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NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 07-14

Subj: GUIDELINES FOR QUALIFICATION FOR STCW ENDORSEMENTS AS RATING FORMING PART OF AN ENGINEERING WATCH

Ref: (a) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW), Regulation III/4 and Section A-III/4 of STCW Code, incorporated into regulations at 46 Code of Federal Regulations (CFR) 12.103

1. PURPOSE. This Navigation and Vessel Inspection Circular (NVIC) provides guidance on qualification for and revalidation of STCW endorsements as Rating Forming Part of an Engineering Watch (RFPEW).

2. ACTION. The Coast Guard will use this NVIC and 46 CFR 12.609 when establishing whether mariners are entitled to hold STCW endorsements as RFPEW. Officers in Charge, Marine Inspection (OCMIs) should also bring this NVIC to the attention of the maritime industry within their zones of responsibility. This NVIC is available on the World Wide Web at http://www.uscg.mil/hq/cg5/nvic. The Coast Guard will distribute it by electronic means only.

3. DIRECTIVES AFFECTED. This NVIC cancels NVIC 01-06, *Guidelines for Assessment of Merchant Mariners' Proficiency for Certification as Ratings Forming Part of an Engineering Watch through Demonstrations of Skills*, and and those portions of National Maritime Center (NMC) Policy Letter 14-02, *Qualifications for Deck and Engineering Ratings* that are only applicable to RFPEW.

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NON-STANDARD DISTRIBUTION: See Page 4

4. BACKGROUND.

a. The STCW Convention and STCW Code, sets forth standards for training and certification for merchant mariners, including mariners serving as RFPEW.

b. In order to implement the 1995 amendments to STCW, the Coast Guard published NVIC 01-06 and NMC Policy Letter 14-02 providing guidance on how mariners may qualify for endorsement as RFPEW.

c. The International Maritime Organization (IMO) amended the STCW Convention and STCW Code on June 25, 2010. These amendments entered into force for all ratifying countries on January 1, 2012.

d. The Convention is not self-implementing; therefore, the U.S., as a signatory to the STCW Convention, must initiate regulatory changes to ensure full implementation of the amendments to the STCW Convention and STCW Code. The U.S. implements these provisions under the Convention and under the authority of the applicable domestic laws in United States Code, Titles 33 and 46.

e. The Coast Guard published a final rule on December 24, 2013 (78 FR 77796) that implements the STCW, including the 2010 amendments. The Coast Guard is publishing this NVIC to provide guidance on complying with the new regulations and is cancelling previous policy. Accordingly, this NVIC cancels NVIC 01-06 and relevant portions of NMC Policy Letter 14-02.

5. DISCUSSION.

a. Policy regarding the endorsement as RFPEW is located in this NVIC, including forms to facilitate compliance with the regulations. Enclosure (1) details specific requirements found in the regulations for this endorsement. Enclosure (2) contains the national assessment guidelines for this endorsement. Enclosure (3) may be used to record completion of assessments. Enclosure (4) provides a transition scheme for mariners who have begun qualifying for RFPEW using the assessments in the now cancelled NVIC 01-06. Enclosure (5) provides relevant excerpts from the STCW Convention and STCW Code.

b. Many U.S.-flag vessels use automated engine rooms where non-licensed engine-department personnel are non-watchstanding. Service, training, and experience gained by engine-department day-workers or dual-department workers on U.S-flag vessels with automated engine-rooms will be acceptable towards meeting the minimum service required for certification as RFPEW when the applicant has demonstrated his or her ability to perform the individual functions associated with watchstanding duties.

c. Qualified Assessors (QAs) are encouraged to use either the guidelines in Enclosure (2) or an alternative as discussed in paragraph 5.d.

d. QAs may refine these published guidelines and/or develop alternatives since the standards used on board any given vessel may need to be modified to be compatible with the vessel's equipment and operations manuals. A training institution submitting a course or program that leads to an endorsement as RFPEW should state either that the guidelines in Enclosure (2) will apply, or provide the guidelines it proposes to use. However, under 46 CFR 10.402(e), a training institution must submit any deviations from these guidelines to the Coast Guard for approval before use.

e. When applying for an RFPEW endorsement, the applicant need only submit the completed Enclosure (3), Record of Assessment (or equivalent evidence of demonstration of competency), to the Coast Guard. The Coast Guard recommends that the applicant retain a copy of enclosure (3) (or equivalent evidence of demonstration of competency), for his or her records.

6. DISCLAIMER. This guidance is not a substitute for applicable legal requirements, nor is it itself a regulation. It is not intended to nor does it impose legally-binding requirements on any party. It represents the Coast Guard's current thinking on this topic and is issued for guidance purposes to outline methods of best practice for compliance to the applicable law. You can use an alternative approach if the approach satisfies the requirements of the applicable statutes and regulations.

7. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS.

a. The development of this NVIC and the general policies contained within it have been thoroughly reviewed by the originating office, and are categorically excluded (CE) under current USCG CE # 33 from further environmental analysis, in accordance with Section 2.B.2. and Figure 2-1 of the National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts, COMDTINST M16475.1 (series). Because this NVIC implements, without substantive change, the applicable Commandant Instruction or other federal agency regulations, procedures, manuals, and other guidance documents, Coast Guard categorical exclusion #33 is appropriate.

b. This NVIC will not have any of the following: significant cumulative impacts on the human environment; substantial controversy or substantial change to existing environmental conditions; or inconsistencies with any Federal, State, or local laws or administrative determinations relating to the environment. All future specific actions resulting from the general policies in this NVIC must be individually evaluated for compliance with the National Environmental Policy Act (NEPA), DHS and Coast Guard NEPA policy, and compliance with all other environmental mandates.

8. RECORDS MANAGEMENT CONSIDERATIONS. This NVIC has been thoroughly reviewed during the directives clearance process, and it has been determined there are no further records scheduling requirements, in accordance with Federal Records Act, 44 U.S.C. 3101 et seq., NARA requirements, and Information and Life Cycle Management Manual, COMDTINST M5212.12 (series). This policy does not create significant or substantial change to existing records management requirements.

9. FORMS/REPORTS. None.

10. QUESTIONS. All questions regarding implementation of this Circular should be directed to the Mariner Credentialing Program Policy Division (CG-CVC-4), at (202) 372-2357 or MMCPolicy@uscg.mil. To obtain approval for an alternative to the assessments described in Enclosure (2), contact the NMC at (888) 427-5662 or IAskNMC@uscg.mil.

J. A. SERVIDIO
Rear Admiral, U. S. Coast Guard
Assistant Commandant for Prevention Policy

Encl: (1) Discussion of Qualification Requirements for Rating Forming Part of an Engineering Watch
(2) Assessment Guidelines for Rating Forming Part of an Engineering Watch
(3) Record of Assessment for Rating Forming Part of an Engineering Watch
(4) Transition from Former Assessment Scheme for Ratings Forming Part of an Engineering Watch
(5) Excerpts from STCW Convention and STCW Code

DISCUSSION OF QUALIFICATION REQUIREMENTS FOR RATING FORMING PART OF AN ENGINEERING WATCH

1. GENERAL.

This enclosure provides guidance to qualify for an International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW) endorsement as a Rating Forming Part of an Engineering Watch (RFPEW) as specified in 46 Code of Federal Regulations (CFR) 12.609.

2. SEA SERVICE, TRAINING, AND DEMONSTRATIONS.

a. In accordance with 46 CFR 12.609(a) and paragraphs 2 and 3 of STCW Regulation III/4, an applicant for an STCW endorsement as an RFPEW shall be not less than 16 years of age and must provide satisfactory evidence of:

(1) Meeting the standard of competence as specified in Table A-III/4 of the STCW Code (incorporated by reference, see 46 CFR 12.103 of this part); and

(2) Either of the following:

(i) Six months of seagoing service that includes training and experience associated with engine-room functions, and involves the performance of duties carried out under the supervision of an engineer officer or a qualified STCW rating; or

(ii) Satisfactory completion of Coast Guard approved or accepted training that includes a period of approved seagoing service of at least 2 months.

b. For qualification as an RFPEW, a day of approved seagoing service is 8 hours associated with engine room watchkeeping functions that involve the performance of duties carried out under the direct supervision of a qualified Engineer Officer or a qualified rating (STCW Regulation III/4). As an alternative to 8 hours in 1 day, two periods from two different calendar days, each not less than 4 hours will be credited as 1 day of sea service. When two such periods are combined as a single day of sea service, no additional credit is given for periods served over 8 hours total (46 CFR 10.107). Assessments and seagoing service should be performed on a vessel of at least 1,000 HP (750 kW) with a walk-in engine room (manned or periodically unmanned), generators independent of the main engine and other independent auxiliaries. Since many vessels no longer have manned engine rooms, experience with engine room maintenance may be substituted for watchkeeping experience. Sea service should be documented as specified in 46 CFR 10.232.

3. ASSESSMENTS.

a. An applicant for an RFPEW endorsement without limitations for specific propulsion modes or vessel equipment or systems should complete every

assessment. This will allow service as an RFPEW on any steam, motor, or gas turbine vessel. However, an applicant for an endorsement as an RFPEW limited to service on vessels of a specific propulsion mode or vessels that are not equipped with certain equipment or systems does not need to complete assessments that are not applicable to the propulsion modes or systems for which their endorsement will be valid. Applicability of individual assessments to propulsion modes and systems is noted in Enclosure (3). Failure to perform certain assessments will limit the endorsement accordingly.

b. Mariners may continue to qualify using the previous model assessments until December 31, 2016.

c. The Coast Guard may exempt an applicant from meeting any individual knowledge, understanding, and proficiency required in Section A-III/4 of the STCW Code. These exemptions will be approved by the Coast Guard based upon vessel type. Under these circumstances, the certificate may include a corresponding limitation (46 CFR 12.609(b)). To request such an exemption, please contact the Mariner Credentialing Program Policy Division (CG-CVC-4) as discussed in paragraph 10 of this NVIC.

4. RENEWAL OF ENDORSEMENT. In order to renew an endorsement as an RFPEW, a mariner must have completed the requirements for basic training found in 46 CFR 12.602 and meet the general qualification requirements for renewal of their national rating endorsement(s) found in 46 CFR 10.227.

Assessment Guidelines for Rating Forming Part of an Engineering Watch

Standard of competence

Every candidate for certification as rating forming part of an engineering watch (RFPEW) shall provide evidence of having achieved the required standard of competence as specified in Table A-III/4 of the STCW Code (46 Code of Federal Regulations (CFR) 12.609(a)(3)). The table below is adopted from Table A-III/4 of the STCW Code (found in Enclosure (5)) to assist the candidate and assessor in the demonstration of competency.

