-III/4

Assessment type provided here

STCW Competency	Performance Objective	Performance Measures	Performance Standards
The information provided in this column is a compilation of both the original Table A-III/4 **Competence** column and the **Knowledge, understanding, and proficiency** column.	The information in this column provides both the assessment conditions and the behavioral objective associated with the competence, knowledge, understanding, or proficiency performance. For knowledge based written tests, the assessment condition refers to participation in a USCG approved course or training module as part of an overall Ratings Forming Part of an Engineering Watch program. For proficiency based practical demonstrations, the assessment condition refers to performance on a ship, school training vessel, shoreside engineering plant installations, or an engine room simulator as applicable. In some cases the propulsion mode is specified.	The information in this column provides the measures by which the competence, knowledge, understanding, or proficiency demonstration is accomplished. For knowledge based written tests, the performance measure areas are those subject matter topics that are to be a functional part of the comprehensive written examination. For proficiency based practical demonstrations in which a plant maintenance function is being assessed, the procedural steps required for task accomplishment are listed. Unless otherwise noted, the prospective rating performs these tasks without prompting by a watch engineer or equivalent. For proficiency based practical demonstrations in which a plant monitoring function is being assessed, the monitoring checks are listed. Due to the generic and comprehensive nature of the checks listings and the variability of plant features, some checks may not apply to certain situations. Unless otherwise noted, the prospective rating performs these tasks without prompting by a watch engineer or equivalent. For proficiency based practical demonstrations in which an plant operational function is being assessed, the procedural steps listed by no means represent a complete listing as the watch engineer would complete those steps not listed, which for the most part represent those critical steps, especially those in which operating controls are manipulated. Steps listed are those requiring labor intensive effort and that a rating would ordinarily peform as directed and prompted by the watch engineer. For proficiency based practical demonstrations, the listed performance measures are designed to be a benchmark guide for the construction of an actual assessment instrument, appropriate for the assessment platform.	The information in this column provides the assessment criteria by which the performance measures are judged. For knowledge based written tests, the performance standards cite a successful percentage rate for comprehensive written examinations and also an examination table of specifications as stipulated in the course or training module curriculum. Tests are to be randomly generated and the question database is to offer a representative sampling of all performance measure areas. For proficiency based practical demonstrations, the performance standards provide guidance on how to qualitatively and quantitatively judge performance. Where relevant, critical steps are specified. Where applicable conformance to regulatory requirements, engineering plant operating guides, and standard accepted engineering practices and accepted safety practices are cited. Where appropriate, parameter measurement recording tolerances, taken during machinery space rounds, are specified. Some tolerances, such as maintained boiler pressure and boiler steam drum water levels, are left blank. These specific standards should reflect the actual requirements relevant to the actual assessment platform. For proficiency based practical demonstrations, the listed performance standards are designed to be a benchmark guide for the construction of an actual assessment instrument appropriate for the assessment platform.

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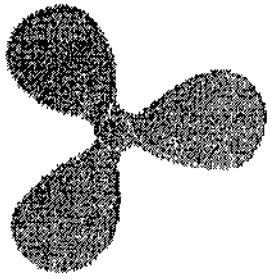
Table A-III/4

AUXILIARY PLANT OPERATIONS PROFICIENCY GROUP

(Requires proficiency based practical demonstration)

1. Pump out machinery space bilges
2. Pump out miscellaneous space bilges
3. Take on sea water ballast
4. Pump off sea water ballast
5. Transfer sea water ballast to adjust trim
6. Transfer sea water ballast to adjust attitude
7. Take on fresh water
8. Recharge hydropneumatic header tanks
9. Shift sea suction to alternate sea chest
10. Blow sea chest clear of obstructions
11. Transfer lube oil purifier suction
12. Transfer fuel oil
13. Monitor potable water systems
14. Monitor sanitary flushing water systems
15. Monitor general service sea water systems
16. Monitor sewage treatment plants
17. Monitor oily water separators
18. Monitor lube oil purification plants
19. Monitor fuel oil treatment plants
20. Monitor compressed air plants
21. Monitor refrigeration plants
22. Monitor air conditioning plants
23. Monitor distilling plants
24. Monitor electricity generating plants
25. Monitor hydraulic steering gear
26. Determine tank and pressure vessel levels
27. Hand over watch
28. Relieve watch
29. Acknowledge and respond to plant alarms
30. Use interior communications equipment
31. Communicate orally on watch
32. Read written orders and instructions
33. 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. Adheres to basic environmental protection procedures.	Given the machinery spaces of a ship or school training vessel, pump out machinery space bilges within the same area as the bilge pump operating control station as directed.	Pumps machinery space bilges to include: a. sounds bilge water collecting tank to insure it is capable of accomodating projected amount of bilge water without overflowing. b. lines up the bilge system to take a suction on the desired bilge pocket and to discharge to the bilge water collecting tank. c. starts bilge pump. d. monitors bilge pump suction and discharge pressure gauges to insure bilge pump has picked up a suction. e. primes bilge pump as necessary. f. monitors bilge pocket level. g. stops bilge pump when bilge pocket has been pumped dry. h. restores bilge system valve lineup back to normal.	Machinery space bilges are successfully pumped dry while remaining in compliance with all pollution prevention regulations and conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics, and engineering watch supervisors as appropriate.

