U.S. Department of Homeland Security

United States Coast Guard

Commandant
United States Coast Guard

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COMDTCHANGENOTE 16721
NVIC 16-14
December 15, 2021

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 16-14, CH-3

Subj: CHANGE 3 TO GUIDELINES ON QUALIFICATION FOR STCW ENDORSEMENTS AS CHIEF ENGINEER OFFICER AND SECOND ENGINEER OFFICER ON SHIPS POWERED BY MAIN PROPULSION MACHINERY OF 750 kW/1,000 HP OR MORE AND LESS THAN 3,000 kW/4,000 HP PROPULSION POWER (MANAGEMENT LEVEL), NVIC 16-14, COMDTPUB 16721

Ref: (a) Guidelines on Qualification for STCW Endorsements as Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level), NVIC 16-14, COMDTPUB 16721

1. PURPOSE. This Commandant Change Notice publishes CH-3 to NVIC 16-14.

2. ACTION. The Coast Guard will use NVIC 16-14 and 46 CFR Part 11 to establish whether mariners are qualified to hold national officer and STCW endorsements as Chief Engineer Officer or Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level).

3. DIRECTIVES AFFECTED. With the release of this Commandant Change Notice, NVIC 16-14 is updated.

4. DISCUSSION. The Coast Guard is aware that as a result of the limited number of approved QAs, there may be a hardship on mariners trying to complete STCW assessments after December 31, 2021. In consideration of this, the Coast Guard will continue to allow STCW assessments to be signed by an assessor who meets the requirements specified in NVIC 19-14 until December 31, 2023. These assessments must be submitted to the Coast Guard as part of a complete application no later than June 30, 2024. Qualified military personnel need not be approved QAs and may continue to sign assessments after December 31, 2023. This change notice revises NVIC 16-14 to reflect this extension.

5. 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

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outline methods of best practice for compliance with applicable law. You can use an alternative approach if the approach satisfies the requirements of the applicable statutes and regulations.

6. MAJOR CHANGES. This Commandant Change Notice revises NVIC 16-14 to extend the date for acceptance of assessments that were not signed by a Coast Guard approved Qualified Assessor.

7. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS.

   a. The development of this Commandant Change Notice and the general policies contained within it have been thoroughly reviewed under Department of Homeland Security Directive 023-01 and Environmental Planning COMDTINST 5090.1 (series) by the originating office, and are categorically excluded (CE) from further environmental analysis under paragraph #A3 in Table 3-1 of U.S. Coast Guard Environmental Planning Implementing Procedures 5090.1. Because this Commandant Change Notice implements, without substantive change, the applicable Commandant Instruction or other federal agency regulations, procedures, manuals, and other guidance documents, Coast Guard categorical exclusion #A3 is appropriate.

   b. This Commandant Change Notice 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 Commandant Change Notice 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. DISTRIBUTION. No paper distribution will be made of this Commandant Change Notice. An electronic version will be located at https://www.dco.uscg.mil/Our-Organization/NVIC/.

9. PROCEDURE. Remove and insert the following pages of NVIC 16-14:

Remove	Insert
Enclosure (2), Page 1 CH-2	Enclosure (2), Page 1 CH-3
Enclosure (3), Page 9 CH-2	Enclosure (3), Page 9 CH-3

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

11. FORMS/REPORTS. None.

12. REQUEST FOR CHANGES. All requests for changes or questions regarding implementation of NVIC 16-14 and this Commandant Change Notice should be directed to the Mariner Credentialing Program Policy Division (CG-MMC-2), at (202) 372-2357 or MMCPolicy@uscg.mil. To obtain approval for a course or training program, contact the NMC at (888) 427-5662 or IAskNMC@uscg.mil.

/s/
J. W. MAUGER
Rear Admiral, U. S. Coast Guard
Assistant Commandant for Prevention Policy

U.S. Department of Homeland Security
United States Coast Guard

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COMDTCHANGENOTE 16721
NVIC 16-14
May 7, 2020

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 16-14, CH-2

Subj: CHANGE 2 TO GUIDELINES ON QUALIFICATION FOR STCW ENDORSEMENTS AS CHIEF ENGINEER OFFICER AND SECOND ENGINEER OFFICER ON SHIPS POWERED BY MAIN PROPULSION MACHINERY OF 750 kW/1,000 HP OR MORE AND LESS THAN 3,000 kW/4,000 HP PROPULSION POWER (MANAGEMENT LEVEL), NVIC 16-14, COMDTPUB 16721

Ref: (a) Guidelines on Qualification for STCW Endorsements as Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level), NVIC 16-14, COMDTPUB 16721

1. PURPOSE. This Commandant Change Notice publishes CH-2 to NVIC 16-14.

2. ACTION. The Coast Guard will use NVIC 15-14 and 46 CFR Part 11 to establish whether mariners are qualified to hold national officer and STCW endorsements as Chief Engineer Officer or Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level). Officers in Charge, Marine Inspection (OCMIs) should also bring this notice to the attention of the maritime industry within their zones of responsibility.

3. DIRECTIVES AFFECTED. With the release of this Commandant Change Notice, NVIC 16-14 is updated.

4. DISCUSSION. The Coast Guard has extended the date for acceptance of assessments of mariner competence that are not signed by a Coast Guard approved Qualified Assessor. This change notice revises NVIC 16-14 to reflect this extension.

5. 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 with applicable law. You can use an alternative approach if the approach satisfies the requirements of the applicable statutes and regulations.

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6. MAJOR CHANGES. This Commandant Change Notice revises NVIC 16-14 to extend the date for acceptance of assessments that were not signed by a Coast Guard approved Qualified Assessor.

7. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS.

   a. The development of this Commandant Change Notice and the general policies contained within it have been thoroughly reviewed under Department of Homeland Security Directive 023-01 and Environmental Planning COMDTINST 5090.1 (series) by the originating office, and are categorically excluded (CE) from further environmental analysis under paragraph #A3 in Table 3-1 of U.S. Coast Guard Environmental Planning Implementing Procedures 5090.1. Because this Commandant Change Notice implements, without substantive change, the applicable Commandant Instruction or other federal agency regulations, procedures, manuals, and other guidance documents, Coast Guard categorical exclusion #A3 is appropriate.

   b. This Commandant Change Notice 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 Commandant Change Notice 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. DISTRIBUTION. No paper distribution will be made of this Commandant Change Notice. An electronic version will be located at https://www.dco.uscg.mil/Our-Organization/NVIC/.

9. PROCEDURE. Remove and insert the following pages of NVIC 16-14:

Remove	Insert
Enclosure (2), Page 1 CH-1	Enclosure (2), Page 1 CH-2
Enclosure (3), Page 9 CH-1	Enclosure (3), Page 9 CH-2

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

11. FORMS/REPORTS. None.

12. REQUEST FOR CHANGES. All requests for changes or questions regarding implementation of Reference (a) and this Commandant Change Notice should be directed to the Mariner Credentialing Program Policy Division (CG-MMC-2), at (202) 372-2357 or MMCPolicy@uscg.mil. To obtain approval for a course or training program, contact the NMC at (888) 427-5662 or IAskNMC@uscg.mil.

/s/
R. V. TIMME
Rear Admiral, U. S. Coast Guard
Assistant Commandant for Prevention Policy

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COMDTCHANGENOTE 16721
NVIC 16-14
October 26, 2018

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 16-14, CH 1

Subj: CH-1 TO GUIDELINES FOR QUALIFICATION FOR STCW ENDORSEMENTS AS CHIEF ENGINEER OFFICER AND SECOND ENGINEER OFFICER ON SHIPS POWERED BY MAIN PROPULSION MACHINERY OF 750 kW/1,000 HP OR MORE AND LESS THAN 3,000 kW/4,000 HP PROPULSION POWER (MANAGEMENT LEVEL), NVIC 16-14, COMDTPUB 16721

Ref: (a) Guidelines for Qualification for STCW Endorsements as Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level), NVIC 16-14, COMDTPUB 16721

1. PURPOSE. This Commandant Change Notice publishes CH-1 to reference (a).

2. ACTION. The Coast Guard will use reference (a) and 46 CFR Part 11 to establish whether mariners are qualified to hold national officer and STCW endorsements as Chief Engineer or Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level). Officers in Charge, Marine Inspection (OCMIs) should also bring this notice to the attention of the maritime industry within their zones of responsibility.

3. DIRECTIVES AFFECTED. With the release of this Commandant Change Notice, reference (a) is updated.

4. DISCUSSION.

   a. Reference (a) included grandfathering provisions that expired on January 1, 2017. As that date has passed, this CH-1 removes those now-expired provisions.

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b. After publication of Reference (a), the Coast Guard extended the date for acceptance of assessments of mariner competence that are not signed by a Coast Guard approved Qualified Assessor. This CH-1 is revised to reflect this extension.

5. 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 with applicable law. You can use an alternative approach if the approach satisfies the requirements of the applicable statutes and regulations.

6. MAJOR CHANGES. This Commandant Change Notice changes the guidance found in reference (a) concerning endorsements as Chief Engineer that are limited to service on OSVs, as follows:

a. Enclosure (1) is revised to remove grandfathering provisions for an STCW endorsement that expired on January 1, 2017, and to add an explanation of the requirement in 46 CFR 11.201(a)(1) to hold an appropriate national endorsement in order to qualify for an STCW endorsement.

b. Enclosures (2) and (3) are revised to reflect previously published policy extending the date for acceptance of assessments that were not signed by a Coast Guard approved Qualified Assessor, and to add additional information concerning assessments that are performed on military vessels.

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 CE # A3 from further environmental analysis, in accordance with Section 2.B and Appendix A, DHS Instruction Manual 023-01-001-01, Revision 01,Implementation of the National Environmental Policy Act (NEPA). 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 #A3 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. DISTRIBUTION. No paper distribution will be made of this Commandant Change Notice. An electronic version will be located at https://www.dco.uscg.mil/Our-Organization/NVIC/.