Practical Skill demonstrations

These assessment guidelines establish the conditions under which the assessment will occur, the performance or behavior the candidate is to accomplish, and the standards against which the performance is measured. The assessor is encouraged to use a checklist in conducting assessments of practical demonstrations of skill. Checklists allow a training institution or qualified assessor to ensure that critical tasks are not overlooked when evaluating a candidate's practical demonstration. Training institutions and qualified assessors should develop their own checklists for use in conducting the assessments in a complete and structured manner.

In addition, due to the unique requirements of different manufacturers for operating, maintenance, and repair; the different generations and configurations of systems; and the specific nature of shipboard installations did not permit the development of detailed performance criteria. As a result, many of the criteria in these guidelines call for direct reference to the manufacturers' instructions, recommendations and specifications, or the ship's standard operating procedures, to determine whether the candidate's actions were appropriate, complete, timely, and executed in the proper sequence.

Qualified Assessors

A shipboard Qualified Assessor (QA) who witnesses a practical assessment may sign the appropriate blocks and pages in the Record of Assessment in Enclosure (3) or an equivalent record. Prospective QAs should have a minimum of at least one year of experience as officer in charge of an engineering watch (OICEW) on seagoing vessels of the applicable propulsion mode(s) of at least 1,000 HP (750 kW). After December 31, 2016, QAs must be approved by the National Maritime Center to conduct the assessment(s) (46 CFR 10.107).

Notes referred to in the "Task No." column of the assessment table that follows.

All	The assessment applies to all RFPEW endorsements.
Note 1	Not performing this task will limit the candidate's endorsement to motor and/or gas-turbine propelled vessels only.
Note 2	Not performing this task will limit the candidate's endorsement to motor and/or gas-turbine propelled vessels without distilling plants.
Note 3	Not performing this task will limit the candidate's endorsement to motor and/or gas-turbine propelled vessels without waste-heat or auxiliary boilers.
Note 4	Not performing this task will limit the candidate's endorsement to motor vessels and/or steam vessels.
Note 5	Not performing this task will limit the candidate's endorsement to gas-turbine propelled and/or steam vessels.
Note 6	Not performing this task will limit the candidate's endorsement to steam vessels only.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/4 of the STCW Code. The use of these Assessment Guidelines is not mandatory and alternative means of having achieved the standards of competence in the STCW Code will be considered. In accordance with 46 CFR 10.402(e), alternative Assessment Guidelines must be submitted to the National Maritime Center and approved before use.

Assessment Guidelines for Ratings Forming Part of an Engineering Watch

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.A *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel,	the candidate makes an engine room round.	The candidate: 1. Inspects, monitors, and checks system parameters of all auxiliary systems and machinery, and main propulsion machinery, check operating pressures, temperatures, flow and level indicators, and collect readings for log book entry; 2. Inspects bilges and pump as necessary; notes piping condition in bilges and conducts visual inspection of sea chests; 3. Checks machinery spaces for all signs of fire, flooding, loss of lighting, and electric shock hazard; 4. Wipes up all spilled oil; 5. Inspects all system and machinery piping for signs of leaks; 6. Monitors all applicable strainer and filter pressure drops; 7. Checks electric motors and machinery for overheating; 8. Investigates any abnormal sounds, vibrations, or odors, as well as loose fittings, nuts, bolts, flanges, clamps, hangers, and connections; 9. Checks for any gear adrift or machinery guards not in place; 10. Notifies watch engineer of any unusual or unsafe conditions; 11. Takes appropriate action to correct any unusual or unsafe conditions; 12. Demonstrates proper keeping of the bell book; and 13. Takes proper action to prevent safety and pollution violations.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/4 of the STCW Code. The use of these Assessment Guidelines is not mandatory and alternative means of having achieved the standards of competence in the STCW Code will be considered. In accordance with 46 CFR 10.402(e), alternative Assessment Guidelines must be submitted to the National Maritime Center and approved before use.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.B(S) *Note 1*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a steam vessel, on a simulator, or in a laboratory,	the candidate monitors the electrical generating plant.	The candidate: 1. Checks plant's operational status; 2. Checks turbo-generator rpm; 3. Checks turbo-generator frequency; 4. Checks turbo-generator output voltage; 5. Checks turbo-generator output amperage; 6. Checks turbo-generator kilowatt output; 7. Checks turbo-generator kilovolt-amp reactive output, or power factor; 8. Checks turbo-generator bearings' temperature and oil flow; 9. Checks turbo-generator/reduction gear lube-oil sump levels; 10. Checks the physical condition of pipes, tubing, and hoses for wear or leaks; 11. Observes steam turbine lube-oil and cooling-water temperatures and pressures; 12. Observes auxiliary condenser vacuum and exhaust temperatures; 13. Observes level of condensate in auxiliary condenser hot well; 14. Checks for any unusual conditions or noises; 15. Notifies the watch engineer of any unusual or unsafe conditions; and 16. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.B(M) *Note 5*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a motor vessel, on a simulator, or in a laboratory,	the candidate monitors the electrical generating plant.	The candidate: 1. Checks plant's operational status; 2. Checks diesel generator rpm; 3. Checks diesel generator frequency; 4. Checks diesel generator output voltage; 5. Checks diesel generator output amperage; 6. Checks diesel generator kilowatt output; 7. Checks diesel generator kilovolt-amp reactive output or power factor, as appropriate; 8. Checks diesel generator bearings' temperature and oil flow; 9. Checks governor, turbocharger, and diesel engine sump lube-oil levels; 10. Checks the physical condition of pipes, tubing, and hoses for wear or leaks; 11. Observes diesel engine lube-oil and cooling-water temperatures and pressures; 12. Observes diesel engine air intake and exhaust temperatures and pressures, including air-intake filter pressure drop, as appropriate; 13. Checks start air pressure 14. Reads fuel-oil meter, day-tank levels, and observes operation of viscosimeter, if installed; 15. Checks for any unusual conditions or noises; 16. Notifies the watch engineer of any unusual or unsafe conditions; and 17. Takes proper action to prevent safety and pollution violations.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/4 of the STCW Code. The use of these Assessment Guidelines is not mandatory and alternative means of having achieved the standards of competence in the STCW Code will be considered. In accordance with 46 CFR 10.402(e), alternative Assessment Guidelines must be submitted to the National Maritime Center and approved before use.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.B(G) *Note 4*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a gas turbine vessel, on a simulator, or in a laboratory,	the candidate monitors the electrical generating plant.	The candidate: 1. Checks plant's operational status; 2. Checks gas turbine generator rpm; 3. Checks gas turbine generator frequency; 4. Checks gas turbine generator output voltage; 5. Checks gas turbine generator output amperage; 6. Checks gas turbine generator kilowatt output; 7. Checks gas turbine generator kilovolt-amp reactive output or power factor, as appropriate; 8. Checks gas turbine generator bearings' temperature and oil flow; 9. Checks governor, turbine/reduction gear lube-oil sump levels; 10. Checks the physical condition of pipes, tubing, and hoses for wear or leaks; 11. Observes gas turbine lube-oil and cooling-water temperatures and pressures; 12. Observes gas turbine air intake and exhaust temperatures and pressures, including air-intake filter pressure drop, as appropriate; 13. Checks start air pressure 14. Reads fuel-oil meter and day-tank levels; 15. Checks for any unusual conditions or noises; 16. Notifies the watch engineer of any unusual or unsafe conditions; and 17. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.C *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel, on a simulator, or in a laboratory,	the candidate monitors lube-oil (LO) and fuel-oil (FO) purification systems.	The candidate: 1. Checks plant's operational status; 2. Checks the dirty-oil inlet temperature, as applicable; 3. Checks the dirty-oil inlet pressure; 4. Checks the clean-oil discharge pressure; 5. Checks the purifier-gear drive oil sump level, as applicable; 6. Checks level in sealing-water head tanks, as applicable; 7. Checks inlet and outlet sight glasses for flow; 8. Checks heater steam supply pressure, as applicable; 9. Feels machine for vibration; 10. Checks speed indicator for proper bowl speed; 11. For lube oil purification plants, determines the point of suction to include engine sump, settling/renovating tank, or other tank; 12. For lube oil purification plants, determines the point of discharge to include engine sump, settling/renovating tank, or other tank; 13. For fuel oil purification plants, determines the point of suction, including settling tank or other tank; 14. For fuel oil purification plants, determines the point of discharge to include day/service tank or other tank; 15. Checks priming- and wash-water pressure, as applicable; 16. Checks operating-water pressure, as applicable; 17. Checks control-air pressure, as applicable; 18. Checks for any unusual conditions or noises; 19. Notifies the watch engineer of unusual or unsafe conditions; and 20. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.D *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel, on a simulator, or in a laboratory,	the candidate monitors the compressed air plant.	The candidate: 1. Checks plant's operational status; 2. Checks applicable start, service, and control air compressor oil levels and adds oil as necessary; 3. Checks applicable start, service, and control air compressor oil pressures; 4. Checks applicable start, service, and control air-compressor suction pressure or air-inlet filter pressure differential indications as appropriate; 5. Checks applicable start, service, and control air-compressor discharge pressures and compressed-air receiver pressures; 6. Checks for any unusual conditions or noises; 7. Blows down intercoolers, after coolers, and receivers, checks associated refrigerated filter system and look for clogged cooling fins; 8. Notifies the watch engineer of any unusual or unsafe conditions; 9. Identifies emergency cross-connect between ship's service air and control air systems; 10. Identifies valves to direct "air on deck"; 11. Identifies settings of standby equipment; and 12. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.E *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel, on a simulator, or in a laboratory,	the candidate monitors the refrigeration and air-conditioning plants.	The candidate: 1. Checks plant's operational status; 2. Checks compressor suction and discharge pressures and temperatures; 3. Checks compressor-oil level; 4. Checks compressor-oil pressure and control-oil pressures; 5. Checks receiver level; 6. Checks liquid-line sight glass condition; 7. Checks related cooling water supply strainers and filters, and cleans or blows down same when necessary; 8. For refrigeration plants, checks refrigerated box temperatures and condition of the evaporator coils and drain for icing; 9. For refrigeration plants, notes the condition of the box door gaskets and operation of circulating fans; 10. For air conditioning plants, checks return and supply air temperatures; 11. Checks condenser sea-water inlet and outlet temperatures; 12. For air conditioning plants, checks chilled-water pump suction and discharge pressures, if applicable; 13. For air conditioning plants, checks chilled-water inlet and outlet temperatures, if applicable; 14. For air conditioning plants, checks chilled-water expansion-tank level, if applicable; 15. Notifies the watch engineer of any unusual or unsafe conditions; and 16. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.F *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel, or in a laboratory,	the candidate determines tank and pressure-vessel levels.	The candidate determines the: 1. Liquid level of vented tanks and low-pressure pressure vessels fitted with tubular sight-glasses; 2. Liquid level of a high-pressure pressure vessel fitted with a high-pressure gauge glass or a remote level indicator; 3. Liquid level of a vented tank fitted with petcocks; 4. Liquid level of two vented tanks (1 fuel- or lube-oil, and 1 water), fitted with sounding tubes, using a sounding tape, using innage or ullage method as appropriate; 5. Fluid level of a lube-oil sump fitted with a dipstick; 6. Liquid level of a vented tank fitted with a pneumercator, as applicable; 7. Oil/water-interface of the slop tank; and 8. Level of a vented tank or pressure vessel fitted with remote reading-level gauges.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.G *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel, on a simulator, or in a laboratory,	the candidate charges a "waterlogged" potable water pressure tank with compressed air.	The candidate: 1. Correctly connects the compressed air hose from the service air header to the pressure tank; 2. Opens the appropriate valves, charge air into the pressure tank, while observing the water level and allowing the potable water pump to cycle on and off; 3. Closes the appropriate valves, secure from charging air into the pressure tank when the potable water pump no longer short-cycles and the pressure tank level cycles between normal parameters; 4. Correctly disconnects and stow the compressed air hose from the service air header to the pressure tank; and 5. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.H(S) *Note 2*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a steam vessel at sea or at anchor in clean water, on a simulator, or in a laboratory,	the candidate monitors steam distilling plant.	The candidate: 1. Checks plant's operational status; 2. Checks sea-water feed, brine, distillate, and condensate drains pump suction and discharge pressures as appropriate; 3. Checks air-ejector steam supply pressure; 4. Checks sea-water feed inlet temperature; 5. Checks distillate outlet temperature; 6. Checks shell vacuums; 7. Checks feed-water-heater inlet pressure and temperature; 8. Verifies and checks distillate-pump discharge to proper tank; 9. Observes the position of the 3-way valve to ensure it is not tripped, unless in the case of high distillate salinity; 10. Takes water-meter reading; 11. Checks distillate salinity; and 12. Notifies the watch engineer of any unusual or unsafe conditions