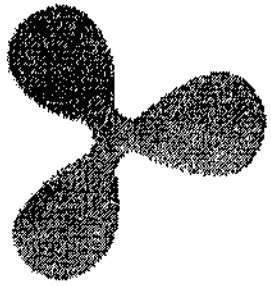


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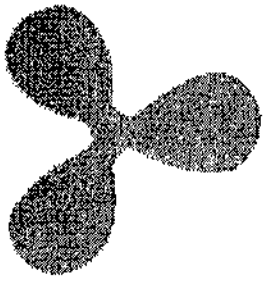
Table A-III/4

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: Performs engine-room watch keeping procedures. Adheres to basic environmental protection procedures.	Given the machinery spaces of a ship or school training vessel, pump out designated spaces outside the bilge pump operating station location as directed.	Pumps out designated space outside the bilge pump operating station location to include: a. sounds bilge water collecting tank to insure it is capable of accomodating projected amount of space water without overflowing. b. lines up the bilge system to take a suction on the desired designated space and to discharge to the bilge water collecting tank. c. starts bilge pump. d. monitors bilge pump suction and discharge pressure gauges to insure bilge pump has picked up a suction. e. primes bilge pump as necessary. f. stops bilge pump when bilge pump loses suction. g. restores bilge system valve lineup back to normal.	Designated space bilges are successfully pumped dry while remaining in compliance with all pollution prevention regulations and conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics 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

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 operable sea water ballast system onboard ship, school training vessel or suitable engine room simulator where the vessel is determined to be "too high" in the water, take on sea water ballast to attain desired trim, attitude, and mean draft as directed.	Takes on sea water ballast to include: a. lines up ballast pump suction manifold and/or suction piping to take a suction on an appropriate seachest. b. lines up ballast pump discharge manifold and/or piping to direct flow to the ballast tank fill and drain manifold. c. lines up ballast tank fill and drain manifold to fill those ballast tanks as directed. d. starts ballast pump. e. stops ballast pump when vessel is brought down to desired draft marks. f. restores ballast system piping back to normal.	Ballast is susscessfully taken on while conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate. Takes note of ballast tank soundings, clinometer readings, and draft marks before, during, and after ballasting operations. Desired trim, attitude, and mean draft is sucessfully achieved.

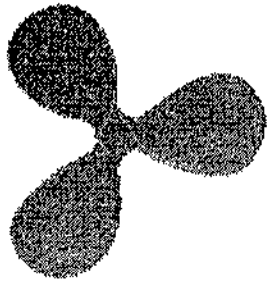


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Table A-III/4

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: Performs engine-room watch keeping procedures.	Given an operable sea water ballast system onboard ship, school training vessel or suitable engine room simulator where the vessel is determined to be "too low" in the water, pump off sea water ballast to attain desired trim, attitude, and mean draft as directed.	Pumps off sea water ballast to include: a. lines up ballast pump suction manifold and/or suction piping to take a suction on the ballast tank fill and drain manifold. b. lines up ballast pump discharge manifold to direct flow to the sea water overboard. c. lines up ballast tank fill and drain manifold to drain those ballast tanks as directed. d. starts ballast pump. e. stops ballast pump when vessel is brought up to desired draft marks f. restores ballast system piping back to normal.	Ballast is successfully pumped off while conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate. Takes note of ballast tank soundings, clinometer readings, and draft marks before, during, and after deballasting operations. Desired trim, attitude, and mean draft is successfully achieved.

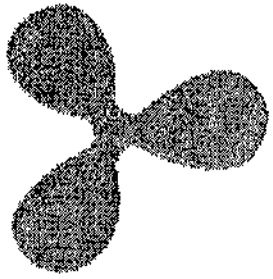

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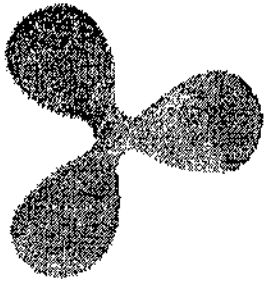
Table A-III/4

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: Performs engine-room watch keeping procedures.	Given an operable sea water ballast system onboard ship, school training vessel or suitable engine room simulator where the vessel is determined to be either "down by the bow" or excessively "down by the stern", transfer ballast to eliminate the adverse fore-aft trim condition while maintaining attitude as directed.	Determines whether or not direct transfer capability exists from tank to tank. If so: a. lines up ballast pump suction manifold and/or suction piping to take a suction on the ballast tank fill and drain manifold. b. lines up ballast pump discharge manifold to direct flow to the ballast tank fill and drain manifold. c. lines up ballast tank fill and drain manifold to drain those ballast tanks as directed and lines up ballast tank fill and drain manifold to fill those ballast tanks as directed. d. starts ballast pump. e. stops ballast pump when vessel is no longer in an undesirable fore-aft trim condition. f. restores ballast system piping back to normal. Determines whether or not direct transfer capability exists from tank to tank. If not: a. performs take on sea water ballast procedure and performs pump off sea water ballast procedure as appropriate.	Ballast is successfully transferred to eliminate the adverse fore-aft trim condition while conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate. Takes note of ballast tank soundings, clinometer readings, and draft marks before, during, and after ballast transfer operations. Desired trim, attitude, and mean draft is successfully achieved.