9. PROCEDURE. Remove and insert the following pages of Enclosure (1) to Reference (a):

Remove	Insert
Enclosure (1), Page 1	Enclosure (1), Page 1 CH-1
Enclosure (1), Page 3	Enclosure (1), Page 3 CH-1
Enclosure (2), Page 1	Enclosure (2), Page 1 CH-1
Enclosure (3), Page 9	Enclosure (3), Page 9 CH-1

10. 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 the Federal Records Act (44 U.S.C. 3101 et seq.), NARA requirements, and the Information and Life Cycle Management Manual, COMDTINST M5212.12 (series). This policy does not create significant or substantial change to existing records management requirements.

11. FORMS/REPORTS. None.

12. REQUEST FOR CHANGES. All requests for changes or questions regarding implementation of Reference (a) and this Commandant Change Notice should be directed to the Mariner Credentialing Program Policy Division (CG-MMC-2), at (202) 372-2357 or MMCPolicy@uscg.mil. To obtain approval for a course or training program, contact the NMC at (888) 427-5662 or IAskNMC@uscg.mil.

J. P. NADEAU
Rear Admiral, U. S. Coast Guard
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COMDTPUB P16721
NVIC 16-14
April 28, 2014

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 16-14

Subj: GUIDELINES FOR QUALIFICATION FOR STCW ENDORSEMENTS AS CHIEF ENGINEER OFFICER AND SECOND ENGINEER OFFICER ON SHIPS POWERED BY MAIN PROPULSION MACHINERY OF 750 kW/1,000 HP OR MORE AND LESS THAN 3,000 kW/4,000 HP PROPULSION POWER (MANAGEMENT LEVEL)

Ref: (a) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW), Regulation III/3 and Section A-III/3 of STCW Code, incorporated into regulations at 46 Code of Federal Regulations (CFR) 10.103

1. PURPOSE. This Navigation and Vessel Inspection Circular (NVIC) provides guidance on qualification for and revalidation of STCW endorsements as Chief Engineer Officer (CEO) and Second Engineer Officer (2EO) on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level).

2. ACTION. The Coast Guard will use this NVIC and 46 CFR 11.331 and 11.333 to establish whether mariners are qualified to hold STCW endorsements as CEO and 2EO for 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP. Officers in Charge, Marine Inspection (OCMIs) should 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. None.

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4. BACKGROUND.

   a. The STCW Convention and STCW Code set forth standards for training and certification for merchant mariners, including mariners serving as CEO and 2EO on ships powered by main propulsion machinery of 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP propulsion power.

   b. 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, including the United States, on January 1, 2012.

   c. The Convention is not self-implementing; therefore, the U.S., as a signatory to the STCW Convention, initiated 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 United States Code, Titles 33 and 46. The Coast Guard published a final rule in the Federal Register on December 24, 2014, (78 FR 77796) that implements the STCW, including the 2010 amendments. This final rule became effective on March 24, 2014. The Coast Guard is publishing this NVIC to provide guidance on complying with the new regulations.

5. DISCUSSION.

   a. Policy regarding STCW endorsements as CEO and 2EO for 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP is located in this NVIC. Enclosure (1) discusses specific qualification requirements for these endorsements. Enclosure (2) contains the national assessment guidelines. Enclosure (3) may be used to record the completion of assessments. Enclosure (4) provides relevant excerpts from the STCW Convention and STCW Code.

   b. When assessing demonstrations of skills, Qualified Assessors (QAs) are encouraged to use the guidelines in Enclosure (2) or an approved alternative. Shipboard QAs may make minor changes to the assessments in Enclosure (2) to reflect differences in shipboard equipment and operating procedures. QAs may not make other changes unless prior approval is given by the National Maritime Center (NMC) (46 CFR 11.301(a)(1)(i)).

   c. Training institutions applying for approval of a course or program that leads to an endorsement as CEO or 2EO for 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP should state that the guidelines in Enclosure (2) will apply, or provide the guidelines they propose to use. However, under 46 CFR 10.402(e), training institutions must submit any significant deviations from these guidelines to the Coast Guard for approval before use.

   d. Many U.S.-flag vessels use automated engine rooms where engine department personnel work as day workers. The Coast Guard will accept service, training, and experience gained by engine department day workers on vessels with automated engine-rooms for endorsements as CEO or 2EO for 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP.

e. Mariners 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 with 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 D. 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.

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 the Federal Records Act, 44 U.S.C. 3101 et seq., National Archives and Records Administration requirements, and the Information and Life Cycle Management Manual, COMDTINST M5212.12 (series). This policy does not create a significant or substantial change to existing records management requirements.

9. QUESTIONS. All questions regarding implementation of this NVIC 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 STCW Endorsements as Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level)
(2) Assessment Guidelines for Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level)
(3) Record of Assessment for Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level)
(4) Excerpts from the STCW Convention and the STCW Code

DISCUSSION OF QUALIFICATION REQUIREMENTS FOR STCW ENDORSEMENTS AS CHIEF ENGINEER OFFICER AND SECOND ENGINEER OFFICER ON VESSELS POWERED BY MAIN PROPULSION MACHINERY OF 750 kW/1,000 HP OR MORE AND LESS THAN 3,000 kW/4,000 HP PROPULSION POWER (MANAGEMENT LEVEL)

1. GENERAL. This enclosure provides guidance for engineering officers to qualify for International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW) endorsements as Chief Engineer Officer (CEO) and Second Engineer Officer (2EO) on Vessels Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power (Management Level) in accordance with Section A-III/3 of the STCW Code, and 46 Code of Federal Regulations (CFR) 11.331 and 46 CFR 11.333.

   An applicant for an STCW endorsement must hold an appropriate national endorsement (46 CFR 11.201(a)). To be eligible for an STCW endorsement as CEO or 2EO on Vessels Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP Propulsion Power, mariners must hold or qualify for any national endorsement for at least 750 kW/1,000 HP. For an endorsement as CEO, the national endorsement should be for Chief Engineer or Designated Duty Engineer; for 2EO, the national endorsement should be as Chief Engineer, Designated Duty Engineer, or First Assistant Engineer.

2. SEA SERVICE, TRAINING, AND DEMONSTRATIONS.

   a. As specified in 46 CFR 11.331, every candidate for endorsement as CEO on vessels powered by main propulsion machinery of 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP propulsion power (Management Level) must provide evidence of:

      1) Having met the requirements of 46 CFR 11.329 for an endorsement as Officer in Charge of an Engineering Watch (OICEW);

      2) Not less than 24 months of service on seagoing vessels powered by main propulsion machinery of not less than 750 kW/1,000 HP, of which not less than 12 months must have been while qualified to serve as Second Engineer Officer. Experience gained in the deck department may be creditable for up to 1 month of the total required service;

      3) Meeting the standard of competence specified in Section A-III/3 of the STCW Code. This may be done by completing the assessments in Enclosure (2); and

      4) Satisfactory completion of approved training in:

         i) Engine Resource Management (ERM), if not completed at the operational level;

         ii) Leadership and Managerial Skills; and

         iii) Management of Electrical and Electronic Control Equipment.

   b. As specified in 46 CFR 11.333, every candidate for certification as 2EO on vessels powered by main propulsion machinery of 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP propulsion power (Management Level) must provide evidence of:

      1) Having met the requirements of 46 CFR 11.329 for an endorsement as OICEW;

      2) Not less than 12 months of service as Assistant Engineer Officer or Engineer Officer on vessels powered by main propulsion machinery of not less than 750 kW/1,000 HP. Experience gained in the deck department may be creditable for up to 1 month of the total required service;

      3) Meeting the standard of competence specified in Section A-III/3 of the STCW Code. This may be done by completing the assessments in Enclosure (2); and

3) Meeting the standard of competence specified in Section A-III/3 of the STCW Code. This may be done by completing the assessments in Enclosure (2); and

4) Satisfactory completion of approved training in:

i) ERM, if not completed at the operational level;

ii) Leadership and managerial skills; and

iii) Management of electrical and electronic control equipment.

c. An applicant for a CEO or 2EO 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP endorsement without limitations for specific propulsion modes, vessel equipment, or vessel systems should complete every assessment in Enclosure (2), or an equivalent approved alternative. This will allow service on any steam, motor, or gas turbine vessel. An applicant for an endorsement 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 Enclosures (2) and (3). Not performing certain assessments will limit the endorsement accordingly.

d. Operational-level assessments are not required if the mariner holds or has previously held an STCW endorsement as OICEW for 750 kW/1,000 HP or more for the sought after propulsion mode. Operational-level assessments are also not required if the mariner holds or has previously held an STCW endorsement as CEO or 2EO valid on vessels of 1,000 HP or more for the sought after propulsion mode issued after 1997. Mariners who have not held an STCW endorsement as OICEW, 2EO, or CEO for 750 kW/1,000 HP or more issued after 1997 for the appropriate propulsion mode, must also meet the requirements of 46 CFR 11.329 for qualification as OICEW;

e. Mariners holding an STCW endorsement as 2EO for 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP who are raising the grade of their endorsement to CEO on vessels powered by main propulsion machinery of 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP (Management Level).for the same propulsion mode will not be required to submit assessments. Mariners seeking an endorsement in a new propulsion mode must complete assessments specific to the sought after mode.

f. Demonstrations of competency should be performed on a vessel of at least 750 kW/1,000 HP with a manned or periodically unmanned walk-in engine room, generators independent of the main engine, and other independent auxiliaries. Since many vessels no longer have manned engine rooms, engine room maintenance with designated engine room operational experience may be substituted for watch keeping experience.

g. To qualify for an STCW endorsement as CEO or 2EO on vessels powered by main propulsion machinery of 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP propulsion power (Management Level) mariners must provide evidence of meeting the

standard of competence for Basic Training (BT) (46 CFR 11.302) and Advanced Firefighting (46 CFR 11.303).