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.H(M) *Note 6*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a motor vessel at sea, on a simulator, or in a laboratory,	the candidate monitors a jacket water evaporator.	The candidate: 1. Checks plant's operational status; 2. Checks sea-water feed, brine, distillate, and sea water ejector pump suction and discharge pressures as appropriate; 3. Checks sea water feed inlet temperature; 4. Checks distillate outlet temperature; 5. Checks shell vacuum; 6. Checks jacket water heating inlet and outlet temperatures; 7. Verifies and checks distillate pump discharge to the proper tank; 8. Observes the position of the 3-way valve to ensure it is not tripped, unless in the case of high salinity; 9. Takes water-meter reading; 10. Checks distillate salinity; and 11. Notifies the watch engineer of any unusual or unsafe conditions.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.H **(M/G)** *Note 6* *May be used as substitute for Task No. 1.1.H(M)*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a motor or gas turbine vessel at sea or at anchor in clean water, on a simulator, or in a laboratory,	the candidate monitors a reverse osmosis plant.	The candidate: 1. Checks plant's operational status; 2. Checks sea water feed and high pressure pump suction and discharge pressures as appropriate; 3. Checks pre-filter pressure drops; 4. Checks membrane bank pressure drops; 5. Verifies and checks distillate flow to proper tank; 6. Observes the position of the 3-way valve to ensure it is not tripped, unless in the case of high salinity; 7. Takes water-meter reading; 8. Checks distillate salinity; and 9. Notifies the watch engineer of any unusual or unsafe conditions.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.I(S) *Note 1*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a steam vessel at sea, on a simulator,	the candidate monitors main steam turbine propulsion unit.	The candidate: 1. Monitors the main lube-oil and sea water temperatures entering and leaving the main lube-oil cooler; 2. Monitors the main lube-oil-sump level; 3. Monitors the main lube-oil-gravity tank for continuous overflow, as appropriate; 4. Monitors the lube oil pump suction and discharge pressures and lube-oil supply pressure to the main engines and applicable lube oil strainer pressure drops; 5. Monitors the oil-return temperature from each bearing and indicators for continuous flow; 6. Checks turbine rotor axial position indicator as applicable; 7. Checks turbine vibration indicator as applicable; 8. Monitors main condenser sea water inlet and outlet temperatures, main circulator pump suction and discharge pressures, and check water boxes for leaks; 9. Monitors main condensate suction and discharge pressures and main condenser hot well level; 10. Checks air-ejector equipment pressures and temperatures ; 11. Checks auxiliary exhaust steam pressure, shell pressure and water level in deaerating feed tank; 12. Monitors main condenser vacuum and turbine exhaust temperature; 13. Notifies the watch engineer of any unusual or unsafe conditions, unusual sounds, or vibrations; and 14. Takes proper action to prevent safety and pollution violations.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/4 of the STCW Code. The use of these Assessment Guidelines is not mandatory and alternative means of having achieved the standards of competence in the STCW Code will be considered. In accordance with 46 CFR 10.402(e), alternative Assessment Guidelines must be submitted to the National Maritime Center and approved before use.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.I(M) *Note 5*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel with a diesel engine propulsion unit at sea, on a simulator, or in a laboratory,	the candidate monitors a main diesel engine propulsion unit.	The candidate: 1. Monitors the main lube-oil and cooling water temperatures entering and leaving the main lube-oil cooler; 2. Monitors the main lube-oil-sump or sump tank level 3. Monitors the main lubricating oil pump suction and discharge pressures, the lube-oil header supply pressure and any applicable filter or strainer pressure drop; 4. Monitors ancillary lube oil system parameters to include pressures, temperatures, and levels for systems to include crosshead, cam, rocker, and cylinder oil systems if applicable; 5. Monitors jacket water cooling pump suction and discharge pressures, jacket water system temperatures, pressures, and flow indicators, and expansion tanks levels; 6. Monitors ancillary specialized self-contained fresh water systems to include pressures, temperatures, and levels for systems to include injector and piston cooling water systems if applicable and inspects for oil contamination; 7. Monitors sea water cooling pump suction and discharge pressures, sea water system heat exchanger inlet and outlet temperatures, and sea strainer pressure drops; 8. Inspects fuel-injector leak-off piping, high-pressure delivery lines, and indicator cocks and checks for leakage; 9. Monitors fuel-oil booster and service pump suction and discharge pressures, fuel oil supply pressure and temperature, and any applicable strainer and filter pressure drops; *Continued on next page*