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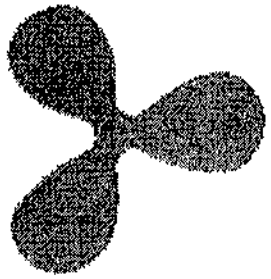
Proficiency based practical demonstration

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 operable sea water ballast system onboard ship, school training vessel or suitable engine room simulator where the vessel is determined to have either a starboard or a port list, transfer ballast to eliminate the list condition while maintaining trim as directed.	Determines whether or not direct transfer capability exists from tank to tank. If so: a. lines up ballast pump suction manifold and/or suction piping to take a suction on the ballast tank fill and drain manifold. b. lines up ballast pump discharge manifold to direct flow to the ballast tank fill and drain manifiold. c. lines up ballast tank fill and drain manifold to drain those ballast tanks as directed and lines up ballast tank fill and drain manifold to fill those ballast tanks as directed. d. starts ballast pump. e. stops ballast pump when vessel is no longer in an undesirable fore-aft trim condition. f. restores ballast system piping back to normal. Determines whether or not direct transfer capability exists from tank to tank. If not: a. performs take on sea water ballast procedure and performs pump off sea water ballast procedure as appropriate.	Ballast is successfully transferred to eliminate the list condition while conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide pertinent piping system schematics and engineering watch supervisors as appropriate. Takes note of ballast tank soundings, clinometer readings, and draft marks before, during, and after ballast transfer operations. Desired trim, attitude, and mean draft is successfully achieved.



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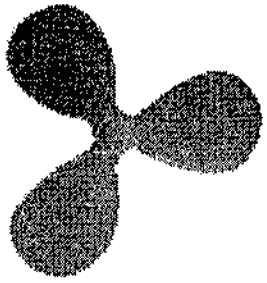
Proficiency based practical demonstration

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 a ship, school training vessel tied up alongside a pier or vessel with fresh water services, from within the engine-room assist in taking on fresh water as directed.	Takes on fresh water to include: a. determines from the watch engineer or equivalent the order in which the fresh water tanks are to be filled. b. lines up fresh water manifold to fill first tank to be filled. c. upon filling first tank, lines up second tank to be filled prior to securing first tank fill valve. d. continues in similar fashion until all tanks are filled. e. secures fresh water manifold. f. reports to the watch officer when all tanks are filled.	Fresh water tanks are successfully filled while conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate.



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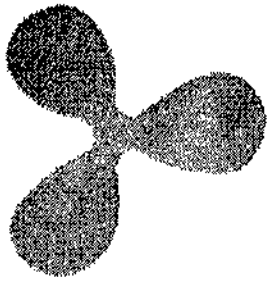
Proficiency based practical demonstration

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 operating potable water and sanitary flushing water systems onboard ship or school training vessel, recharge the potable water and sanitary flushing water hydropneumatic header tanks with compressed air as directed.	Recharges potable or sanitary hydropneumatic header tank to include: a. determines need for recharging tanks with compressed air. b. locates and connects air charging hose from air charging line to tank charging connection. c. opens compressed air valve, then opens tank charging valve. d. monitors tank pressure and level. e. secures air charge when tank pressure rises to an acceptable pressure for the corresponding tank level, closing the tank charging valve, then the compressed air valve. f. disconnects and stows air charging hose.	Potable water or sanitary water hydropneumatic header tanks are successfully recharged with compressed air while conforming to local operating procedures and standard engineering practice. At the completion of the recharging procedure, header pressures are within normal paramaters and no evidence of pump short-cycling exists. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate.



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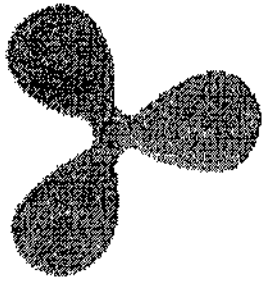
Proficiency based practical demonstration

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 sea water circulating system onboard ship or a school training vessel, shift sea suctions from one sea chest to another while maintaining continuous flow as directed.	Shifts sea suction to an alternate sea chest to include: a. opens sea suction valve from alternate sea chest and any crossconnect valves as necessary. b. closes sea suction valve from off-going sea chest. c. monitors sea water pump suction and discharge pressures to confirm continuous flow.	Sea suctions are successfully shifted from one sea chest to another while maintaining continuous flow and conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate. Takes corrective action of continuous flow is not maintained.