3. RENEWAL OF ENDORSEMENTS. In order to renew an endorsement as CEO or 2EO 750 kW/1,000 HP or more and less than 3,000 kW/4,000 HP, an applicant must:

   a. Meet the general requirements for renewal of a merchant mariner credential found in 46 CFR 10.227;

   b. Provide evidence of:

      1) Completion of approved or accepted training for:

         A) Leadership and Managerial Skills, if not completed previously (46 CFR 11.331(b)(2) or 46 CFR 11.333(b)(2);

         B) Management of Electrical and Electronic Control Equipment, if not completed previously; and

         C) ERM, if not completed previously; and

      2) Maintaining the standard of competence in standard of competence for Basic Training (46 CFR 11.302(b)) and Advanced Firefighting (46 CFR 11.303(b)).

   c. Seafarers serving as Lifeboatman must also provide evidence of maintaining the standard of competence for Proficiency in Survival Craft (46 CFR 12.613) or Proficiency in Survival Craft-Limited (46 CFR 12.615), as appropriate.

Assessment Guidelines for Chief Engineer Officers and Second Engineer Officers on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW / 4,000 HP Propulsion Power

Standard of Competence

As specified in 46 CFR 11.331(a)(2) and 11.333(a)(2), every candidate for an endorsement as Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW/4,000 HP must provide evidence of having achieved the required standard of competence specified in Table A-III/3 of the STCW Code. The table below is adopted from Table A-III/3 of the STCW Code 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. In addition, for the assessments in this enclosure, the unique requirements of different manufacturers for operating, maintenance, and repair; the different generations and configurations of systems; and the specific nature of the shipboard installation do 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 demonstration may sign the appropriate blocks and pages in the Record of Assessment in Enclosure (3) or an equivalent record. All assessments must be signed by a qualified assessor approved by the Coast Guard in accordance with 46 CFR 10.405. In order to facilitate the transition to this new requirement, the Coast Guard will accept assessments that have been demonstrated in the presence of and signed by an assessor who has not been Coast Guard approved until December 31, 2023, provided that the assessor meets the professional requirements in 46 CFR 10.405(a)(3) to assess competence for the specific endorsement. Assessors must be in possession of the level of endorsement, or other professional credential, which provides proof that he or she has attained a level of experience and qualification equal or superior to the relevant level of knowledge, skills, and abilities to be assessed (46 CFR 10.405(a)(3)). Until June 30, 2024, the Coast Guard will accept assessments signed before January 1, 2024 by mariners who hold an appropriate national endorsement and have at least 1 year of experience as Chief Engineer or Second Engineer Officer (national First Assistant Engineer) on seagoing vessels of at least 750 kW (1,000 HP). For assessments signed on a military vessel, the assessor should have experience as Chief Engineering Officer on seagoing vessels of at least 750 kW (1,000 HP) or more. Military assessors should only conduct assessments that are within their personal experience and are relevant to the vessel on which they are conducted. For example, assessments involving a specific propulsion mode should not be performed on a vessel that is not fitted with that mode of propulsion and/or by an assessor who lacks experience in that propulsion mode. After December 31, 2023, QAs must be approved by the National Maritime Center (46 CFR 10.405). Qualified military personnel need not be approved QAs continue to sign assessments on military vessels after December 31, 2023.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/2 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must approved by the National Maritime Center before use.

Notes

The following notes are used in the "Task No." column of the assessment table that follows:

All The assessment is required for all propulsion modes.

Motor The assessment is required for an endorsement valid for motor propelled vessels.

Steam The assessment is required for an endorsement valid for steam propelled vessels.

GT The assessment is required for an endorsement valid for gas turbine propelled vessels.

Assessment Guidelines for Chief Engineer Officer and Second Engineer Officer on Vessels Powered by Main Propulsion Machinery of Between 750 kW / 1,000 HP and 3,000 kW / 4,000 HP Propulsion Power