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.I(M) *Cont'd* *Note 5*					*Continued from previous page* 10. Inspects fuel-oil temperature controller or viscosimeter set point as applicable; 11. Observes governor operation and lube-oil level, 12. Observes fuel-pump and /or fuel injector rack settings; 13. Observes telescopic links and cylinder lubrication, if fitted; 14. Checks operation of crankcase vacuum fans, mist detectors, and condition of explosion covers; 15. Monitors scavenging/charge air receiver pressures and temperatures as applicable; 16. Drains scavenging air receiver as applicable; 17. Monitors individual cylinder, turbocharger inlet and outlet exhaust temperatures and exhaust receiver pressures and temperatures as applicable; 18. Monitors reduction gear lube oil sump levels, lube oil temperatures and pressures, and lube oil filter and strainer pressure drops, if applicable; 19. Monitors controllable pitch propeller oil sump levels, pitch oil temperatures and pressures, and pitch oil filter and strainer pressure drops as applicable 20. Notifies the watch engineer of any unusual or unsafe conditions, unusual sounds, or vibrations; and 21. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.I(G) *Note 4*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a gas turbine vessel at sea, on a simulator, or in a laboratory,	the candidate monitors a main gas-turbine engine propulsion unit.	The candidate: 1. Monitors the main lube-oil and cooling water temperatures entering and leaving the main lube-oil cooler; 2. Monitors the main lube-oil sump tank level 3. Monitors the main and scavenging lubricating oil pump suction and discharge pressures, the lube-oil supply and scavenging header pressures and temperatures and any applicable filter or strainer pressure drops; 4. Monitors fuel oil manifold pressure and temperature, and any applicable strainer and filter pressure drops; 5. Monitors start air pressure; 6. Monitors compressor inlet and discharge pressures and temperatures; 7. Monitors power turbine gas inlet and outlet pressure and temperature; 8. Monitors gas generator and power turbine speed; 9. Checks gas turbine vibration indicator; 10. Monitors gas turbine enclosure cooling air outlet temperature; 11. Monitors reduction gear lube oil sump levels, lube oil temperatures and pressures, and lube oil filter and strainer pressure drops as applicable; 12. Monitors controllable pitch propeller oil sump levels, pitch oil temperatures and pressures, and pitch oil filter and strainer pressure drops as applicable; and 13. Notifies the watch engineer of any unusual or unsafe conditions, unusual sounds, or vibrations; and 14. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.J *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel at sea, on a simulator, or in a laboratory,	the candidate monitors the propulsion shafting and bearings.	The candidate: 1. Checks all line shaft-bearing sump-oil levels; 2. Checks all line shaft-bearing-oil temperatures; 3. Checks all line shaft-bearing oiler rings, where appropriate; 4. Checks the independent thrust-bearing sump level, where appropriate; 5. Checks the independent thrust-bearing lube-oil sump temperature, where appropriate; 6. Checks the independent thrust-bearing lube-oil cooler inlet and outlet temperatures, where appropriate; 7. Checks the independent thrust-bearing lube-oil supply pressure, where appropriate; 8. Checks the independent thrust-bearing gravity- head tank level, where appropriate; 9. Checks the water-lubricated stern-tube stuffing box for proper leak-off, where appropriate; 10. Checks the oil-lubricated stern-tube lube sump tank level where appropriate; 11. Checks the oil-lubricated stern-tube lube-oil pressure where appropriate; 12. Checks the oil-lubricated stern-tube oil temperatures where appropriate; 13. Checks the oil-lubricated stern-tube inboard shaft seal for leakage if appropriate; 14. Notifies the watch engineer of any unusual or unsafe conditions; and 15. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.K *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Engine-room watchkeeping procedures	On a vessel at sea, on a simulator, or in a laboratory**,**	the candidate monitors the steering gear.	The candidate: 1. Correctly compares the rudder-angle mechanical- sliding scale with the electrical indicator, if fitted; 2. Monitors the steering gear hydraulic oil reservoir levels and temperatures; 3. Monitors system hydraulic oil pressure and any applicable filter pressure drops; 4. Checks steering hydraulic system power units, piping, and actuators for leaks 5. Assists in testing the communication devices; 6. Observes various linkages for wear, loosening, or lost motion; 7. Notes glands on main rams and rudderpost for leakage; 8. Assists in adding oil to hydraulic oil reservoirs as required; 9. Checks for unusual noises, erratic motions and other indications of air in the system; 10. Notifies the watch engineer of all unusual or unsafe conditions; and 11. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.A *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Safe working practices as related to engine-room operations	On a vessel, or in a laboratory,	the candidate adds clean oil to the vented lube-oil sump of an auxiliary engine, reduction gear, or piece of deck machinery.	The candidate: 1. Determines the need to add oil; 2. Obtains an adequate amount of clean oil of proper grade and type; 3. Removes the filler cap or plug; 4. Pours oil through the filler cap or oil filler plug opening; 5. Checks the oil level and verifies that it stands at the specified level; 6. Replaces the filler cap or plug and leaves the area clean; and 7. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.B *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Safe working practices as related to engine-room operations	On a vessel, or in a laboratory,	the candidate lubricates a grease-lubricated bearing.	The candidate performs (A) <u>or</u> (B) below: (A) GREASE-FITTING-EQUIPPED BEARING 1. Determines from the appropriate lubrication chart the type and grade of grease to use; 2. Removes the fitting protective covering if fitted, drain plug, if fitted, and wipes the fitting free of grease and dirt with a rag; 3. Removes air from the grease-gun hose by slowly squeezing the handle until grease starts to leave the fitting, and attaches the hose fitting to the bearing of the fitting; 4. Slowly pumps in grease until a small amount of clean grease appears but, if the grease meets undue resistance, the candidate notifies the watch engineer; and 5. Replaces drain plug and protective cover on grease fitting.
					(B) GREASE-CUP-EQUIPPED BEARING 1. Determines from the appropriate lubrication chart the type and grade of grease to use; 2. Obtains a sufficient clean quantity of correct grease; 3. Removes the drain plug opposite the grease cup and ensure that the hole is free from hardening grease; 4. Removes the cap from the grease cup; 5. Wipes out the grease cup with a rag; 6. Fills the grease cup with grease; 7. Installs the cap onto the grease cup and force grease into the bearing housing; 8. Continues and repeats as necessary until grease begins to flow out the drain hole; 9. Wipes excess grease from the bearing housing with a rag; and 10. Reinstalls the drain plug.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.C *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Safe working practices as related to engine-room operations	On a vessel, or in a laboratory,	the candidate shifts and cleans a basket-type duplex strainer.	The candidate: 1. Ascertains the need for cleaning a duplex strainer (but does not clean an in-service suction strainer); 2. Ensures that the change-over handle is loosened; 3. Ensures that the strainer being changed to is either pre-filled or is carefully filled by changing over without loss of pressure to protected machinery; 4. Ensures that the selector handle is positioned on the element not being cleaned, then tightened; 5. Loosens the idle strainer-lid fasteners or hold-down dogs as appropriate; 6. Ensures that the strainer house is depressurized and that the selector-plug valve is not leaking; 7. Removes fasteners or positions dogs clear out of the way; 8. Lifts up strainer lid and sets it aside; 9. Lifts up and removes the strainer basket; 10. Cleans the strainer basket; 11. Reinstalls the strainer basket; 12. Inspects mating surfaces of housing and lid, and scrapes, cleans, and replaces gasket as necessary; 13. Replaces and aligns the lid on top of the strainer housing; 14. Hand-tightens the bolts or firmly tighten hold-down dogs; 15. Wrench-tightens the bolts or firmly tighten hold- down dogs; *Continued on next page*

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.C *Cont'd* ***All***					*Continued from previous page* 16. Checks the strainer housing for leaks; 17. Cracks the strainer element selector-handle towards the idle strainer housing to slowly admit sea water and pressurize housing; 18. Repositions the selector handle fully towards the strainer housing in service; 19. Notifies watch engineer of any unusual or unsafe conditions; and 20. Takes proper action to prevent safety and pollution violations.
1.2.D *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Safe working practices as related to engine-room operations	On a vessel, or in a laboratory and workshop,	the candidate assists in cleaning a lube-oil or a fuel-oil purifier to demonstrate safe working practices for the following: lifting heavy equipment; handling chemicals; and work w/delicate equipment	The candidate: 1. Performs all tasks safely using all required safety equipment (safety shoes, safety glasses, explosion-proof lighting and electrical devices, hearing protection, gloves, hard hat, respirator mask, etc) and adheres to all safety procedures (verifies tag-out procedures, notifications, safe lifting techniques, etc.); 2. Assists in disassembly of purifier using appropriate tools as provided; 3. Cleans all sludge deposits from individual disks, bowl top and bowl; 4. Assists in reassembling purifier, reinstalling all disks and in numerical order; 5. Leaves the area safe and secure; 6. Reports all unusual findings or unsafe conditions; 7. Ensures that all operations are in accordance with equipment manufacturer's recommended procedures and supervisor's instructions; and 8. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.E *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Safe working practices as related to engine-room operations	On a vessel, or in a laboratory,	the candidate takes up on a gate or globe valve stuffing-box gland.	The candidate: 1. Determines the need to take up on the gate or globe stuffing-box glands; 2. Checks for bent or scored stem; 3. Checks the valve for ease of operation, ensuring that it is a candidate for taking up on the gland without the necessity of adding packing or re-packing of the valve; 4. Checks the position of the gland to determine if it may be further tightened; 5. Tightens alternately each gland nut slightly and evenly until the stem-to-bonnet leakage ceases; 6. Inspects the gland to insure that it is square; and 7. Checks the valve for ease of operation ensuring that the operation is not unacceptably difficult.
1.2.F *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Safe working practices as related to engine-room operations	On a vessel, or in a laboratory,	the candidate takes on fresh water.	The candidate: 1. Determines from the watch engineer, or equivalent, the order in which to fill the fresh-water tanks; 2. Lines up the filling system properly; 3. Ensures that proper hose is used; 4. Flushes out dock/barge/other vessel connection; 5. Assists taking sample for testing before taking on water; 6. Properly takes on fresh water; and 7. Secures the fresh-water valves after task is complete.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.3.A *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Basic environmental protection procedures	On a vessel, on a simulator, or in a laboratory,	the candidate pumps the bilges to the holding tanks from one of the following locations: • Shaft alley; • Engine room; • Cargo hold.	The candidate: 1. Correctly lines up the bilge system and pumps the bilges dry to the correct holding tank in accordance with ship's procedures; 2. Provides tank-level data and start/stop times to the officer-in-charge of the engine watch; and 3. Takes proper action to prevent safety and pollution violations.
1.3.B *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Basic environmental protection procedures	On a vessel, on a simulator, or in a laboratory,	the candidate monitors an oily-water separator.	The candidate: 1. Checks plant's operational status; 2. Checks bilge-water tank level; 3. Checks oily-water-separator chamber pressure or vacuum; 4. Checks filling related pressure/vacuum; 5. Checks overboard-discharge water-pump pressure; 6. Monitors oil-content monitor: a. Ensures that equipment is not bypassed, sampling line is open, and flushing water is not being supplied to sensor; b. Automatic valves are not operated in manual mode or disconnected from controlling devices; and c. No temporary hoses are used during operation; 7. Checks for any unusual conditions or noises; 8. Notifies the watch engineer of any unusual or unsafe conditions; and 9. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.3.C *All*	Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch.	Basic environmental protection procedures	On a vessel, on a simulator, or in a laboratory,	the candidate monitors a sewage-treatment plant.	The candidate: 1. Checks the plant's operational status; 2. Checks the destination of "black water" sewage; 3. Checks sewage-circulating and overboard-discharge pump pressures; 4. Checks sewage-circulating and overboard-discharge pump mechanical seals for leakage; 5. Checks air-compressor discharge pressure; 6. Checks the chemical-batch tank level; 7. Checks for any unusual conditions or noises; 8. Notifies the watch engineer of any unusual or unsafe conditions; and 9. Takes proper action to prevent safety and pollution violations.
2.1.A *All*	Understand orders and be understood in matters relevant to watchkeeping duties.	Terms used in machinery spaces and names of machinery and equipment	On a vessel at sea, on a simulator, or in a laboratory,	the candidate relieves the watch.	The candidate: 1. Reports for duty 15 minutes before the hour; 2. Determines from the off-going watch: a. Operational status of the plant; b. Unusual alarms or conditions occurring during the previous watch; c. Standing orders; d. Maintenance performed during the previous watch; e. On-going repairs affecting plant operations; and f. Outstanding safety conditions; and 3. Seeks clarification from the off-going watch or engineer if information was not clearly understood.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
2.1.B *All*	Understand orders and be understood in matters relevant to watchkeeping duties.	Terms used in machinery spaces and names of machinery and equipment	On a vessel at sea, on a simulator, or in a laboratory,	the candidate hands over the watch.	The candidate: 1. In preparation for relief, ensures that all assigned routine duties are completed before the conclusion of the watch; 2. Communicates to the oncoming watch: a. Operational status of the plant; b. Unusual alarms or conditions occurring during previous watch; c. Standing orders; d. Maintenance performed during previous watch; e. On-going repairs affecting plant operations; and f. Outstanding safety conditions; and 3. Ensures that the watch relief is fully aware of the operational status of the plant.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
2.1.C *All*	Understand orders and be understood in matters relevant to watchkeeping duties.	Terms used in machinery spaces and names of machinery and equipment	On a vessel, on an approved simulator, or in a laboratory,	the candidate assists in a pre-start check of a diesel engine.	The candidate: 1. Checks the general exterior of the engine for debris, leaks, or unsafe conditions; 2. Checks the lube-oil levels of the engine sump, governor, and any other ancillary lube oil tanks such as cylinder oil tank, rocker lube tank, cam lube oil tank, as applicable; 3. Checks the jacket water expansion tank level and any other ancillary treated fresh water expansion or collecting tanks such as injector cooling water tank and piston cooling water tank, as applicable; 4. Checks fuel oil day tank level; 5. Checks starting air receiver pressure, starting hydraulic accumulator pressure, or starting battery charge status as applicable; 6. Drains air boxes, scavenging air receivers, and start air bottles, as appropriate; 7. Performs any manual pre-lubrication functions as required; 8. Opens indicators cocks and stands by for engine rollover, and re-closes indicator cocks as applicable; 9. Checks other associated equipment as fitted aboard the specific vessel, and as contained in assessor's checklist; and 10. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
2.2.A *All*	Understand orders and be understood in matters relevant to watchkeeping duties.	Use of appropriate internal communication systems	On a vessel, on a simulator, or in a laboratory,	the candidate operates internal communication systems.	The candidate: 1. Answers the phone stating his or her location, name, and rank; 2. Correctly operates and communicates with remote stations by ship's phone; 3. Correctly operates and communicates with remote stations by sound-powered phone; 4. Correctly operates and communicates with remote stations by two-way radio; and 5. Conducts all operations in accordance with ship's procedures.
2.2.B *All*	Understand orders and be understood in matters relevant to watchkeeping duties.	Use of appropriate internal communication systems	On a vessel, on a simulator, or in a laboratory,	the candidate logs engine-order telegraph signals.	The candidate: 1. Obtains correct "counter" and "fuel oil meter" readings at standby or departure or arrival; 2. Correctly acknowledges main engine direction and speed by matching engine order telegraph with order from the bridge; 3. Correctly enters appropriate graphic bell signal symbol and logs with correct time; from *full ahead* to *full astern* including *stop* and *finished with engines*; and 4. Makes legible entries.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
2.3.A *All*	Understand orders and be understood in matters relevant to watchkeeping duties.	Engine-room alarm systems and ability to distinguish between the various alarms, with special reference to fire-extinguishing gas alarms	On a vessel, on a simulator, or in a laboratory,	the candidate respond s to the following alarms: • CO_2 discharge ; • Fire or smoke ; • Engine operational alarms, incl. lube-oil alarms (temperature and pressure), boiler alarms, fuel-oil tank high-level alarm, oily-water separator alarm, and high-bilge-water alarm; and • Vessel emergency signal or alarm.	For each alarm response, the candidate: 1. Silences the alarm; 2. Describes the system involved; 3. Describes the system's purpose; 4. Describes the seriousness of the alarm; and 5. Notifies the officer-in-charge of the engine watch of the alarm and his/her actions.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.A *Note 1*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, on a simulator, or in a laboratory,	the candidate, in manual mode, maintains main boiler water level and steam pressures.	The candidate: 1. Maintains the water level of the boiler within +/- 2 inches of the specified level using appropriate manual control technology available; 2. Maintains the steam pressure of the boiler within +/- 5% of the specified pressure using appropriate manual control technology available; and 3. Takes proper action to prevent safety and pollution violations.
3.1.B *Note 3*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a motor or gas turbine vessel, on a simulator, or in a laboratory,	the candidate, in manual mode, maintains auxiliary (waste heat or oil-fired) boiler water level and steam pressures.	The candidate will: 1. Maintains the water level of the boiler within +/- 2 inches of the specified level using appropriate manual control technology available; 2. Maintains the steam pressure of the boiler within +/- 5% of the specified pressure using appropriate manual control technology available; and 3. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.C *Note 1*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, on a simulator, or in a laboratory,	the candidate monitors the main propulsion boiler.	The candidate: 1. Monitors the steam drum pressure and water level, with water level being taken at both the gauge glass and remote level indicator; 2. Monitors superheater and de-superheater outlet pressures and temperatures; 3. Monitors feed water pressure and temperature; 4. Monitors the fuel oil service pump suction and discharge pressures and fuel-oil supply pressure and temperature to the supply header and applicable fuel oil strainer pressure drops; 5. Monitors the fuel oil settling/service tank levels and temperatures; 6. Strips fuel oil settling tanks of moisture as appropriate; 7. Monitors forced draft damper position and combustion air pressure and temperature; 8. Monitors stack temperature; 9. Monitors atomizing steam pressure as applicable; 10. Observes stack gases leaving boiler through periscope; 11. Monitors flue gas analysis readings as applicable; 12. Monitors boiler water analysis readings as applicable; 13. Observes condition of flame through peephole and checks for the presence of clinkers; 14. Visually inspects boiler casing, hand holes, manholes, and piping for leaks; 15. N the watch engineer of any unusual or unsafe conditions, unusual sounds, or vibrations; and 16. Takes proper action to prevent safety and pollution violations. Note: Recorded readings from analog gauges should be +/- 5% of actual, except boiler water level should be +/- 1” of actual.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.D *Note 3*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a motor or gas turbine vessel, on a simulator, or in a laboratory,	the candidate monitors the oil-fired or waste-heat auxiliary boiler.	The candidate performs <u>either</u> (A) or (B): (A) OIL-FIRED AUXILIARY BOILER 1. Monitors the steam drum pressure and water level; 2. Monitors the feed water pressure; 3. Monitors the fuel oil service pump suction and discharge pressures and fuel-oil supply pressure and temperature to the supply header and applicable fuel oil strainer pressure drops; 4. Monitors the fuel oil settling/service tank levels and temperatures; 5. Strips fuel oil settling tanks of moisture as appropriate; 6. Monitors the stack temperature; 7. Monitors the atomizing steam pressure as applicable; 8. Observes condition of flame through peephole; 9. Visually inspects boiler casing, hand holes, manholes, and piping for leaks; 10. Promptly wipes up any oil accumulations presenting a fire hazard; 11. Notifies the watch engineer of any unusual or unsafe conditions, unusual sounds, or vibrations; and 12. Takes proper action to prevent safety and pollution violations. Note: Recorded readings from analog gauges should be +/- 5% of actual, except boiler water level should be +/- 1” of actual. *Continued on next page*