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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 sea water circulating system onboard ship or a school training vessel, perform a sea chest blow while maintaining a continuous flow as directed.	Blows sea chest clear of obstructions to include: a. opens sea suction valve from alternate sea chest and any crossconnect valves as necessary. b. closes sea suction valve from sea chest to be blown clear as well as any continuous vent isolation valve. c. opens sea chest blow valve (air or steam as appropriate) and blows sea chest clear. d. closes sea chest blow valve after several seconds. e. reopens continuous vent isolation valve and sea suction valve from sea chest just blown clear. f. recloses sea suction valve from alternate sea chest and any crossconnects. g. monitors sea water pump suction and discharge pressures to confirm continuous flow.	Sea chest is successfully blown clear of obstructions while maintaining continuous flow and conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate. Takes corrective action if continuous flow is not maintained.

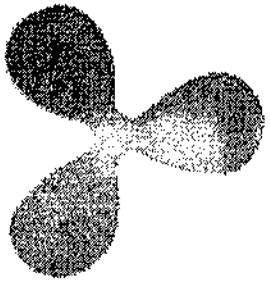

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Table A-III/4

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: Performs engine-room watch keeping procedures.	Given an operating lube oil or fuel oil purifier aboard a ship or school training vessel, transfer suction from one oil sump or tank to another while maintaining continuous flow as directed.	Transfers lube oil purifier suction to an alternate sump to include: a. opens suction valve from oil sump or tank to be drawn from and any other valves drawing oil to purifier suction. b. opens return valve to oil sump or tank to be drawn from and any other valves discharging oil from the purifier outlet. c. closes suction and return valves associated with off-going sump or tank. d. monitors lube oil purifier suction and discharge pressures to confirm continuous flow. e. monitors sump or tank levels of both off-going and on-coming sumps or tanks to insure no oil migration occurs.	Successfully shifts lube oil or fuel oil purifier suction from one oil sump or tank to another while maintaining continuous flow and conforming to local operating procedures and standard engineering practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate. Takes corrective action if continuous flow is not maintained.

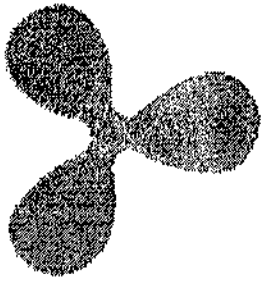

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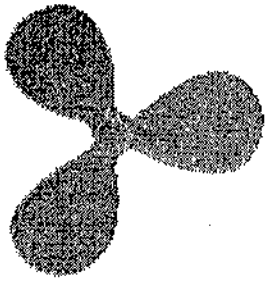
Table A-III/4

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: Performs engine-room watch keeping procedures. Adheres to basic environmental protection procedures.	Given an operable fuel oil transfer system aboard a ship or school training vessel, transfer fuel from a fuel oil storage tank to a fuel oil settling or a fuel oil settling to tank to an fuel oil service tank as directed.	Transfers fuel oil to include: a. lines up fuel oil transfer pump and fuel oil manifold to take a suction on the desired fuel oil storage tank or fuel oil settling tank as directed. b. lines up fuel oil transfer pump to discharge to the desired settling or service tank as directed. c. determines fuel oil settling or service tank level. d. starts fuel transfer pump. e. checks fuel oil transfer pump suction and discharge pressures to determine that the pump picks up suction. f. monitors fuel oil settling or service tank level. g. stops fuel transfer pump when fuel settling or service tank approaches full. h. restores fuel transfer system piping back to normal.	Fuel is successfully transferred while remaining in compliance with all pollution prevention regulations, conforming to local operating procedures, standard engineering and fire prevention safety practice. Seeks clarification from local operating guide, pertinent piping system schematics and engineering watch supervisors as appropriate.



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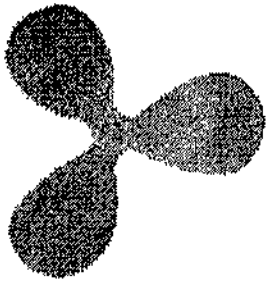
Proficiency based practical demonstration

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 ship, school training vessel, or suitable engine room simulator, monitor potable water systems as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors potable water systems to include: a. checks plant operational mode status. b. checks potable water pump fresh water tank source (fresh water tank on service). c. checks potabler water pump packing gland for proper leakoff or mechanical seal for leakage as appropriate d. checks potable water filter pressure drop e. checks potable water header tank level and pressure. f. checks potable hot water header temperature. g. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of potable water pump operation, the pump may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors potable water systems during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines potable water system pressures, temperatures, levels, suction sources, 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

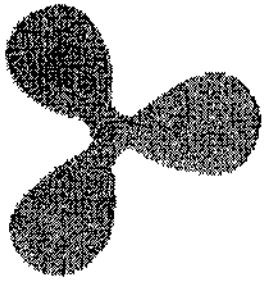
STCW 95

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, monitor sanitary flushing water systems as directed.	Monitor sanitary flushing water systems to include: a. checks plant operational mode status. b. checks sanitary flushing water pump suction source (sea chest on service). c. checks sanitary water flushing pump suction and discharge pressure d. checks sanitary flushing water pump packing gland for proper leakoff or mechanical seal for leakage as appropriate e. checks sea suction strainer pressure drop c. checks sanitary flushing water header tank level and pressure. d. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of sanitary flushing water pump operation, the pump may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors sanitary flushing water systems during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines sanitary flushing water system pressures, levels, sea chest suction sources, 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