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.A *Motor*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Diesel Engine Propulsion Plant	On a vessel powered by diesel propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be prepared for service.	The candidate directs that the main propulsion plant be made ready for seagoing operations by: 1. Operating auxiliary machinery within manufacturer's specifications; 2. Contacting the bridge watch officer and arranging for the testing of steering gear and main engine; 3. Testing the main propulsion engine(s) for proper start and direction. 4. Performing pre-operational checks with satisfactory results; 5. Transferring control of the propulsion engines to the Bridge (if fitted for Bridge control); 6. Preparing the plant for start-up using the most appropriate methods and in accordance with manufacturer specifications; 7. Ensuring that propulsion plant performance is verified and checked in relation to bridge commands and technical specifications; and 8. Complying with international and domestic regulatory requirements.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/3 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.B *Motor*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Diesel Engine Propulsion Plant	On a vessel powered by diesel propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be operated in maneuvering mode.	The candidate directs that the main propulsion plant maneuvering operations to be performed as directed by the Bridge, including: 1. Operating auxiliary machinery within acceptable limits and parameters; 2. Ensuring that the main propulsion engine(s) react properly to requests for changes in speed and direction; 3. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications; and 4. Plant performance is verified and checked for adherence to bridge commands and technical specifications.
1.1.C *Motor*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Diesel Engine Propulsion Plant	On a vessel powered by diesel propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be operated at full sea speed.	The candidate directs the main propulsion plant to be brought to full sea speed operations, including: 1. Ensuring that the main propulsion engine(s) speed is increased at a rate in accordance with manufacturer's specifications upon receiving direction from the Bridge Watch Officer; 2. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications; 3. Ancillary equipment such as distillers are brought on line in accordance with manufacturer's directions and operational requirements; and 4. Propulsion plant performance is verified and checked in relation to bridge commands and technical specifications.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/3 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.1.D *Motor*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Diesel Engine Propulsion Plant	On a vessel powered by diesel propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be prepared for shutdown and secured.	The candidate directs the main propulsion plant to be secured from seagoing or maneuvering operations to port operations, including: 1. Transferring engine control to the engine room upon the Bridge's signal for Finished With Engines (FWE); 2. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications for port operations; 3. Main propulsion machinery is secured safely in accordance with manufacturer's instructions and company procedures; 4. Ancillary and auxiliary equipment are secured in accordance with manufacturer's directions and operational requirements; and 5. Preparing the plant for shut-down using the most appropriate methods and in accordance with manufacturer specifications.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.A *Steam*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Steam Propulsion Plant	On a vessel powered by steam propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be prepared for service.	The candidate directs that the main propulsion plant be made ready for seagoing operations, including: 1. Main boiler(s) have the appropriate firing capabilities and are at recommended temperature(s) and pressure(s); 2. Operating auxiliary machinery is within manufacturer's specifications; 3. Contacting the Bridge Watch Officer and arranging for the testing of gear and the main engine; 4. Testing the main propulsion engine(s) for proper start and direction. 5. Performing pre-operational checks with satisfactory results; 6. Transferring control of the propulsion engines to the Bridge (if fitted for bridge control); 7. Preparing the plant for start-up using the most appropriate methods and in accordance with manufacturer specifications; 8. Ensuring that propulsion plant performance is verified and checked in relation to bridge commands and technical specifications; and 9. Complying with international and domestic regulatory requirements.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.B *Steam*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Steam Propulsion Plant	On a vessel powered by steam propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be operated in maneuvering mode.	The candidate directs that the main propulsion plant maneuvering operations be performed as directed by the Bridge, including: 1. Operating auxiliary machinery within acceptable limits and parameters; 2. Ensuring that the main propulsion engine(s) react properly to requests for changes in speed and direction; 3. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications; 4. Main boiler(s) operating pressure(s) and water level(s) are maintained within recommended operational limits; and 5. Ensuring that propulsion plant performance is verified and checked for adherence to bridge commands and technical specifications.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.C *Steam*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Steam Propulsion Plant	On a vessel powered by steam propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be operated at full sea speed.	The candidate directs that the main propulsion plant to be brought to full sea speed operations, including: 1. Operating the main boiler(s) at the appropriate firing rate(s), pressure(s), and efficiency as required by operational necessity; 2. Ensuring that the main propulsion engine(s) speed is/are increased at a rate in accordance with manufacturer's specifications upon receiving direction from the Bridge Watch Officer; 3. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications; 4. Ancillary equipment such as distillers are brought on line in accordance with manufacturer's directions and operational requirements; and 5. Ensuring that propulsion plant performance is verified and checked for adherence to bridge commands and technical specifications.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.2.D *Steam*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Marine Steam Propulsion Plant	On a vessel powered by steam propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be prepared for shutdown and secured.	The candidate directs that the main propulsion plant be secured from seagoing or maneuvering operations to port operations, including: 1. Operating the main boiler(s) at the appropriate firing rate(s), pressure(s), and efficiency as required by operational necessity; 2. Transferring engine control to the engine room upon Bridge signal for FWE; 3. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications for port operations; 4. Securing main propulsion machinery safely in accordance with manufacturer's instructions and company protocols; and 5. Securing ancillary and auxiliary equipment in accordance with manufacturer's directions and operational requirements.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.3.A *GT*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Gas Turbine Propulsion Plant	On a vessel powered by gas turbine propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be prepared for service.	The candidate directs that the main propulsion plant be made ready for seagoing operations by: 1. Operating auxiliary machinery within manufacturer's specifications; 2. Contacting the Bridge Watch Officer and arranging for the testing of gear and the main engine; 3. Testing the main propulsion engine(s) for proper start and direction; 4. Performing pre-operational checks with satisfactory results; 5. Transferring control of the propulsion engines to the Bridge (if fitted for bridge control); 6. Preparing the plant for start-up using the most appropriate methods and in accordance with manufacturer specifications 7. Ensuring that propulsion plant performance is verified and checked for adherence to Bridge commands and technical specifications; and 8. Complying with international and domestic regulatory requirements.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.3.B *GT*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Gas Turbine Propulsion Plant	On a vessel powered by gas turbine propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be operated in maneuvering mode.	The candidate directs that main propulsion plant maneuvering operations be performed as directed by the Bridge, including: 1. Operating auxiliary machinery within acceptable limits and parameters; 2. Ensuring that the main propulsion engine(s) react properly to requests for changes in speed and direction; 3. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications ensuring plant performance is verified; and 4. Plant performance is verified and checked in relation to bridge commands and technical specifications.
1.3.C *GT*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Gas Turbine Propulsion Plant	On a vessel powered by gas turbine propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant be operated at full sea speed.	The candidate directs that the main propulsion plant be brought to full sea speed operations, including ensuring that: 1. Main propulsion engine(s) speed is/are increased at a rate in accordance with manufacturer's specifications upon receiving direction from the Bridge Watch Officer; 2. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications; 3. Ancillary equipment such as distillers are brought on line in accordance with manufacturer's directions and operational requirements; and 4. Propulsion plant performance is verified and checked in relation to bridge commands and technical specifications.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/3 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
1.3.D *GT*	Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: Gas Turbine Propulsion Plant	On a vessel powered by gas turbine propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates the management of operations by directing the engineering plant prepared for shutdown and secured.	The candidate directs that the main propulsion plant be secured from seagoing or maneuvering operations to port operations by: 1. Transferring engine control to the engine room upon Bridge's signal for FWE; 2. Temperatures, pressures, flows, and other measured operating parameters are within manufacturer's specifications for port operations; 3. Securing main propulsion machinery safely in accordance with manufacturer's instructions and company protocols; 4. Securing ancillary and auxiliary equipment in accordance with manufacturer's directions and operational requirements; and 5. Preparing the plant for shut-down using the most appropriate methods and in accordance with manufacturer specifications.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
2.1.A *All*	Plan and schedule operations	Thermodynamics and heat transmission Mechanics and hydromechanics Propulsive characteristics of diesel engines, steam and gas turbines, including speed, output and fuel consumption Heat cycle, thermal efficiency and heat balance of the following: .1 Marine diesel engine .2 Marine steam turbine .3 Marine gas turbine .4 Marine steam boiler Refrigerators and refrigeration cycle Physical and chemical properties of fuels and lubricants Technology of materials Naval architecture and ship construction, including damage control	On a vessel powered by main propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate demonstrates planning and preparation of operations suited to the design parameters of the power installation and to the requirements of the voyage.	The candidate creates a plan and schedule for vessel operations, including: 1. Plant Operations: • Maneuvering; • Arrival; • Departure; and 2. Bunkering Operations: • Pre-Bunker Preparations; • Loading Plan; • Securing; and 3. Port Stay: • Scheduled Maintenance; and • Watch Functions; and 4. Voyage Calculations: • Fuel consumption; • FOB; • Fuel Order; • Propeller slip; and 5. Engine Room Emergency Drills: • Blackout; • Fire; • Man Down; and • Damage Control; and 6. FO and LO Sampling and Testing: • Viscosity; • Density; • Water Content; and • Ph.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/3 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.1.A *Motor*	Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	Start up and shut down main propulsion and auxiliary machinery, including associated systems Operating limits of propulsion plant The efficient operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery Functions and mechanism of automatic control for main engine	On a vessel powered by diesel propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate uses methods of measuring and calculating propulsion plant load and heat distribution that are the most appropriate and in accordance with manufacturer specifications.	The candidate directs the operations of the propulsion plant so that performance levels and plant loads are maintained within specified ranges, operating parameters and manufacturer prescribed limits by: 1. Evaluating all propulsion plant operating parameters against recommended levels and adjusting plant operations to ensure they remain within recommended ranges and technical specifications; 2. Ensuring that the execution and recording of propulsion plant performance analysis and determining the immediate condition of the propulsion system and leads to the most efficient operation possible; 3. Measuring and calculating plant loads, heat distribution and heat transfer efficiency; 4. Monitoring the main propulsion plant operating parameters sufficient to maintain safe operating conditions; and 5. Ensuring that performance levels are within recommended operating parameters and technical specifications.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.2.A *Steam*	Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	Start up and shut down main propulsion and auxiliary machinery, including associated systems Operating limits of propulsion plant The efficient operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery Functions and mechanism of automatic control for main engine	On a vessel powered by steam propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate uses methods of measuring and calculating propulsion plant load and heat distribution that are the most appropriate and in accordance with manufacturer specifications.	The candidate directs the operations of the propulsion plant so that performance levels and plant loads are maintained within specified ranges, operating parameters and manufacturer prescribed limits by: 1. Evaluating propulsion plant operating parameters against recommended levels and adjusting plant operations to ensure they remain within recommended ranges and technical specifications; 2. Ensuring that the execution and recording of propulsion plant performance analysis and determining the immediate condition of the propulsion system and leads to the most efficient operation possible; 3. Measuring and calculating plant loads, heat distribution and heat transfer efficiency; 4. Monitoring the main propulsion plant operating parameters is sufficient to maintain safe operating conditions; and 5. Ensuring that performance levels are within recommended operating parameters and technical specifications.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.3.A *GT*	Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	Start up and shut down main propulsion and auxiliary machinery, including associated systems Operating limits of propulsion plant The efficient operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery Functions and mechanism of automatic control for main engine	On a vessel powered by gas turbine propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate uses methods of measuring and calculating propulsion plant load and heat distribution that are the most appropriate and in accordance with manufacturer specifications.	The candidate directs the operations of the propulsion plant so that performance levels and plant loads are maintained within specified ranges, operating parameters and manufacturer prescribed limits by: 1. Evaluating all propulsion plant operating parameters against recommended levels and adjusting plant operations to ensure they remain within recommended ranges and technical specifications; 2. Ensuring that the execution and recording of propulsion plant performance analysis and determining the immediate condition of the propulsion system and leads to the most efficient operation possible; 3. Measuring and calculating plant loads, heat distribution and heat transfer efficiency; 4. Monitoring the main propulsion plant operating parameters is sufficient to maintain safe operating conditions; and 5. Ensuring that performance levels are within recommended operating parameters and technical specifications.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.4.A *All*	Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	Functions and mechanism of automatic control for auxiliary machinery including but not limited to: .1 Generator distribution systems .2 Steam boilers .3 Oil purifier .4 Refrigeration system .5 Pumping and piping systems .6 Steering gear system .7 Cargo-handling equipment and deck machinery	On a vessel powered by main propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions and systems, or during approved laboratory equipment training,	the candidate uses methods of measuring and calculating plant load and heat distribution that are the most appropriate and in accordance with manufacturer specifications.	The candidate directs the operations of auxiliary and ancillary machinery and systems so that performance levels and plant loads are maintained within specified ranges, operating parameters and manufacturer prescribed limits by: 1. Performing a thorough inspection and evaluation of all auxiliary and ancillary systems, machinery and equipment operations; and 2. Comparing operational data to manufacturer's recommended technical specifications and operational limits. System operations should include: 1. Electrical generation and distribution system and machinery; 2. Liquid centrifugal purification system and machinery; 3. Refrigeration systems and machinery; 4. Bilge and ballast transfer system and machinery; 5. Vessel steering system and machinery; 6. Cargo handling system and machinery; and 7. Auxiliary boiler and steam system and machinery.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
3.5.A *All*	Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	The efficient operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery Functions and mechanism of automatic control for auxiliary machinery	On a vessel powered by main propulsion machinery of 1,000 HP or more, or in an engineering laboratory using equipment commonly fitted aboard ship,	the candidate uses methods of measuring and calculating plant load and heat distribution that are the most appropriate and in accordance with manufacturer specifications.	The candidate directs the operations of auxiliary and ancillary machinery and systems for hotel operations so that performance levels and plant loads are maintained within specified ranges, operating parameters and manufacturer prescribed limits by: 1. Performing a thorough inspection and evaluation of all auxiliary and ancillary systems, machinery and equipment operations; and 2. Comparing operational data to manufacturer's recommended technical specifications and operational limits. System operations should include: 1. Fire fighting systems and equipment; 2. Accommodation heating; 3. Air conditioning and ventilation; 4. Sanitary systems and equipment; 5. Potable systems and equipment; 6. Sewage treatment systems and equipment; 7. Galley equipment, vent dampers; 8. Laundry equipment; 9. Communication systems and devices; and 10. Entertainment systems and equipment.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
4.1.A *All*	Manage fuel, lubrication and ballast operations	Operation and maintenance of machinery, including pumps and piping systems	On a vessel powered by main propulsion machinery of 1,000 HP or more, or a suitable liquid cargo simulator,	the candidate manages and directs the transfer of fuels, liquid lubricants in bulk and bilge and ballast water.	The candidate directs fuel and lubrication, ballast water, and bilge water transfer operations so as to ensure prevention of pollution of the marine environment, adhering to domestic and international laws, and meeting operational requirements.
5.1.A *Motor*	Manage the operation of electrical, electronic and control equipment	Marine electro-technology, electronics, power electronics, automatic control engineering and safety devices Design features and system configurations of automatic control equipment and safety devices	On a vessel powered by diesel propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions, instrumentation, and control devices, or in an approved *Management of Electrical and Electronic Control Equipment* course,	the candidate directs the operation of electrical and electronic equipment and systems relative to a diesel propulsion plant.	The candidate ensures that electrical, electronic and automatic instrumentation and control devices are operating within manufacturer's guidelines and technical specifications by testing: 1. Emergency action input devices for proper operation at appropriate set-points; 2. Remote and local controls for proper operation; and 3. Alarm functions and input devices for proper operation at appropriate set-points. Equipment used for this assessment should include: 1. Remote and local controls; 2. Automatic shutdowns; 3. Automatic slowdowns; 4. Starting permissives; 5. Override functions; and 6. Alarm functionality.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
5.1.B *Steam*	Manage the operation of electrical, electronic and control equipment	Marine electro-technology, electronics, power electronics, automatic control engineering and safety devices Design features and system configurations of automatic control equipment and safety devices	On a vessel powered by steam propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions, instrumentation, and control devices, or in an approved *Management of Electrical and Electronic Control Equipment* course,	the candidate directs the operation of electrical and electronic equipment and systems relative to a steam propulsion plant.	The candidate ensures electrical, electronic and automatic instrumentation and control devices are operating within manufacturer's guidelines and technical specifications by testing: 1. Emergency action input devices for proper operation at appropriate set-points; 2. All remote and local controls for proper operation; and 3. Alarm functions and input devices for proper operation at appropriate set-points. Equipment used for this assessment to include but not be limited to: 1. Remote and local controls; 2. Automatic shutdowns; 3. Burner management system; 4. Light-off permissives; 5. Override functions; and 6. Alarm functionality.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
5.1.C *GT*	Manage the operation of electrical, electronic and control equipment	Marine electro-technology, electronics, power electronics, automatic control engineering and safety devices Design features and system configurations of automatic control equipment and safety devices	On a vessel powered by gas turbine propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions, instrumentation, and control devices, or in an approved *Management of Electrical and Electronic Control Equipment* course,	The candidate directs the operation of electrical and electronic equipment and systems relative to a gas turbine propulsion plant.	The candidate ensures electrical, electronic and automatic instrumentation and control devices are operating within manufacturer's guidelines and technical specifications by testing: 1. Emergency action input devices for proper operation at appropriate set-points; 2. Remote and local controls for proper operation; and 3. Alarm functions and input devices for proper operation at appropriate set-points. Equipment used for this assessment should include: 1. Remote and local controls; 2. Automatic shutdowns; 3. Fuel supply and ignition sequencing; 4. Start permissives; 5. Override functions; and 6. Alarm functionality.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
5.1.D *All*	Manage the operation of electrical, electronic and control equipment	Marine electro-technology, electronics, power electronics, automatic control engineering and safety devices Design features and system configurations of automatic control equipment and safety devices	On a vessel powered by main propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions, instrumentation, and control devices, or in an approved *Management of Electrical and Electronic Control Equipment* course	the candidate directs the operation of electrical and electronic equipment and systems relative to power generation.	The candidate ensures that electrical, electronic and automatic instrumentation and control devices for power generation, distribution and management systems are operating within manufacturer's guidelines and technical specifications by testing: 1. Emergency action input devices for proper operation at appropriate set-points; 2. Remote and local controls for proper operation; and 3. Alarm functions and input devices for proper operation at appropriate set-points. Equipment used for this assessment should include: 1. Remote and local controls; 2. Automatic shutdowns; 3. Generator protection; 4. High voltage system equipment and controls; 5. Operating modes; 6. Power management functions; and 7. Alarm functionality.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/3 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
5.1.E *All*	Manage the operation of electrical, electronic and control equipment	Marine electro-technology, electronics, power electronics, automatic control engineering and safety devices Design features and system configurations of automatic control equipment and safety devices	On a vessel powered by main propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions, instrumentation, and control devices, or in an approved *Management of Electrical and Electronic Control Equipment* course,	the candidate directs the operation of electrical and electronic equipment relative to electro-hydraulic and electro-pneumatic control systems.	The candidate ensures that electrical, electronic and automatic instrumentation and control devices for electro-hydraulic and electro-pneumatic systems are operating within manufacturer's guidelines and technical specifications by testing: 1. Emergency action input devices for proper operation at appropriate set-points; 2. Remote and local controls for proper operation; and 3. Alarm functions and input devices for proper operation at appropriate set-points. Equipment used for this assessment should include: 1. Remote and local valve controls 2. Remote sensing instrumentation 3. Alarm functionality; and 4. Propulsion control equipment.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
6.1.A *All*	Manage trouble-shooting, restoration of electrical and electronic control equipment to operating condition	Troubleshooting of electrical and electronic control equipment Function test of electrical, electronic control equipment and safety devices Troubleshooting of monitoring systems Software version control	On a vessel powered by main propulsion machinery of 1,000 HP or more, or as part of an approved course in a laboratory with electrical equipment capable of replicating the troubleshooting process, or in an approved *Management of Electrical and Electronic Control Equipment* course.	the candidate directs that personnel demonstrate safe working practices relative to shipboard electrical systems; and that test equipment and tools are properly selected, and that proper repair and maintenance procedures are implemented.	The candidate: 1. Troubleshoots electrical and electronic control equipment with the proper use of test equipment leading to the restoration of normal functionality; 2. Performs proper functionality tests on electrical, electronic control equipment and safety devices, as part of a troubleshooting procedure and restoration protocol; 3. Troubleshoots monitoring system and equipment with the proper use of test equipment leading to the restoration of normal functionality; and 4. Properly operates electrical, and electronic control equipment and safety devices for to computer application and software version control.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
7.1.A *Motor*	Manage safe and effective maintenance and repair procedures	Management techniques of maintenance and repair procedures related to main propulsion and auxiliary / ancillary machinery and equipment	On a vessel powered by diesel propulsion machinery of 1,000 HP or more, or in a laboratory, or on a simulator capable of replicating all maintenance and repair functions,	the candidate demonstrates the management of maintenance procedures by directing that engineering plant repairs are performed properly.	The candidate ensures that the maintenance procedures employed on motor vessel propulsion and supporting auxiliary equipment are performed in the safest, most efficient way by: 1. Utilizing instruction manuals and manufacturer publications related to repair and maintenance procedures; 2. Performing repairs in accordance with manufacturer's guidelines and technical specifications; and 3. Performing repairs using correct tools and spare parts. Procedures for this assessment should include: 1. Turbo charger maintenance; 2. Timing of fuel injection pumps; 3. Cylinder head appurtenance overhaul; 4. Intake / exhaust valve overhaul; 5. Working piston overhaul; and 6. Main bearing replacement.