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.D (*Cont'd*) *Note 3*					*Continued from previous page* The candidate performs <u>either</u> (A) or (B) below: (B) WASTE HEAT AUXILIARY BOILER 1. Monitors the steam drum pressure and water level; 2. Monitors the feed water pressure; 3. Monitors the feed pump suction and discharge pressures; 4. Monitors the feed tank level and temperature; 5. Monitors the boiler water circulating pump suction and discharge pressures, as applicable; 6. Monitors the exhaust gas inlet temperature 7. Monitors the stack temperature; 8. Visually inspects boiler casing, hand holes, manholes, and 9. piping for leaks; 10. Notifies the watch engineer of any unusual or unsafe conditions, unusual sounds, or vibrations; and 11. Takes proper action to prevent safety and pollution violations. Note: Recorded readings from analog gauges should be +/- 5% of actual, except boiler water level should be +/- 1" of actual.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.D *Note 1*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, or in a laboratory,	the candidate changes out burners for a main-propulsion boiler.	The candidate: 1. Checks to ensure that a properly cleaned and assembled atomizer assembly is available; 2. Closes burner atomizer fuel valve (or valves),burner atomizer steam valve, and air register doors as appropriate; 3. Loosens applicable connections, withdraw the burner atomizer assembly and transfer same to burner atomizer cleaning bench; 4. Transfers the clean burner atomizer to the boiler front and insert the clean burner; 5. Tightens all connections; 6. Opens the air register doors , burner atomizer fuel valve (or valves, and burner atomizer steam valve, as appropriate ; 7. Observes the flame and adjust the air-fuel ratio as necessary; 8. Ensures that all oil drippings are promptly wiped up; and 9. Takes proper action to prevent safety and pollution violations.
3.1.E *Note 1*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, or in a workshop and laboratory,	the candidate cleans a burner atomizer assembly for a main-propulsion boiler.	The candidate: 1. Using the proper tools, disassembles the dirty burner assembly; 2. Places the tip in a container, furnace face upward, and soaks all other parts in diesel oil or kerosene until carbon is soft; 3. Removes paint from cleaning agent; 4. Cleans parts of carbon and debris; 5. Reassembles the burner properly and properly stow in rack; 6. Ensures that all operations are in accordance with manufacturer's recommended procedures; and 7. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.F *Note 1*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, on a simulator, or in a laboratory,	the candidate assists in preparing a main propulsion boiler for light-off.	The candidate: 1. Visually inspects the boiler to ensure that boiler firesides and watersides are properly closed up and that all manholes, handholes, and access plates are properly secured; 2. Checks for and wipe up any oil accumulations in the furnace or air casing; 3. Checks closed bottom and surface blow valves; waterwall and economizer header drain valves; chemical feed and main and auxiliary feed stop check valves; main and auxiliary and soot blower steam stop valves, and the gauge glass drain valve; 4. Checks open the steam drum atmospheric vent valve; superheater drain and vent valves; gauge glass cutoff valves; instrument and gauge root valves; and the feedwater stop valves; 5. Vents the economizer; 6. Brings the boiler water level to one inch from the bottom of the gauge glass, filling or draining the boiler as necessary and making sure to verify the ability to feed the boiler; 7. Blows down the boiler water level gauge glass to insure accuracy; 8. Visually inspects the boiler and checks for water leaks; 9. Eases of on all steam stop valves and re-closes them hand tight; 10. Inspects and cleans all fuel oil strainers and ensure atomizers are made up with clean tips; 11. Ensures the air register doors operate freely; 12. Ensures that all operations are in accordance with manufacturer's recommended procedures; and 13. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.G *Note 1*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, on a simulator, or in a laboratory,	the candidate assists in manual light-off, raising steam, and cutting-in on line a main-propulsion boiler.	The candidate: 1. Checks all burner fuel oil root valves closed; 2. Opens the forced draft damper, all air register doors, start the forced draft fan in high speed, and purge the furnace for a few minutes; 3. Lines up the fuel-oil system to recirculate through heater (if fitted) and brings oil up to temperature as specified and notifies the watch engineer; 4. Makes up a burner atomizer with a small sprayer plate and inserts it into a central register designated for light-off (#1), closes air register doors, and opens steam and fuel oil root valves for #1 burner; 5. Adjusts forced draft damper for low fire and adjust the fuel-oil pressure to the minimum pressure specified for successful combustion; 6. Opens the steam atomizing valve of burner #1 and allows steam to flow to at least one minute to clear header of condensate; 7. Closes the fuel oil recirculation valve, open burner #1 air register doors, and readjusts fuel pressure to minimum required; 8. Lights the torch or activate lighter ignition (go to step 15); 9. Inserts the torch through the manual light-off opening; 10. Stands clear of open register doors; 11. Holds the torch near and just under the atomizer tip; 12. Cracks open the burner valve; 13. Checks for ignition; opens the 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); (*Continued on next page*)