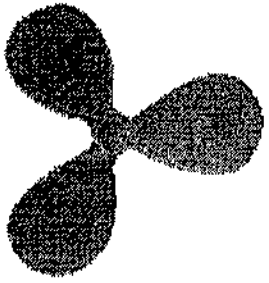
STCW 95

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, monitor general service sea water systems as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors general sea water service systems to include: a. checks plant operational mode status. b. checks identity of general service sea water pump point of suction (sea chest). c. checks general service sea water pump packing gland for proper leakoff or mechanical seal for leakage as appropriate d. checks general service sea water pump suction and discharge pressures. e. checks sea suction strainer pressure drop. f. checks sea water injection temperature. g. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors general sea water service systems during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines general service sea water system pressures, temperatures, suction sources 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

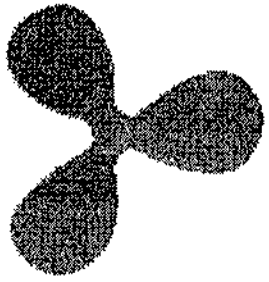
STCW 95

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, monitor sewage waste treatment plants as directed.	Monitors sewage waste treatment plants to include: a. Checks plant operational mode status. b. Checks destination of "black" water sewage (overboard or sewage waste treatment plant preliminary chamber) c. Checks sewage circulating and overboard discharge pump discharge pressures d. Checks sewage circulating and overboard discharge pump mechanical seals for leakage e. Checks air compressor discharge pressure f. Checks chemical treatment batch tank level g. Checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of sewage circulating and overboard discharge pump operation, the pumps may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors sewage waste treatment plants during the course of machinery space rounds. Correctly determines plant operational mode status. Confirms the the destination of "black" water sewage is in keeping with pollution prevention regulations. Correctly determines sewage waste treatment plant pressures 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 sewage treatment plant technologies, some performance measures may not apply.



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

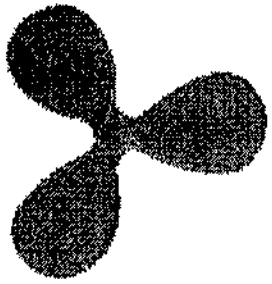
STCW 95

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, monitor oily water separators as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors oily water separators to include: a. checks plant operational mode status. b. checks bilge water tank level. c. checks oily waste collecting tank level. d. checks oily water separator chamber pressure e. checks filling and displacement water supply pressure f. checks overboard discharge water pump discharge pressure. g. checks oil concentration of overboard discharge water h. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of overboard discharge water pump operation, the pump may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors oily water separators during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines bilge water tank and oily waste collecting tank levels, oily water separator and overboard discharge water pump pressures, and overboard discharge water oil concentrations 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, pertinent pollution regulations and engineering watch supervisors when unsure of normal parameter ranges. Reports any unusual or unsafe conditions, including the approachment of the overboard discharge water oil concentration to the maximum allowable of 15 ppm. Immediately shuts down the oily water separator if this maximum is exceeded and informs the watch engineer upon doing so.



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

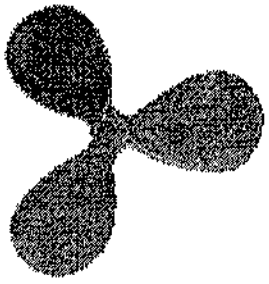
STCW 95

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 simulator, monitor lube oil purification plants as directed.	Monitors lube oil purification plants to include: a. checks plant operational mode status. b. checks dirty oil inlet temperature. c. checks dirty oil inlet pressure. d. checks clean oil discharge pressure. e. checks purifier gear drive oil sump level. f. determines point of suction to include: engine sump, engine sump tank, or lube oil settling tank. g. determines point of discharge to include: engine sump, engine sump tank, or lube oil service tank. h. checks sludge, engine sumps, and engine sump tanks, settling, and service tanks as appropriate. i. checks priming and wash water pressure. j. checks operate water pressure. k. checks control air pressure. l. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors lube oil purification plants during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines oil purification plant 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

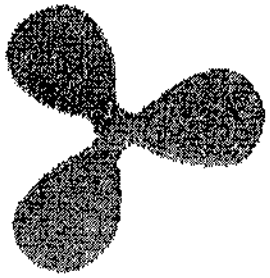
STCW 95

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 ship, school training vessel, or suitable engine room simulator, monitor fuel oil treatment plants as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors fuel oil treatment plants to include: a. checks plant operational mode status. b. checks dirty oil inlet temperature. c. checks dirty oil inlet pressure. d. checks clean oil discharge pressure. e. checks purifier gear drive oil sump level. f. checks sludge, settling, and service tank levels. g. checks priming and wash water pressure. h. checks bowl opening operate water pressure. i. checks control air pressure. j. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors fuel oil treatment plants during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines fuel oil treatment plant 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

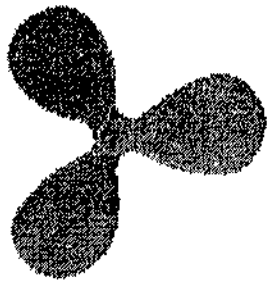
STCW 95

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 ship, school training vessel, or suitable engine room simulator, monitor compressed air plants as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors compressed air plants to include: a. checks plant operational mode status. b. checks compressor oil level. c. checks compressor oil pressure if applicable. d. checks air compressor suction pressure or air inlet filter pressure differential indication as appropriate. e. checks air compressor discharge air pressure and compressed air service tank pressures. f. checks compressor air discharge temperature. g. checks compressor load/unload status. j. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of air compressor operation, the air compressor may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors compressed air plants 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.