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/3 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
7.1.B *Steam*	Manage safe and effective maintenance and repair procedures	Management techniques of maintenance and repair procedures related to main propulsion and auxiliary / ancillary machinery and equipment	On a vessel powered by steam propulsion machinery of 1,000 HP or more, of in a laboratory, or on a simulator capable of replicating all maintenance and repair functions,	the candidate demonstrates the management of maintenance procedures by directing that engineering plant repairs are performed properly.	The candidate ensures that the maintenance procedures employed on steam vessel propulsion and supporting auxiliary equipment are performed in the safest, most efficient way by: 1. Utilizing instruction manuals and manufacturer publications related to repair and maintenance procedures; 2. Performing repairs in accordance with manufacturer's guidelines and technical specifications; and 3. Performing repairs using the correct tools and spare parts. Procedures for this assessment should include: 1. Burner maintenance 2. Firesides maintenance 3. Steam drum appurtenance overhaul 4. Water treatment 5. Reduction gear inspection 6. Axial position of the hp/lp turbines

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
7.1.C *GT*	Manage safe and effective maintenance and repair procedures	Management techniques of maintenance and repair procedures related to main propulsion and auxiliary / ancillary machinery and equipment	On a vessel powered by gas turbine propulsion machinery of 1,000 HP or more, in a laboratory, or on a simulator capable of replicating all maintenance and repair functions,	the candidate demonstrates the management of maintenance procedures by directing that engineering plant repairs are performed properly.	The candidate ensures that the maintenance procedures employed on gas turbine vessel propulsion and supporting auxiliary equipment are performed in the safest, most efficient way by: 1. Utilizing instruction manuals and manufacturer publications related to repair and maintenance procedures; 2. Performing repairs in accordance with manufacturer's guidelines and technical specifications; and 3. Performing repairs using the correct tools and spare parts. Procedures for this assessment should include: 1. Compressor borescope inspection 2. Turbine borescope inspection 3. Accessory gear box appurtenance overhaul 4. Main fuel control performance calculations or replacement 5. Variable stator vane positioner replacement 6. Demister cleaning / inspection