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.G (*Cont'd*) *Note 1*					*Continued from previous page* 14. Withdraws the torch (if used); 15. Inspects the fire through the peep hole; 16. Checks the periscope for smoke and adjust the ratio of fuel to air needed for a steady flame and to avoid smoking while achieving complete combustion; 17. Closes superheater drains when blowing clear of condensate; 18. Throttles steam drum atmospheric vent when steam pressure starts to rise; 19. Closes steam drum atmospheric vent at pressure specified by watch engineer; 20. Throttles in on superheater vent valves, ensuring that they are not closed until the boiler is on line; 21. Monitors steam drum water level and maintain the water level with the auxiliary feed stop check as necessary; 22. As line pressure is approached, inserts additional atomizers into the idle burners and cut in atomizing steam; 23. When steam drum pressure exceeds line pressure, opens the auxiliary, then the main steam stop valves, bringing the boiler on line; 24. Closes the superheater vent valves; 25. Switches the automatic combustion control system and feedwater regulating system to automatic as appropriate; 26. Notifies the watch engineer of any unusual or unsafe conditions; and 27. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.H *Note (1)*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, on a simulator, or in a laboratory (where steam load can be varied),	the candidate will assist in maintaining the fires on a main-propulsion boiler during maneuvering.	The candidate: 1. Has the required burners prepared and ready one hour before maneuvering; 2. Verifies the fuel oil service system master (solenoid) valve is properly engaged for each boiler; 3. Verifies the fuel oil service system recirculation valve is closed; 4. Verifies the operation of the fuel oil service pump and normal discharge pressure is maintained; 5. Verifies water is visible in the boiler gauge glass at half or normal drum level; 6. Readies all burners with varying orifice sprayer plates according to vessel maneuvering operations; 7. Verifies F.O. temperature is steady at specified temperature.; 8. When directed that engine sea speed will be reduced to maneuvering speed, ensures that fuel to at least one burner in each boiler will be secured; 9. Reduces combustion air to the proper fuel/air ratio by reducing the forced draft fan speed, and/or air register opening, or combustion control board air ratio controller, or through a combination of events as is necessary; *Continued on next page*

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.H *Cont'd* *Note (1)*					*Continued from previous page* 10. Periodically observes periscope/light intensity to modify supply of combustion air to prevent "smoking"; 11. Continually monitors boiler water level, modulating feed as necessary, avoiding feed water flow changes as an over-reaction during periods of shrink and swell due to engine speed changes; 12. Ensures that as engine speed is increased, combustion air will be increased prior to fuel flow increase by increasing forced draft fan speed, and/or air register opening, or combustion control board air ratio controller, or through a combination of events as is necessary; 13. Notifies the watch engineer of any unusual or unsafe conditions; and 14. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.I *Note 1*	For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	On a steam vessel, on a simulator, or in a laboratory,	the candidate assists in the operation of the soot blower system in the daily maintenance of the main-propulsion boiler.	The candidate: 1. Ensures that permission has been requested from the bridge before blowing tubes; 2. Manually increases the de-aerating feedwater tank (DFT) level in preparation for using the steam soot blowers; 3. Verifies that the drain valve of the soot blower steam line is open; 4. Slowly opens the soot blower steam isolation valves; 5. Observes the output from the soot blower system drain, and secures the drain valve when it is determined that only steam is present; 6. Informs the OICEW when the system is ready; 7. Increases the speed of the forced-draft fan; 8. Physically pulls on any chain drive or manually rotates any crank to operate any non-air motor-driven soot blower in its proper sequence; 9. Assists in maintaining a watch on the main propulsion boiler water level, steam, pressure, and DFT water level; 10. At the end of cycling all soot blowers, secure the steam isolation valve to the soot blowers; 11. Opens the soot blower steam line drain; and 12. Wears proper safety equipment throughout the operation; and 13. Takes proper action to prevent safety and pollution violations.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
4.1.A *All*	Operate machinery equipment and apply emergency procedures.	Escape routes from machinery spaces	On a vessel,	the candidate locates all engine-room escape routes, describes the emergency-escape procedure for each, and performs escapes using the shortest open route and up an escape trunk (if so equipped).	The candidate: 1. Locates all emergency-escape routes; 2. Describes the operations and procedures appropriate to each means of escape (including the use of emergency-escape breathing devices); 3. Demonstrates the correct means of escape via: a. The shortest open route; and b. An escape trunk, if so equipped.
4.2.A *All*	Operate machinery equipment and apply emergency procedures.	Familiarity with the location and use of fire-fighting equipment in machinery spaces	On a vessel, given a set of a ship's fire plans,	the candidate locates each piece of fire-fighting and emergency equipment in the machinery spaces, starting with the nearest, states its purpose, and describes its use or operation.	The candidate: 1. Locates the nearest piece of each item named from the fire-control plan; and 2. Correctly states the purpose and describe the use or operation of the item of equipment named.

Task No.	STCW Competence	Knowledge, Understanding and Proficiency	Performance Condition	Performance Behavior	Performance Standard
4.2.B *All*	Operate machinery equipment and apply emergency procedures.	Familiarity with the location and use of fire-fighting equipment in machinery spaces	On a vessel, on a simulator, or in a laboratory,	the candidate puts a main or emergency fire-pump in service.	The candidate: 1. Checks or open all required suction and discharge valves; 2. Correctly starts the pump; 3. Ensures the fire-pump discharge pressure rises to proper operating pressure; 4. Checks the running condition of the pump and motor; 5. Properly secures the pump; and 6. Takes proper action to prevent safety and pollution violations.

Record of Assessment

for

RATING FORMING PART OF AN ENGINEERING WATCH

For: _____ _____ _____

Print Name of Candidate | Candidate's Signature | Mariner Reference No.

RECORD OF ASSESSMENT
Rating Forming Part of an Engineering Watch

NOTE TO QUALIFIED ASSESSOR(S): In performing your function as a qualified assessor, you may use your initials below to indicate that you have personally witnessed the demonstration of skill or ability by the person being assessed. The Assessment Guidelines in Enclosure (2) will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/4 of the STCW Code. The use of these Assessment Guidelines is not mandatory and an alternative means of having achieved the standards of competence in the STCW Code will be considered as discussed in paragraph 6 of this NVIC.

STCW Competence	Knowledge, Understanding and Proficiency	Task Number	Task	Assessor's Initials	Date
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch	Engine-room watchkeeping procedures	1.1.A *Note 1*	Engine room round		
		1.1.B (S) *Note 1*	Monitor electricity generating plant		
		1.1.B (M) *Note 5*	Monitor electricity generating plant		
		1.1.B (G) *Note 4*	Monitor electricity generating plant		
		1.1.C	Monitor LO/FO purification systems		
		1.1.D	Monitor compressed air plant		
		1.1.E	Monitor refrigeration and air-conditioning plants		
		1.1.F	Determine tank and pressure-vessel levels		
		1.1.G	Charge a "waterlogged" potable water pressure tank w. compressed air		
		1.1.H(S) *Note 2*	Monitor steam distilling plant		
		1.1.H(M) *Note 6*	Monitor jacket water evaporator		
		1.1.H(M/G) *Note 6*	Monitor reverse osmosis plant [*Optional substitute for Task No. 1.1.H(M)*]		

Notes:

Note 1 Not performing this task will limit the endorsement to motor and/or gas-turbine propelled vessels only

Note 2 Not performing this task will limit the endorsement to motor and/or gas-turbine propelled vessels without distilling plants.

Note 3 Not performing this task will limit the endorsement to motor and/or gas-turbine propelled vessels without waste-heat or auxiliary boilers.

Note 4 Not performing this task will limit the endorsement to diesel-engine propelled motor vessels or steam vessels.

Note 5 Not performing this task will limit the endorsement to gas-turbine propelled and/or steam vessels.

Note 6 Not performing this task will limit the endorsement to steam vessels only.

_____
Print Name of Candidate

RECORD OF ASSESSMENT
Rating Forming Part of an Engineering Watch

STCW Competence	Knowledge, Understanding and Proficiency	Task Number	Task	Assessor's Initials	Date
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch	Engine-room watchkeeping procedures	1.1.I(S) *Note 1*	Monitor main steam turbine propulsion unit		
		1.1.I(M) *Note 5*	Monitor main diesel engine propulsion unit		
		Note 4	Monitor main gas turbine propulsion unit		
		1.1.J	Monitor propulsion shafting and bearings		
		1.1.K	Monitor steering gear		
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch	Safe working practices as related to engine room operations	1.1.I(G)			
		1.2.A	Add clean oil to engine and deck machinery		
		1.2.B	Lubricate a grease-lubricated bearing		
		1.2.C	Shift and clean a basket-type duplex strainer		
		1.2.D	Clean LO/FO purifier		
		1.2.E	Take up on a gate/globe valve stuffing-box gland		
		1.2.F	Take on fresh water		
	Basic environmental protection procedures	1.3.A	Pump out bilges		
		1.3.B	Monitor oily-water separators		
		1.3.C	Monitor sewage treatment plants		
Understand orders and be understood in matters relevant to watchkeeping duties	Terms used in machinery spaces and names of machinery and equipment	2.1.A	Relieve the watch		
		2.1.B	Hand over the watch		
		2.1.C	Assist in pre-start check of a diesel engine		

Print Name of Candidate

RECORD OF ASSESSMENT
Rating Forming Part of an Engineering Watch

STCW Competence	Knowledge, Understanding and Proficiency	Task Number	Task	Assessor's Initials	Date
Understand orders and be understood in matters relevant to watchkeeping duties	Use of appropriate internal communication systems	2.2.A	Operate internal communications systems		
		2.2.B	Log engine-order telegraph signals		
	Engine-room alarm systems and ability to distinguish between the various alarms	2.3.A	Respond appropriately to alarms		
For keeping a safe boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	3.1.A *Note 1*	Maintain main boiler water level and steam pressures		
		3.1.B *Note 3*	Maintain auxiliary boiler water level and steam pressures		
		Note 1	Monitor the main propulsion boiler		
		Note 3	Monitor the auxiliary boiler		
		3.1.D *Note 1*	Change out burners for a main-propulsion boiler		
		3.1.E *Note 1*	Clean a burner atomizer assembly		
	3.1.C	3.1.F *Note 1*	Assist preparing a main-propulsion boiler for light-off		
	3.1.D	3.1.G *Note 1*	Assist in manual light-off, raising steam and cutting-in online a main-propulsion boiler		
		3.1.H *Note 1*	Assist in maintaining the fires on a main-propulsion boiler during maneuvering		
		3.1.I *Note 1*	Assist in the operation of the soot blower		

Print Name of Candidate

RECORD OF ASSESSMENT
Rating Forming Part of an Engineering Watch

STCW Competence	Knowledge, Understanding and Proficiency	Task Number	Task	Assessor's Initials	Date
Operate emergency equipment and apply emergency procedures	Escape routes from machinery spaces	4.1.A	Locate all engine-room escape routes		
	Familiarity with the location and use of fire-fighting equipment in machinery spaces	4.2.A	Locate fire-fighting and emergency		
		4.2.B	Put a main or emergency fire-pump in service		

Print Name of Candidate

RECORD OF ASSESSMENT
Rating Forming Part of an Engineering Watch

ASSESSOR AND VESSEL INFORMATION

Qualified Assessors should provide all information below, including their Mariner Reference Number.