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

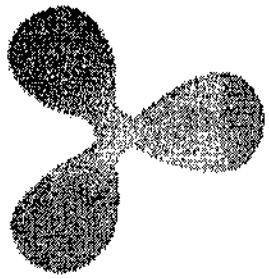
STCW 95

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, monitor refrigeration plants as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors refrigeration plants to include: a. checks plant operational mode status. b. checks compressor suction and discharge pressures. c. checks compressor oil level. d. checks compressor oil pressure and control oil pressure if applicable. e. checks receiver level. f. checks liquid line sight glass condition. g. checks suction line condition. h. checks suction and discharge temperatures. i. checks condenser sea water inlet and outlet temperatures. j. checks walk-in box temperatures. k. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of refrigeration compressor operation, the compressor may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors refrigeration plants during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines refrigeration plant pressures, temperatures, levels, and line 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

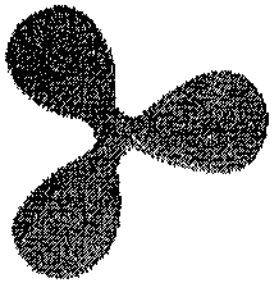
STCW 95

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, monitor air conditioning plants as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors air conditioning plants to include: a. checks plant operational mode status. b. checks compressor suction and discharge pressures. c. checks compressor oil level. d. checks compressor oil pressure and control oil pressures. e. checks receiver level. f. checks liquid line sight glass condition. g.checks suction line condition. h. checks suction and discharge temperatures. i. checks condenser sea water inlet and outlet temperatures. j. checks chilled water pump suction and discharge pressures if applicable. k. checks chilled water inlet and outlet temperatures if applicable. l. checks chilled water expansion tank level if applicable. m. checks for any unusual conditions threatening the operational integrity of the plant or personal safety. Note: due to the cyclic nature of air conditioning compressor operation, the compressor may not be running during a given machinery space round. The candidate, however, must demonstrate all competencies.	Monitors air conditioning plants during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines air conditioning plant pressures, temperatures, levels, and line 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.



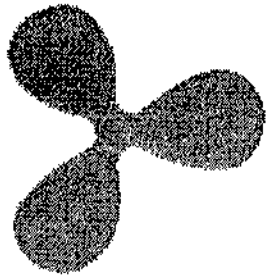
Specification of minimum standard of competence for ratings forming part of an engineering watch

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, monitor distilling plants as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors distilling plants to include: a. checks plant operational mode status. b. checks sea water feed, brine, distillate, and ejector pump suction and discharge pressures as appropriate. c. checks air ejector steam supply pressure if applicable. d. checks air/brine ejector supply pressure if applicable. e. checks sea water feed inlet temperature. f. checks distillate outlet temperature. g. checks first and second stage shell vacuums as appropriate. h. checks feed water heater inlet pressure or temperature (steam or diesel engine jacket water) as applicable. i. checks distillate salinity. j. checks brine level. k. checks for distillate outflow destination. l. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors distilling plants during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines distilling plant pressures, vacuums, temperatures, levels, and salinities 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

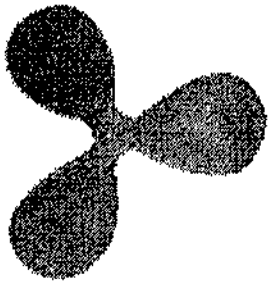
STCW 95

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, monitor electricity generating plants from the main switchboard and at generator as directed	Monitors electricity generating plants to include: a. checks plant operational mode status. b. checks generator rpm c. checks generator frequency. d. checks generator output voltage. e. checks generator output amperage. f. checks generator kilowatt output g. checks generator kilovoltamp output h. checks generator power factor i. checks for bus ground faults. j. checks generator air temperature k. checks generator bearing temperatures l. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors electricity generating plants during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines electric plant frequencies, voltages, tamperages, kilowatt outputs, and power factors 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

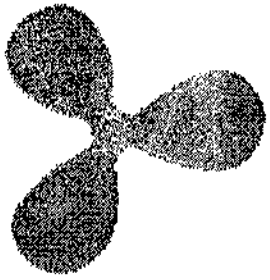
STCW 95

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, monitor steering gear as directed with an emphasis on performing checks at the actual equipment location within the machinery spaces.	Monitors hydraulic steering gear to include: a. determines plant operational mode status. b. checks steering gear hydraulics reservoir level on both port and starboard units. c. inspects hydraulic piping, hoses, and rams or actuators for leaks. d. inspects rudder post packing glands. e. inspects after steering room bilges for water or hydraulic oil accumulation. f. checks for any unusual conditions threatening the operational integrity of the plant or personal safety.	Monitors hydrauic steering gear during the course of machinery space rounds. Correctly determines plant operational mode status. Correctly determines steering unit hydraulic oil levels and reports any out of specification parameters. Records parameter readings as requested by the watch engineer. Reported accuracy is within __% of gauge scale range.Successfully conducts necessary inspections. 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