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
7.1.D *All*	Manage safe and effective maintenance and repair procedures	Planning maintenance, and repairs including statutory and class verifications	On a vessel powered by propulsion machinery of 1,000 HP or more, or in a laboratory and given technical specifications and manufacturer's manuals for shipboard equipment,	the candidate plans scheduled maintenance and corrective repairs while utilizing all available assets.	The candidate plans and schedules maintenance procedures in accordance with technical specifications and operational requirements by: 1. Identifying the appropriate statutory and classification requirement for each maintenance procedure performed.(if applicable); and 2. Developing a work plan describing the assets involved and steps performed to accomplish maintenance and repairs tasks leading to restored functionality of propulsion plant components. The candidate's plan should include: 1. Personnel; 2. Tools; 3. Spare parts / supplies; 4. Time; 5. Safety precautions / considerations; 6. Lock Out / Tag Out procedures; 7. Communications; 8. Restoration processes; and 9. System testing / verification.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
8.1.A *All*	Detect and identify the cause of machinery malfunctions and correct faults	Detection of machinery malfunction, location of faults and action to prevent damage Inspection and adjustment of equipment Non-destructive examination	On a vessel powered by main propulsion machinery of 1,000 HP or more, or an engine room simulator capable of replicating all propulsion plant functions, or from the assessment of evidence obtained from approved laboratory equipment training,	the candidate demonstrates methods to detect the abnormal operation of plant machinery, causes of the abnormalities and the actions taken to prevent damage	The candidate demonstrates the procedures utilized to detect, locate and prevent damage by faults and malfunctions of propulsion and auxiliary machinery associated with the relevant propulsion plants by: 1. Determining machinery malfunctions through comparison of machinery performance data to the standards associated with a specific operating scenario; 2. Using performance indicating and testing devices and equipment to locate faults in machinery operation; and 3. Performing the procedures necessary to prevent damage by machinery faults and malfunctions in accordance with manufacture guidelines and technical specifications.
9.1.A *All*	Ensure Safe Working Practices	Safe Working Practices	On a vessel powered by main propulsion machinery of 1,000 HP or more, in a laboratory, or on a simulator capable of replicating all maintenance and repair functions,	the candidate directs the use of safe working practices in all phases of maintenance, troubleshooting, and repair scenarios.	The candidate performs work practices safely and in compliance with all industry requirements, codes, permissions and environmental concerns, including identifying and describing: 1. Vessel permit requirements by reviewing preventive and scheduled maintenance lists; 2. Machinery preparation and isolation requirements as related to safe working practices; and 3. Maintenance procedures that inherently relate to environmental concerns and procedures.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
10.1.A *All*	Control trim, stability and stress	Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability. Knowledge of the effect on trim and stability of a ship in the event of damage to, and consequent flooding of a compartment and countermeasures to be taken. Knowledge of IMO recommendations concerning ship's stability	On a vessel powered by main propulsion machinery of 1,000 HP or more,	the candidate ensures that stability and stress conditions are maintained within safety limits at all times.	The candidate directs engine department operations in order to maintain safe vessel trim. stability, and stress by: 1. Providing before and after tank level measurements the bridge team; 2. Coordinates liquid transfers with the bridge team; 3. Locates of and records the maintenance and testing of watertight compartment doors; 4. Identifies possible vessel flooding countermeasure procedures and effects thereof; and 5. Complying with rules, regulations and codes pertinent to vessel stability and trim.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
11.1.A *All*	Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and protection of the marine environment	Knowledge of international maritime law in international agreements and conventions: Responsibilities under the relevant requirements of • International Convention on Load Lines • International Convention for the Safety of Life at Sea, 1974 (SOLAS) • International Convention for the Prevention of Pollution from Ships (MARPOL) • Maritime Declarations of Health and Int'l Health Regulations • International Instruments Affecting the Safety of Ships, Passengers, Crew and Cargo • Methods and Aids to Prevent Pollution Knowledge of National legislation for implementing international agreements and conventions	In an approved *Leadership and Managerial Skills* course, or when asked by a Qualified Assessor on a vessel powered by main propulsion machinery of 1,000 HP or more,	the candidate describes the procedures for monitoring operations and maintenance to comply with legislative requirements; that potential non-compliance is promptly and fully identified; and that requirements for renewal and extension of certificates are acted upon to ensure continued validity of survey items and equipment	The candidate identifies and describes compliance with domestic and international regulations, rules and conventions relative to safety, security and protection of the marine environment, including: 1. Vessel operations and maintenance procedures relative to compliance with legislative requirements for safety of life at sea, vessel security, and protection of the marine environment; 2. Procedures to identify and eliminate potential non-compliance in a timely and efficient manner; and 3. Certificates and survey items that require renewal and requirements for the continued validity of each. The candidate's description should include: 1. International Convention of Load Lines; 2. SOLAS; 3. MARPOL; 4. STCW; 5. Maritime Declarations of Health; 6. ISM Code; 7. OPA 90; 8. U. S. Code; and 9. Code of Federal Regulations

Successful completion of these Assessment Guidelines will provide satisfactory evidence of meeting the standard of competence specified in Section A-III/3 of the STCW Code. Use of these 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 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
12.1.A *All*	Maintain safety and security of the vessel, crew and passengers and the operational condition of lifesaving, firefighting and other safety systems	A thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) Organization of fire and abandon ship drills Maintenance of operational condition of life-saving, firefighting and other safety systems Actions to be taken to protect and safeguard all persons on board in emergencies Actions to limit damage and salve the ship following fire, explosion, collision or grounding	In an approved *Leadership and Managerial Skills* course, or when asked by a Qualified Assessor, or on a vessel powered by main propulsion machinery of 1,000 HP or more,	the candidate describes the procedures for monitoring fire detection and safety systems and ensures that all alarms are detected promptly and acted upon in accordance with established emergency procedures.	The candidate's description includes: 1. Identification of all shipboard emergency procedures applicable to maintaining safety and security; 2. Actions taken in response to fire detection and safety related alarms; 3. Inspecting all lifesaving, fire fighting, and emergency response equipment for correct operation; and 4. Maintenance and use of safety, security and life saving related equipment. Equipment described should include: 1. Two way vhf radios; 2. Survival craft engines and maintenance; 3. Onboard training and drills; 4. Emergency planning; 5. Fire and smoke monitoring apparatus'; 6. Alarm systems and equipment; 7. Fixed CO_2 and foam systems; 8. Damage control equipment; and 9. Firefighting equipment.

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
13.1.A *All*	Develop emergency and damage control plans and handle emergency situations	Ship construction, including damage control	On board a ship of at least 200 GRT or 500 GT or in a laboratory given a particulars for a vessel of at least 200 GRT or 500 GT,	The candidate develops a damage control plan in accordance with the established plans for emergency situations for damage control.	The candidate develops a damage control plan that includes: 1. Vessel construction; 2. Investigation procedures; 3. Dewatering equipment; 4. Shoring; 5. Pipe patching; 6. Bulkhead plugging; 7. Emergency hull repairs; and 8. Flooding countermeasures.
13.1.B *All*	Develop emergency and damage control plans and handle emergency situations	Methods and aids for fire prevention, detection and extinction	This KUP is demonstrated by successfully completing the approved or accepted *Advanced Fire Fighting* course specified in 46 CFR 11.303.		
13.1.C *All*	Develop emergency and damage control plans and handle emergency situations	Functions and use of lifesaving appliances	This KUP is demonstrated by successfully completing the approved or accepted *Advanced Fire Fighting* course specified in 46 CFR 11.303.		

Task No.	STCW Competence	Knowledge, Understanding, and Proficiency	Performance Condition	Performance Behavior	Performance Standard
14.1.A *All*	Use of leadership and managerial skill	Knowledge of shipboard personnel management and training	This competence and associated KUPs are satisfied by successfully completing the approved or accepted *Leadership and Managerial Skills* course specified in 46 CFR 11.331 and 11.333.		

Record of Assessment

for

Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW / 1,000 HP or More and Less Than 3,000 kW / 4,000 HP Propulsion Power or More (Management Level)

For: _____ _____ _____

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

RECORD OF ASSESSMENT

Chief Engineer Officer and Second Engineer Officer on Vessels Powered by Main Propulsion Machinery of 750 kW/1,000 Hp or More and Less Than 3,000 kW/4,000 Hp (Management Level)

NOTE TO QUALIFIED ASSESSOR(S): In performing your function as a qualified assessor, you may use your initials only 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/2 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 as described in paragraph 6 of this NVIC. In accordance with 46 CFR 11.301(a)(1)(i), alternative Assessment Guidelines must be approved by the National Maritime Center before use.

STCW Competence	Knowledge, Understanding, and Proficiency	Task No.	Task	Assessor's Initials	Date
Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: • Marine Diesel Engine Propulsion Plant	1.1.A *Motor*	Direct that the engineering plant be prepared for service.		
		1.1.B *Motor*	Direct that the engineering plant be operated in maneuvering mode.		
		1.1.C *Motor*	Direct that the engineering plant be operated at full sea speed.		
		1.1.D *Motor*	Direct that the engineering plant be prepared for shutdown and secured.		
	Design features, and operative mechanism of the following machinery and associated auxiliaries: • Marine Steam Propulsion Plant	1.2.A *Steam*	Direct that the engineering plant be prepared for service.		
		1.2.B *Steam*	Direct that the engineering plant be operated in maneuvering mode.		
		1.2.C *Steam*	Direct that the engineering plant be operated at full sea speed.		
		1.2.D *Steam*	Direct that the engineering plant be prepared for shutdown and secured.		

Notes:

All The assessment is required for all propulsion modes.
Motor The assessment is required for an endorsement valid for motor propelled vessels.
Steam The assessment is required for an endorsement valid for steam propelled vessels.
GT The assessment is required for an endorsement valid for gas turbine propelled vessels.
Course The assessment is satisfied by completion of an approved or accepted course. The mariner's course completion certificate will be sufficient documentation of completion of the assessment.

Print Name of Candidate *Candidate's Mariner Reference No.*

RECORD OF ASSESSMENT

Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 3,000 kW / 4,000 HP Propulsion Power or More (Management Level)

STCW Competence	Knowledge, Understanding, and Proficiency	Task No.	Task	Assessor's Initials	Date
Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: • Gas Turbine Propulsion Plant	1.3.A *GT*	Direct that the engineering plant be prepared for service.		
		1.3.B *GT*	Direct that the engineering plant be operated in maneuvering mode.		
		1.3.C *GT*	Direct that the engineering plant be operated at full sea speed.		
		1.3.D *GT*	Direct that the engineering plant be prepared for shutdown and secured.		
Plan and schedule operations	Thermodynamics, heat transmission, mechanics, hydro-mechanics, propulsive devices, heat cycle, refrigeration cycle, properties of lubes/fuels, technology of materials, Naval architecture, ship construction, and damage control.	2.1.A *All*	Plan and prepare operations suited to the design parameters of the power installation and voyage requirements.		
Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	Start up and shut down main propulsion and auxiliary machinery including associated systems including operating limits efficient operation, surveillance, performance assessment and maintaining safety as well as automatic controls.	3.1.A *Motor*	Measure and calculate a motor propulsion plant load and head distribution.		
		3.2.A *Steam*	Measure and calculate a steam propulsion plant load and head distribution.		
		3.3.A *GT*	Measure and calculate a gas turbine propulsion plant load and head distribution.		
	Functions and mechanism of automatic control for auxiliary machinery	3.4.A *All*	Measure and calculate auxiliary plant load and heat distribution.		
		3.5.A *All*	Measure and calculate hotel plant load and heat distribution.		