Vessel Name & Propulsion Mode	Propulsion Power (HP or kW)	Dates of Service		Assessor Name	Assessor Signature	Sample Initials of Assessor	Assessor's Mariner Reference No.	Assessor's Shipboard Position
		From	To					
M/V Onderbroek (Motor)	8,892 HP	7/7/2014	11/14/2014	Michael Scurius	Michael Scurius	MS	1234567	Chief Engineer

Print Name of Candidate

RECORD OF ASSESSMENT
Rating Forming Part of an Engineering Watch

Vessel Name & Propulsion Mode	Propulsion Power (HP or kW)	Dates of Service		Assessor Name	Assessor Signature	Sample Initials of Assessor	Assessor's Mariner Reference No.	Assessor's Shipboard Position
		From	To					

Print Name of Candidate

TRANSITION FROM FORMER ASSESSMENT SCHEME FOR RATING FORMING PART OF AN ENGINEERING WATCH

The assessments specified in this Navigation and Vessel Inspection Circular (NVIC) differ from those previously specified in now cancelled NVIC 01-06. Among the differences are changes in the numbering scheme. The Coast Guard recognizes that mariners may be in the process of qualifying for an endorsement as Rating Forming Part of an Engineering Watch (RFPEW), and may have already completed RFPEW assessments under the previous guidance. In order to minimize the burden to these mariners, the Coast Guard will allow a reasonable transition period during which assessments from the old scheme will be accepted.

Until December 31, 2016, mariners may use some or all of the former assessments to meet the equivalent assessment specified in this NVIC.

The following table identifies which assessments from the former scheme satisfy the assessments specified in this NVIC. Mariners who present evidence of satisfactory completion of the assessment identified in the column titled "NVIC 01-06 Control Sheet Number" may use the assessment as evidence of completing the corresponding task in the column "New Task Number."

NVIC 01-06 Control Sheet Number	**New Task Number**	**Task Description**
If you completed this assessment from NVIC 01-06,	*you do not need to complete this task*	
RFPEW-1-1A	1.1.A	Engine room round
RFPEW-1-1B/1	1.1.B (M)	Monitor electricity generating plant (SSDG)
RFPEW-1-1B/2	1.1.B (S)	Monitor electricity generating plant (SSTG)
RFPEW-1-1C/1	1.1.C	Monitor LO/FO purification systems
RFPEW-1-1C/2		
RFPEW-1-1D	1.1.D	Monitor compressed air plant
RFPEW-1-1E	1.1.E	Monitor refrigeration and air-conditioning plants
RFPEW-1-1F	1.1.F	Determine tank and pressure-vessel levels
RFPEW-1-1G	1.1.G	Charge a "waterlogged" potable water pressure tank with compressed air
RFPEW-1-1H/1	1.1.H (M)	Monitor jacket water evaporator
RFPEW-1-1H/2	1.1.H (S)	Monitor steam distilling plant
RFPEW-1-1I/1	1.1.I (M)	Monitor main diesel engine propulsion unit
RFPEW-1-1I/2	1.1.I (S)	Monitor main steam turbine propulsion unit
RFPEW-1-1J	1.1.J	Monitor propulsion shafting and bearings

NVIC 01-06 Control Sheet Number	**New Task Number**	**Task Description**
If you completed this assessment from NVIC 01-06,	*you do not need to complete this task*	
RFPEW-1-1K	1.1.K	Monitor steering gear
RFPEW-1-2A	1.2.A	Add clean oil to engine and deck machinery
RFPEW-1-2B	1.2.B	Lubricate a grease-lubricated bearing
RFPEW-1-2C	1.2.C	Shift and clean a basket-type duplex strainer
RFPEW-1-2D	1.2.D	Clean LO/FO purifier
RFPEW-1-2E	1.2.E	Take up on a gate/globe valve stuffing-box gland
RFPEW-1-2F	1.2.F	Take on fresh water
RFPEW-1-3A	1.3.A	Pump out bilges
RFPEW-1-3B	1.3.B	Monitor oily-water separators
RFPEW-1-3C	1.3.C	Monitor sewage treatment plants
RFPEW-2-1A	2.1.A	Relieve the watch
RFPEW-2-1B	2.1.B	Hand over the watch
RFPEW-2-1C	2.1.C	Assist in pre-start check of a diesel engine
RFPEW-2-2A	2.2.A	Operate internal communications systems
RFPEW-2-2B	2.2.B	Log engine-order telegraph signals
RFPEW-2-3A	2.3.A	Respond appropriately to alarms
RFPEW-3-1A & RFPEW-3-1B	3.1.A	Maintain main boiler water level and steam pressures
RFPEW-3-1A & RFPEW-3-1B	3.1.B	Maintain auxiliary boiler water level and steam pressures
RFPEW-3-1C	3.1.C	Monitor the main propulsion boiler
RFPEW-3-1D	3.1.D	Change out burners for a main-propulsion boiler
RFPEW-3-1E	3.1.E	Clean a burner atomizer assembly
RFPEW-3-1F	3.1.F	Assist in preparing a main-propulsion boiler for light-off
RFPEW-3-1G	3.1.H	Assist in maintaining the fires on a main-propulsion boiler during maneuvering
RFPEW-3-1H	3.1.I	Assist in the operation of the soot blower
RFPEW-4-1A	4.1.A	Locate all engine-room escape routes
RFPEW-4-2A	4.2.A	Locate engineroom fire-fighting and emergency equipment
RFPEW-4-2B	4.2.B	Put a main or emergency fire-pump In service.

Excerpts from the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended

and

Seafarers' Training, Certification and Watchkeeping Code, as amended

Notice: These excerpts are provided for background information. By themselves, they do not constitute Coast Guard policy.

The Manila Amendments to the annex to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978

Chapter I
General provisions

Regulation I/6
Training and assessment

Each Party shall ensure that:

.1 the training and assessment of seafarers, as required under the Convention, are administered, supervised and monitored in accordance with the provisions of section A-I/6 of the STCW Code; and

.2 those responsible for the training and assessment of competence of seafarers, as required under the Convention, are appropriately qualified in accordance with the provisions of section A-I/6 of the STCW Code for the type and level of training and assessment involved.

Regulation I/12
Use of simulators

1 The performance standards and other provisions set forth in section A-I/12 and such other requirements as are prescribed in part A pf the STCW Code for any certificate concerned shall be complied with in respect of:

.1 all mandatory simulator-based training;

.2 any assessment of competency required by part A of the STCW Code which is carried out by means of a simulator; and

.3 any demonstration, by means of a simulator, of continued proficiency required by part A of the STCW Code.

Chapter III
Engine department

Regulation III/4
Mandatory minimum requirements for certification of ratings forming part of a watch in a manned engine-room or designated to perform duties in a periodically unmanned engine-room

1 Every rating forming part of an engine-room watch or designated to perform duties in a periodically unmanned engine-room on a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more, other than ratings under training and ratings whose duties are of an unskilled nature, shall be duly certificated to perform such duties.

2 Every candidate for certification shall:

.1 be not less than 16 years of age;

.2 have completed:

.2.1 approved seagoing service including not less than six months of training and experience, or

.2.2 special training, either pre-sea or on board ship, including an approved period of seagoing service which shall not be less than two months; and

.3 meet the standard of competence specified in section A-III/4 of the STCW Code.

3 The seagoing service, training and experience required by subparagraphs 2.2.1 and 2.2.2 shall be associated with engine-room watchkeeping functions and involve the performance of duties carried out under the direct supervision of a qualified engineer officer or a qualified rating.

The Manila Amendments to the Seafarers' Training, Certification and Watchkeeping (STCW) Code

Chapter I
Standards regarding general provisions

Section A-I/6
Training and assessment

1 Each Party shall ensure that all training and assessment of seafarers for certification under the Convention is:

.1 structured in accordance with written programmes, including such methods and media of delivery, procedures, and course material as are necessary to achieve the prescribed standard of competence; and

.2 conducted, monitored, evaluated and supported by persons qualified in accordance with paragraphs 4, 5 and 6.

2 Persons conducting in-service training or assessment on board ship shall only do so when such training or assessment will not adversely affect the normal operation of the ship and they can dedicate their time and attention to training or assessment.

Qualifications of instructors, supervisors and assessors*

3 Each Party shall ensure that instructors, supervisors and assessors are appropriately qualified for the particular types and levels of training or assessment of competence of seafarers either on board or ashore, as required under the Convention, in accordance with the provisions of this section.

In-service training

4 Any person conducting in-service training of a seafarer, either on board or ashore, which is intended to be used in qualifying for certification under the Convention, shall:

.1 have an appreciation of the training programme and an understanding of the specific training objectives for the particular type of training being conducted;

.2 be qualified in the task for which training is being conducted; and

.3 if conducting training using a simulator:

.3.1 have received appropriate guidance in instructional techniques involving the use of simulators; and

.3.2 have gained practical operational experience on the particular type of simulator being used.

5 Any person responsible for the supervision of in-service training of a seafarer intended to be used in qualifying for certification under the Convention shall have a full understanding of the training programme and the specific objectives for each type of training being conducted.

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* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

Assessment of competence

6 Any person conducting in-service assessment of competence of a seafarer, either on board or ashore, which is intended to be used in qualifying for certification under the Convention, shall:

.1 have an appropriate level of knowledge and understanding of the competence to be assessed;

.2 be qualified in the task for which the assessment is being made;

.3 have received appropriate guidance in assessment methods and practice;

.4 have gained practical assessment experience; and

.5 if conducting assessment involving the use of simulators, have gained practical assessment experience on the particular type of simulator under the supervision and to the satisfaction of an experienced assessor.