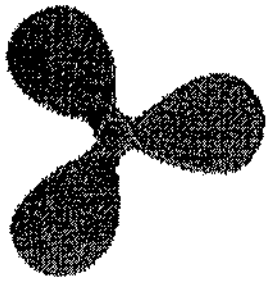
STCW 95

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: Employ safe working practices as related to engine-room operations.	Given an operating ship, school training vessel, or suitable shoreside power plant, determine the liquid levels of various presure vessels and vented tanks.	Determines the levels of various presure vessels and vented tanks to include: a. determines the liquid level of vented tanks and low pressure pressure vessels fitted with tubular sightglasses b. determines the liquid level of a high pressure pressure vessel fitted with multiple sightglasses c. sounds the liquid level of a vented tank fitted with sounding petcocks d. sounds the liquid level of vented tanks fitted with sounding tubes using a sounding tape e. determines the fluid level of a lube oil sump fitted with a dipstick f. determines the liquid level of a vented tank fitted with a pneumercator g. determines the liquid level of a vented tank or pressure vessel fitted with a local float type level gauge h. determines the level of a vented tank or presure vessel fitted with remote reading level gauges i. determines the level of pressure vessels fitted with ball float viewing glasses j. determines the level of compressor sumps fitted with bull's eyes	Successfully determines all vented tank and pressure vessel levels using the proper terminology such as inches, feet and inches, gallons, fraction of a glass, fraction of a tank, percentage full, down by a quart, etc. while conforming to local operating procedures and standard engineering practice and observing all pertinent safety precautions.



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

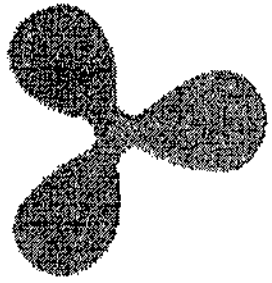
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical deomonstration

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 from the perspective of the auxiliary plant only, properly hand over the watch to the oncoming relief oiler (or equivalent).	Hands over watch to include: a. describes to the on-coming relief the operational status of the plant. b. describes to the on-coming relief any unusual conditions or plant alarms occurring during the previous watch. c. describes to the on-coming relief any standing orders. d. describes to the on-coming relief any pertinent routine maintenance performed on the previous watch. e. describes to the on-coming watch any on-going repairs or out-of-commission equipment affecting plant operations. f. insures that all duplex strainers are in a state of readiness for shifting as the need arises. g. insures that engine room bilges are pumped prior to handing over the watch	Successfully communicates to the on-coming watch plant operational status, unusual or alarm conditions during the previous watch, standing orders, maintenance performed on the previous watch, and on-going repairs affecting plant operations. Insures that the off-line element of all plant duplex strainers has been cleaned prior to turning over the watch. Does not hand over watch until completely satisified that the watch relief is fully aware of the operational status of the plant and is competent to perform associated duties.



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

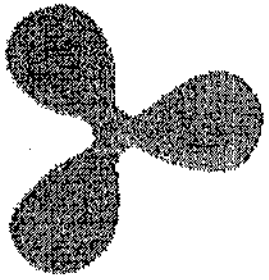
STCW 95

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 or school training vessel and from the perspective of the auxiliary plant only, properly relieve the off-going oiler (or equivalent).	Relieves watch to include: a. relieves the watch in a punctual manner. b. conducts a complete round of machinery spaces prior to relieving the watch. c. obtains a complete briefing from the off-going watch in terms of operational status of machinery, unusual conditions or alarms during preceding watch, or the status of any on-going repairs. d. reads the engineer's standing orders and the machinery status board and determines whether or not any discrepancies exist.	Relieves the watch at least fifteen minutes before the hour. Successfully determines from the off-coming watch plant operational status, unusual or alarm conditions during the previous watch, standing orders, maintenance performed on the previous watch, and on-going repairs affecting plant operations. Does not relieve watch until fully aware of the operational status of the plant, confident in assuming associated duties, which includes conducting a complete round of the machinery spaces. Seeks clarification from the off-going watch and engineering watch supervisors as necessary.



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

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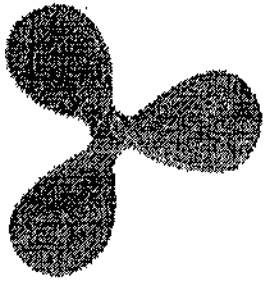
Function: Marine engineering at the support level

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. Appropriately responds to engine-room alarm systems and distinguishes between the various alarms, with special reference to fire extinguishing gas alarms.	Given an operating ship, school training vessel, or suitable engine room simulator, assist in acknowledging, silencing, and responding to plant alarms.	Acknowledges and responds to engineering plant alarms to include: a. in response to an engineering plant alarm, acknowledges the alarm. b. as directed by the watch engineer, confirms affected parameter is above or below the established alarm point. c. assists the watch engineer in taking corrective action as directed. d. clears the alarm once the alarm condition has been corrected.	In response to an engineering plant alarm, correctly identifies the alarming parameter and silences the alarm in acknowledgement. As directed by the watch engineer, confirms agreement between local and remote parameter readings. Implements corrective action strategy devised by the watch engineer as directed by responding in a timely fashion to the watch engineer's orders. Assists the watch engineer in determining when the alarm condition has cleared as directed and clears the alarm. Seeks clarification as to normal readings and alarm points when not clearly understood.