Print Name of Candidate _____ *Candidate's Mariner Reference No.* _____

RECORD OF ASSESSMENT

Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 3,000 kW / 4,000 HP Propulsion Power or More (Management Level)

STCW Competence	Knowledge, Understanding, and Proficiency	Task No.	Task	Assessor's Initials	Date
Manage fuel, lubrication and ballast operations	Operation and maintenance of machinery, including pumps and piping systems.	4.1.A *All*	Manage and direct the transfer of fuels, liquid lubricants in bulk and bilge and ballast water.		
Manage the operation of electrical, electronic and control equipment	Marine electro-technology, electronics, power electronics, automatic control engineering and safety devices. Design features and system configurations of automatic control equipment and safety devices.	5.1.A *Motor*	Direct the operation of electrical and electronic equipment and systems relative to a diesel propulsion plant.		
		5.1.B *Steam*	Direct the operation of electrical and electronic equipment and systems relative to a steam propulsion plant.		
		5.1.C *GT*	Direct the operation of electrical and electronic equipment and systems relative to a gas turbine propulsion plant.		
		5.1.D *All*	Direct the operation of electrical and electronic equipment and systems relative to power generation.		
		5.1.E *All*	Direct the operation of electrical and electronic equipment and systems relative to electro-hydraulic and electro-pneumatic control systems.		
Manage troubleshooting, restoration of electrical and electronic control equipment to operating condition	Troubleshooting of electrical and electronic control equipment Function test of electrical, electronic control equipment and safety devices Troubleshooting of monitoring systems Software version control	6.1.A *All*	Direct that personnel demonstrate safe working practices relative to shipboard electrical systems.		

Print Name of Candidate _____ *Candidate's Mariner Reference No.* _____

RECORD OF ASSESSMENT

Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 3,000 kW / 4,000 HP Propulsion Power or More (Management Level)

STCW Competence	Knowledge, Understanding, and Proficiency	Task No.	Task	Assessor's Initials	Date
Manage safe and effective maintenance and repair procedures	Management techniques of maintenance and repair procedures related to main propulsion and auxiliary / ancillary machinery and equipment	7.1.A *Motor*	Demonstrate the management of maintenance procedures by directing that motor engineering plant repairs are performed properly.		
		7.1.B *Steam*	Demonstrate the management of maintenance procedures by directing that steam engineering plant repairs are performed properly.		
		7.1.C *GT*	Demonstrate the management of maintenance procedures by directing that gas turbine engineering plant repairs are performed properly.		
	Planning maintenance, and repairs including statutory and class verifications	7.1.D *All*	Demonstrate the procedures for planning scheduled maintenance and corrective repairs while utilizing all available assets.		
Detect and identify the cause of machinery malfunctions and correct faults	Detection of machinery malfunction, location of faults and action to prevent damage Inspection and adjustment of equipment Non-destructive examination	8.1.A *All*	Demonstrate methods to detect the abnormal operation of plant machinery, causes of the abnormalities and the actions taken to prevent damage.		
Ensure Safe Working Practices	Safe Working Practices	9.1.A *All*	Oversee the use of safe working practices in all phases of maintenance, troubleshooting, and repair scenarios.		

Print Name of Candidate _____ *Candidate's Mariner Reference No.* _____

RECORD OF ASSESSMENT

Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 3,000 kW / 4,000 HP Propulsion Power or More (Management Level)

STCW Competence	Knowledge, Understanding, and Proficiency	Task No.	Task	Assessor's Initials	Date
Control trim, stability and stress	Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability; Knowledge of the effect on trim and stability of a ship in the event of damage to, and consequent flooding of a compartment and countermeasures to be taken; Knowledge of IMO recommendations concerning ship's stability.	10.1.A *All*	Ensure that stability and stress conditions are maintained within safety limits at all times.		
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and protection of the marine environment	Knowledge of international maritime law embodied in international agreements and conventions: Responsibilities under the relevant requirements of international agreements and conventions Knowledge of National legislation for implementing international agreements and conventions	11.1.A *All*	Describe the procedures for monitoring operations and maintenance to comply with legislative requirements; that potential non-compliance is promptly and fully identified; and that requirements for renewal and extension of certificates are acted upon to ensure continued validity of survey items and equipment.		

Print Name of Candidate *Candidate's Mariner Reference No.*

RECORD OF ASSESSMENT

Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 3,000 kW / 4,000 HP Propulsion Power or More (Management Level)

STCW Competence	Knowledge, Understanding, and Proficiency	Task No.	Task	Assessor's Initials	Date
Maintain safety and security of the vessel, crew and passengers and the operational condition of lifesaving, firefighting and other safety systems	A thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) Organization of fire and abandon ship drills; Maintenance of operational condition of life-saving, firefighting and other safety systems Actions to be taken to protect and safeguard all persons on board in emergencies Actions to limit damage and salve the ship following fire, explosion, collision or grounding.	12.1.A *All*	Describe the procedures for monitoring fire detection and safety systems and ensures that all alarms are detected promptly and acted upon in accordance with established emergency procedures.		
Develop emergency and damage control plans and handle emergency situations	Ship construction, including damage control	13.1.A *All*	Develop a Damage Control Plan.		
	Methods and aids for fire prevention, detection and extinction	13.1.B *All*	The candidate successfully completes an approved training course in Advanced Firefighting.	COURSE	
	Functions and use of lifesaving appliances	13.1.C *All*	Proficiency in Survival Craft.	COURSE	
Use leadership and managerial skills	Knowledge of shipboard personnel management and training.	14.1.A *All*	Leadership and Managerial Skills.	COURSE	

Print Name of Candidate _____ *Candidate's Mariner Reference No.* _____

RECORD OF ASSESSMENT

Chief Engineer Officer and Second Engineer Officer on Ships Powered by Main Propulsion Machinery of 750 kW/1,000 HP or More and Less Than 3,000 kW / 4,000 HP Propulsion Power (Management Level)

Qualified Assessors (QAs) witnessing the successful demonstrations noted in this record should provide the information below relative to their service with the candidate. Prospective QAs should have at least 1 year of experience as Chief Engineer or Second Engineer Officer (national First Assistant Engineer) on seagoing vessels of at least 750 kW (1,000 HP). For assessments signed on a military vessel, the assessor should have experience as Chief Engineering Officer on seagoing vessels of at least 750 kW/1,000 HP or more. Military assessors should only conduct assessments that are within their personal experience and are relevant to the vessel on which they are conducted. For example, assessments involving a specific propulsion mode should not be performed on a vessel that is not fitted with that mode of propulsion and/or by an assessor who lacks experience in that propulsion mode. After December 31, 2023 , QAs must be approved by the National Maritime Center (46 CFR 10.107). Qualified military personnel will not need to be approved as QAs and may continue to sign assessments on military vessels after December 31, 2023.

Vessel Name and Propulsion Mode	Propulsion Power	Dates of Service		Assessor Name	Assessor Signature	Sample Assessor Initials	Assessor Mariner Reference No.	Assessor Shipboard Position
		From	To					
M/V Onderbroek Motor	2,345 HP	7/7/2018	11/14/2018	Ignatius J. Reilly	Ignatius J. Reilly	IJR	1234567	Chief Engineer

Print Name of Candidate

Candidate's Mariner Reference No.

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
Standards regarding the engine department

Regulation III/3
Mandatory minimum requirements for certification of chief engineer officers and second engineer officers on ships powered by main propulsion machinery of between 750kW and 3,000 kW propulsion power

1 Every chief engineer officer and second engineer officer on a seagoing ship powered by main propulsion machinery of between 750 kW and 3,000 kW propulsion power shall hold a certificate of competency.

2 Every candidate for certification shall:

.1 meet the requirements for certification as an officer in charge of an engineering watch on seagoing ships powered by main propulsion machinery of 750 kW propulsion power or more and have approved seagoing service in that capacity:

.1.1 for certification as second engineer officer, have not less than 12 months of approved seagoing service as assistant engineer officer or engineer officer, and

.1.2 for certification as chief engineer officer, have not less than 24 months of approved seagoing service of which not less than 12 months shall se served while qualified to serve as second engineer officer; and

.2 have completed approved education and training and meet the standard of competence specified in section A-III/3 of the STCW Code.

Chapter VIII
Watchkeeping

Regulation VIII/2
Watchkeeping arrangements and principles to be observed

1 Administrations shall direct the attention of companies, masters, chief engineer officers and all watchkeeping personnel to the requirements, principles and guidance set out in the STCW Code which shall be observed to ensure that a safe continuous watch or watches appropriate to the prevailing circumstances and conditions are maintained on all seagoing ships at all times.

2 Administrations shall require the master of every ship to ensure that watchkeeping arrangements are adequate for maintaining a safe watch or watches, taking into account the prevailing circumstances and conditions and that, under the master's general direction:

.1 officers in charge of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they shall be physically present on the navigating bridge or in a directly associated location such as the chartroom or bridge control room at all times;

.2 radio operators are responsible for maintaining a continuous radio watch on appropriate frequencies during their periods of duty;

.3 officers in charge of an engineering watch, as defined in the STCW Code, under the direction of the chief engineer officer, shall be immediately available and on call to attend the machinery spaces and, when required, shall be physically present in the machinery space during their periods of responsibility;

.4 an appropriate and effective watch or watches are maintained for the purpose of safety at all times, while the ship is at anchor or moored and, if the ship is carrying hazardous cargo, the organization of such watch or watches takes full account of the nature, quantity, packing and stowage of the hazardous cargo and of any special conditions prevailing on board, afloat or ashore; and

.5 as applicable, an appropriate and effective watch or watches are maintained for the purposes of security.

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.

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

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.

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/3

Mandatory minimum requirements for certification of chief engineer officers and second engineer officers on ships powered by main propulsion machinery of between 750 kW and 3,000 kW propulsion power

Standard of competence

1 Every candidate for certification as chief engineer officer and second engineer officer of seagoing ships powered by main propulsion machinery of between 750 kW and 3,000 kW power shall be required to demonstrate ability to undertake, at the management level, the tasks, duties and responsibilities listed in column 1 of table A-III/2.