Training and assessment within an institution

7 Each Party which recognizes a course of training, a training institution, or a qualification granted by a training institution, as part of its requirements for the issue of a certificate required under the Convention, shall ensure that the qualifications and experience of instructors and assessors are covered in the application of the quality standard provisions of section A-I/8. Such qualification, experience and application of quality standards shall incorporate appropriate training in instructional techniques, and training and assessment methods and practice, and shall comply with all applicable requirements of paragraphs 4 to 6.

Section A-I/12
Standards governing the use of simulators

Part 1 – Performance standards

General performance standards for simulators used in training

1 Each Party shall ensure that any simulator used for mandatory simulator-based training shall:

.1 be suitable for the selected objectives and training tasks;

.2 be capable of simulating the operating capabilities of shipboard equipment concerned, to a level of physical realism appropriate to training objectives, and include the capabilities, limitations and possible errors of such equipment;

.3 have sufficient behavioural realism to allow a trainee to acquire the skills appropriate to the training objectives;

.4 provide a controlled operating environment, capable of producing a variety of conditions, which may include emergency, hazardous or unusual situations relevant to the training objectives;

.5 provide an interface through which a trainee can interact with the equipment, the simulated environment and, as appropriate, the instructor; and

.6 permit an instructor to control, monitor and record exercises for the effective debriefing of trainees.

General performance standards for simulators used in assessment of competence

2 Each Party shall ensure that any simulator used for the assessment of competence required under the Convention or for any demonstration of continued proficiency so required shall:

.1 be capable of satisfying the specified assessment objectives;

.2 be capable of simulating the operational capabilities of the shipboard equipment concerned to a level of physical realism appropriate to the assessment objectives, and include the capabilities, limitations and possible errors of such equipment;

.3 have sufficient behavioural realism to allow a candidate to exhibit the skills appropriate to the assessment objectives;

.4 provide an interface through which a candidate can interact with the equipment and simulated environment;

.5 provide a controlled operating environment, capable of producing a variety of conditions, which may include emergency, hazardous or unusual situations relevant to assessment objectives; and

.6 permit an assessor to control, monitor and record exercises for the effective assessment of the performance of candidates.

*** * * * ***

Part 2 – Other provisions

Simulator training objectives

6 Each Party shall ensure that the aims and objectives of simulator-based training are defined within an overall training programme and that specific training objectives and tasks are selected so as to relate as closely as possible to shipboard tasks and practices.

Training procedures

7 In conducting mandatory simulator-based training, instructors shall ensure that:

.1 trainees are adequately briefed beforehand on the exercise objectives and tasks and are given sufficient planning time before the exercise starts;

.2 trainees have adequate familiarization time on the simulator and with its equipment before any training or assessment exercise commences;

.3 guidance given and exercise stimuli are appropriate to the selected exercise objectives and tasks and to the level of trainee experience;

.4 exercises are effectively monitored, supported as appropriate by audio and visual observation of trainee activity and pre- and post-exercise evaluation reports;

.5 trainees are effectively debriefed to ensure that training objectives have been met and that operational skills demonstrated are of an acceptable standard;

.6 the use of peer assessment during debriefing is encouraged; and

.7 simulator exercises are designed and tested so as to ensure their suitability for the specified training objectives.

Assessment procedures

8 Where simulators are used to assess the ability of candidates to demonstrate levels of competency, assessors shall ensure that:

.1 performance criteria are identified clearly and explicitly and are valid and available to the candidates;

.2 assessment criteria are established clearly and are explicit to ensure reliability and uniformity of assessment and to optimize objective measurement and evaluation, so that subjective judgements are kept to the minimum;

.3 candidates are briefed clearly on the tasks and/or skills to be assessed and on the tasks and performance criteria by which their competency will be determined;

.4 assessment of performance takes into account normal operating procedures and any behavioural interaction with other candidates on the simulator or with simulator staff;

.5 scoring or grading methods to assess performance are used with caution until they have been validated; and

.6 the prime criterion is that a candidate demonstrates the ability to carry out a task safely and effectively to the satisfaction of the assessor.

Qualifications of instructors and assessors*

9 Each Party shall ensure that instructors and assessors are appropriately qualified and experienced for the particular types and levels of training and corresponding assessment of competence as specified in regulation I/6 and section A-I/6.

* The relevant IMO Model Course(s) and resolution MSC.64(67), *Recommendations on new and amended performance standards*, may be of assistance in the preparation of courses.

Chapter III
Standards regarding the engine department

Section A-III/4
Mandatory minimum requirements for certification of ratings forming part of a watch in a manned engine-room or designated to perform duties in a periodically unmanned engine-room

Standard of competence

1 Every rating forming part of an engine-room watch on a seagoing ship shall be required to demonstrate the competence to perform the marine engineering function at the support level, as specified in column 1 of table A-III/4.

2 The minimum knowledge, understanding and proficiency required of ratings forming part of an engine-room watch is listed in column 2 of table A-III/4.

3 Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence in accordance with the methods for demonstrating competence and the criteria for evaluating competence specified in columns 3 and 4 of table A-III/4.
The reference to “practical test” in column 3 may include approved shore-based training in which the students undergo practical testing.

4 Where there are no tables of competence for the support level with respect to certain functions, it remains the responsibility of the Administration to determine the appropriate training, assessment and certification requirements to be applied to personnel designated to perform those functions at the support level.

Table A-III/4

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

Function: Marine engineering at the support level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch Understand orders and be understood in matters relevant to watchkeeping duties	Terms used in machinery spaces and names of machinery and equipment Engine-room watchkeeping procedures Safe working practices as related to engine-room operations Basic environmental protection procedures Use of appropriate internal communication system Engine-room alarm systems and ability to distinguish between the various alarms, with special reference to fire-extinguishing gas alarms	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience; .2 approved training ship experience; or .3 practical test	Communications are clear and concise and advice or clarification is sought from the officer of the watch where watch information or instructions are not clearly understood Maintenance, handover and relief of the watch is in conformity with accepted principles and procedures
For keeping a boiler watch: Maintain the correct water levels and steam pressures	Safe operation of boilers	Assessment of evidence obtained from one or more of the following: .1 approved in-service experience; .2 approved training ship experience; .3 practical test; or .4 approved simulator training, where appropriate	Assessment of boiler condition is accurate and based on relevant information available from local and remote indicators and physical inspections The sequence and timing of adjustments maintains safety and optimum efficiency
Operate emergency equipment and apply emergency procedures	Knowledge of emergency duties Escape routes from machinery spaces Familiarity with the location and use of fire-fighting equipment in the machinery spaces	Assessment of evidence obtained from demonstration and approved in-service experience or approved training ship experience	Initial action on becoming aware of an emergency or abnormal situation conforms with established procedures Communications are clear and concise at all times and orders are acknowledged in a seamanlike manner

GUIDANCE REGARDING PROVISIONS OF THE ANNEX TO THE STCW CONVENTION PART B

Chapter I
Guidance regarding general provisions

Section B-I/6
Guidance regarding training and assessment

Qualifications of instructors and assessors

1 Each Party should ensure that instructors and assessors are appropriately qualified and experienced for the particular types and levels of training or assessment of competence of seafarers, as required under the Convention, in accordance with the guidelines in this section.

In-service training and assessment

2 Any person, on board or ashore, conducting in-service training of a seafarer intended to be used in qualifying for certification under the Convention should have received appropriate guidance in instructional techniques*.

3 Any person responsible for the supervision of in-service training of a seafarer intended to be used in qualifying for certification under the Convention should have appropriate knowledge of instructional techniques and of training methods and practice.

4 Any person, on board or ashore, conducting an in-service assessment of the competence of a seafarer intended to be used in qualifying for certification under the Convention should have:

.1 received appropriate guidance in assessment methods and practice*; and

.2 gained practical assessment experience under the supervision and to the satisfaction of an experienced assessor.

5 Any person responsible for the supervision of the in-service assessment of competence of a seafarer intended to be used in qualifying for certification under the Convention should have a full understanding of the assessment system, assessment methods and practice*.

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Section B-I/12
Guidance regarding the use of simulators

1 When simulators are being used for training or assessment of competency, the following guidelines should be taken into consideration in conducting any such training or assessment.

* * * * *

Recommended performance standards for non-mandatory types of simulation

67 Performance standards for non-mandatory simulation equipment used for training and/or assessment of competence or demonstration of skills are set out hereunder. Such forms of simulation include, but are not limited to, the following types:

* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

.1 navigation and watchkeeping;

.2 ship handling and manoeuvring;

.3 cargo handling and stowage;

.4 reporting and radiocommunications; and

.5 main and auxiliary machinery operation.

*** * * * ***

Main and auxiliary machinery operation simulation

73 Engine-room simulation equipment should be capable of simulating a main and auxiliary machinery system and incorporate facilities to:

.1 create a real-time environment for seagoing and harbour operations, with communication devices and simulation of appropriate main and auxiliary propulsion machinery equipment and control panels;

.2 simulate relevant sub-systems that should include, but not be restricted to, boiler, steering gear, electrical power general and distribution systems, including emergency power supplies, and fuel, cooling water, refrigeration, bilge and ballast systems;

.3 monitor and evaluate engine performance and remote sensing systems;

.4 simulate machinery malfunctions;

.5 allow for the variable external conditions to be changed so as to influence the simulated operations: weather, ship's draught, seawater and air temperatures;

.6 allow for instructor-controlled external conditions to be changed: deck steam, accommodation steam, deck air, ice conditions, deck cranes, heavy power, bow thrust, ship load;

.7 allow for instructor-controlled simulator dynamics to be changed: emergency run, process responses, ship responses; and

.8 provide a facility to isolate certain processes, such as speed, electrical system, diesel oil system, lubricating oil system, heavy oil system, seawater system, steam system, exhaust boiler and turbo generator, for performing specific training tasks.*

* The relevant IMO Model Course(s) may be of assistance in the preparation of courses.

Chapter III
Guidance regarding the engine department

Section B-III/4
Guidance regarding the training and certification of ratings forming part of a watch in a manned engine-room or designated to perform duties in a periodically unmanned engine-room

1 In addition to the requirements stated in section A-III/4 of this Code, Parties are encouraged, for safety reasons, to include the following items in the training of ratings forming part of an engineering watch:

.1 a basic knowledge of routine pumping operations, such as bilge, ballast and cargo pumping systems;

.2 a basic knowledge of electrical installations and the associated dangers;

.3 a basic knowledge of maintenance and repair of machinery and tools used in the engine-room; and

.4 a basic knowledge of stowage and arrangements for bringing stores on board.