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

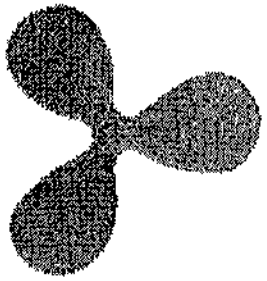
STCW 95

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. Properly uses appropriate internal communications systems.	Given an operating ship, school training vessel, or suitable engine room simulator, effectively communicate using all available interior communications equipment.	Uses interior communications equipment to include: a. responds appropriately to ship's emergency alarms. b. responds appropriately to engineering plant alarms. c. communicates clearly with remote stations via sound powered telephones. d. communicates clearly with remote stations via dial telephones. e. communicates clearly with remote stations via two-way radio. f. responds appropriately to all directives issued via public address system.	In response to a ship's emergency alarm, correctly performs duties as posted on the Station Bill. In response to an engineering plant alarm, acknowledges, silences, verifies parameter, takes corrective action, and clears alarm as directed by the watch engineer. Using fixed sound powered phone equipment and using the hand cranked ringer, rings up a remote station and clearly communicates pertinent watch information. On the receiving end responds to a ringing sound powered phone set and clearly communicates pertinent watch information with the remote station. Similiarly communicates using a portable sound powered phone headset. Clearly and effectively communicates watch information via the ship's dial telephone network both as a caller and as a call recipient. Using a two-way radio, establishes an FCC acceptable and agreed upon communications frequency, establishes radio contact with a remote location station and communicates clearly pertinent watch information. Correctly and in a timely fashion carries out all directives issued via the public address system.



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

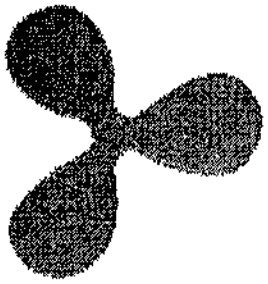
STCW 95

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: Performs engine-room watchkeeping procedures.	Given an operating ship, school training vessel, or suitable engine room simulator, follow oral instructions as given by the officer in charge of the engineering watch or equivalent	Effectively communicates orally while on watch with the following individuals as it pertains to watchstanding duties to include: a. officers in charge of the engineering watch b. the first assistant engineer c. the chief engineer d. unlicensed engine watchstanders e. licensed and unlicensed dayworkers	Converses clearly with the licensed watch engineers and unlicensed watchstanders in the English language using the correct nautical and marine engineering plant terminology for machinery and related systems. Understands and carries out verbal orders and directives issued by the officer in charge of the engineering watch, first assistant engineer, or chief engineer. Asks questions and seeks clarification when verbal orders are not initially clearly understood.



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

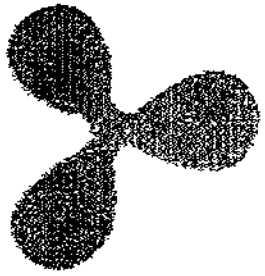
STCW 95

Function: Marine engineering at the support level

Table A-III/4

Proficiency based practical demonstration

STCW Competency	Performance Objective	Performance Measures	Performance Standards
Understand orders and be understood in matters relevant to watchkeeping duties: Performs engine-room watchkeeping procedures.	Given an operating ship, school training vessel, or suitable engine room simulator, follow all written directives as issued by the Chief Engineer, First Assistant Engineer, officer in charge of the engineering watch, or equivalent.	Reads, understands, and complies with all forms of written communications associated with the engineering watch as it relates to the ratings forming part of the engineering watch at the suppoort level to include: a. engineering plant status board b. engineer's standing orders and written directives c. watch engineer's written instructions and notes d. relieved watch's notes e. engineering plant operating instructions f. safety placards g. product warning labels	Reads and understands all written forms of communications specified as performance measures. Demonstrates sufficient fluency in written English requisite to performing watch duties. Understands, carries out and complies with written orders and instructions by the officer in charge of the engineering watch, first assistant engineer, or chief engineer. Asks questions and seeks clarification when written directives 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
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 motor vessel, diesel propelled school training vessel, or suitable shoreside piping systems and machinery arrangements comparable to shipboard motor 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 motor propulsion plant systems to include: a. air intake and scavenging b. exhaust c. cylinder jacket water cooling d. specialized water cooling e. engine bearing lubricating oil f. specialized lubricating oil g. fuel oil service h. start and clutch air i. sea water cooling j. controllable pitch propeller k. main engine, reduction gear, and propulsion shafting 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, compressors, 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.