2 The minimum knowledge, understanding and proficiency required for certification is listed in column 2 of table A-III/2. This incorporates, expands and extends in depth the subjects listed in column 2 of table A-III/1 for officers in charge of an engineering watch in a manned engine-room or designated duty engineers in a periodically unmanned engine-room.

3 Bearing in mind that a second engineer officer shall be in a position to assume the responsibilities of the chief engineer officer at any time, assessment in these subjects shall be designed to test the candidate's ability to assimilate all available information that affects the safe operation of the ship's machinery and the protection of the marine environment.

4 The level of knowledge of the subjects listed in column 2 of table A-III/2 may be lowered but shall be sufficient to enable the candidate to serve in the capacity of chief engineer officer or second engineer officer at the range of propulsion powered in this section.[*]

5 Training and experience to achieve the necessary level of theoretical knowledge, understanding and proficiency shall take into account the relevant requirements of this part and the guidance given in part B of this Code.

6 The Administration may omit knowledge requirements for types of propulsion machinery other than those machinery installations for which the certificate to be awarded shall be valid. A certificate awarded on such a basis shall not be valid for any category of machinery installation which has been omitted until the engineer officer proves to be competent in these knowledge requirements. Any such limitation shall be stated on the certificate and in the endorsement.

7 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 tabulated in columns 3 and 4 of table A-III/2.

Near-coastal voyages

8 The level of knowledge, understanding and proficiency required under the different sections listed in column 2 of table A-III/2 and the requirements of paragraphs 2.1.1 and 2.1.2 of regulation III/3 may be varied for engineer officers of ships powered by main propulsion machinery of less than 3,000 kW main propulsion power engaged on near-coastal voyages, as considered necessary, bearing in mind the effect on the safety of all ships which may be operating in the same waters. Any such limitation shall be stated on the certificate and in the endorsement.

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

Table A-III/2

Specification of minimum standard of competence for chief engineer officers and second engineer officers on ships powered by main propulsion machinery of 3,000 kW propulsion power or more

Function: Marine engineering at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manage the operation of propulsion plant machinery	Design features, and operative mechanism of the following machinery and associated auxiliaries: .1 marine diesel engine .2 marine steam turbine .3 marine gas turbine .4 marine steam boiler	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved laboratory equipment training .4 approved simulator training, where appropriate	Explanation and understanding of design features and operating mechanisms are appropriate
Plan and schedule operations	*Theoretical knowledge* Thermodynamics and heat transmission Mechanics and hydromechanics Propulsive characteristics of diesel engines, steam and gas turbines, including speed, output and fuel consumption Heat cycle, thermal efficiency and heat balance of the following: .1 marine diesel engine .2 marine steam turbine .3 marine gas turbine .4 marine steam boiler	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The planning and preparation of operations is suited to the design parameters of the power installation and to the requirements of the voyage

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Plan and schedule operations *(continued)*	Refrigerators and refrigeration cycle Physical and chemical properties of fuels and lubricants Technology of materials Naval architecture and ship construction, including damage control		
Operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery	*Practical knowledge* Start up and shut down main propulsion and auxiliary machinery, including associated systems Operating limits of propulsion plant The efficient operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery Functions and mechanism of automatic control for main engine Functions and mechanism of automatic control for auxiliary machinery including but not limited to: .1 generator distribution systems .2 steam boilers .3 oil purifier .4 refrigeration system .5 pumping and piping systems .6 steering gear system .7 cargo-handling equipment and deck machinery	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The methods of preparing for the start-up and of making available fuels, lubricants, cooling water and air are the most appropriate Checks of pressures, temperatures and revolutions during the start-up and warm-up period are in accordance with technical specifications and agreed work plans Surveillance of main propulsion plant and auxiliary systems is sufficient to maintain safe operating conditions The methods of preparing the shutdown and of supervising the cooling down of the engine are the most appropriate The methods of measuring the load capacity of the engines are in accordance with technical specifications Performance is checked against bridge orders Performance levels are in accordance with technical specifications

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manage fuel, lubrication and ballast operations	Operation and maintenance of machinery, including pumps and piping systems	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Fuel and ballast operations meet operational requirements and are carried out so as to prevent pollution of the marine environment

Function: Electrical, electronic and control engineering at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Manage operation of electrical and electronic control equipment	*Theoretical knowledge* Marine electrotechnology, electronics, power electronics, automatic control engineering and safety devices Design features and system configurations of automatic control equipment and safety devices for the following: .1 main engine .2 generator and distribution system .3 steam boiler Design features and system configurations of operational control equipment for electrical motors Design features of high-voltage installations Features of hydraulic and pneumatic control equipment	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Operation of equipment and system is in accordance with operating manuals Performance levels are in accordance with technical specifications
Manage trouble-shooting, restoration of electrical and electronic control equipment to operating condition	*Practical knowledge* Troubleshooting of electrical and electronic control equipment Function test of electrical, electronic control equipment and safety devices Troubleshooting of monitoring systems Software version control	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	Maintenance activities are correctly planned in accordance with technical, legislative, safety and procedural specifications Inspection, testing and troubleshooting of equipment are appropriate

Function: Maintenance and repair at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria forevaluating competence**
Manage safe and effective maintenance and repair procedures	*Theoretical knowledge* Marine engineering practice *Practical knowledge* Manage safe and effective maintenance and repair procedures Planning maintenance, including statutory and class verifications Planning repairs	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved workshop training	Maintenance activities are correctly planned and carried out in accordance with technical, legislative, safety and procedural specifications Appropriate plans, specifications, materials and equipment are available for maintenance and repair Action taken leads to the restoration of plant by the most suitable method
Detect and identify the cause of machinery malfunctions and correct faults	*Practical knowledge* Detection of machinery malfunction, location of faults and action to prevent damage Inspection and adjustment of equipment Non-destructive examination	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate .4 approved laboratory equipment training	The methods of comparing actual operating conditions are in accordance with recommended practices and procedures Actions and decisions are in accordance with recommended operating specifications and limitations
Ensure safe working practices	*Practical knowledge* Safe working practices	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved laboratory equipment training	Working practices are in accordance with legislative requirements, codes of practice, permits to work and environmental concerns

Function: Controlling the operation of the ship and care for persons on board at the management level

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Control trim, stability and stress	Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability Knowledge of the effect on trim and stability of a ship in the event of damage to and consequent flooding of a compartment and countermeasures to be taken Knowledge of IMO recommendations concerning ship stability	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Stability and stress conditions are maintained within safety limits at all times
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and protection of the marine environment	Knowledge of relevant international maritime law embodied in international agreements and conventions Regard shall be paid especially to the following subjects: .1 certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and the period of their legal validity .2 responsibilities under the relevant requirements of the International Convention on Load Lines, 1966, as amended .3 responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea, 1974, as amended	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Procedures for monitoring operations and maintenance comply with legislative requirements Potential non-compliance is promptly and fully identified Requirements for renewal and extension of certificates ensure continued validity of survey items and equipment

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment (*continued*)	.4 responsibilities under the International Convention for the Prevention of Pollution from Ships, as amended .5 maritime declarations of health and the requirements of the International Health Regulations .6 responsibilities under international instruments affecting the safety of the ships, passengers, crew or cargo .7 methods and aids to prevent pollution of the environment by ships .8 knowledge of national legislation for implementing international agreements and conventions		
Maintain safety and security of the vessel, crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems	A thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) Organization of fire and abandon ship drills Maintenance of operational condition of life-saving, fire-fighting and other safety systems Actions to be taken to protect and safeguard all persons on board in emergencies Actions to limit damage and salve the ship following fire, explosion, collision or grounding	Examination and assessment of evidence obtained from practical instruction and approved in-service training and experience	Procedures for monitoring fire-detection and safety systems ensure that all alarms are detected promptly and acted upon in accordance with established emergency procedures

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Develop emergency and damage control plans and handle emergency situations	Ship construction, including damage control Methods and aids for fire prevention, detection and extinction Functions and use of life-saving appliances	Examination and assessment of evidence obtained from approved in-service training and experience	Emergency procedures are in accordance with the established plans for emergency situations
Use leadership and managerial skills	Knowledge of shipboard personnel management and training A knowledge of international maritime conventions and recommendations, and related national legislation Ability to apply task and workload management, including: .1 planning and coordination .2 personnel assignment .3 time and resource constraints .4 prioritization Knowledge and ability to apply effective resource management: .1 allocation, assignment, and prioritization of resources .2 effective communication on board and ashore .3 decisions reflect consideration of team experience	Assessment of evidence obtained from one or more of the following: .1 approved training .2 approved in-service experience .3 approved simulator training	The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned Training objectives and activities are based on assessment of current competence and capabilities and operational requirements Operations are demonstrated to be in accordance with applicable rules Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received

Column 1	Column 2	Column 3	Column 4
Competence	**Knowledge, understanding and proficiency**	**Methods for demonstrating competence**	**Criteria for evaluating competence**
Use leadership and managerial skills (*continued*)	.4 assertiveness and leadership, including motivation .5 obtaining and maintaining situation awareness Knowledge and ability to apply decision-making techniques: .1 situation and risk assessment .2 identify and generate options .3 select course of action .4 evaluation of outcome effectiveness Development, implementation, and oversight of standard operating procedures		Effective leadership behaviours are demonstrated Necessary team member(s) share accurate understanding of current and predicted vessel state and operational status and external environment Decisions are most effective for the situation Operations are demonstrated to be effective and in accordance with applicable rules

Chapter VIII
Standards regarding watchkeeping

Section A-VIII/2
Watchkeeping arrangements and principles to be observed

Part 1 – Certification

1 The officer in charge of the navigational or deck watch shall be duly qualified in accordance with the provisions of chapter II or chapter VII appropriate to the duties related to navigational or deck watchkeeping.

2 The officer in charge of the engineering watch shall be duly qualified in accordance with the provisions of chapter III or chapter VII appropriate to the duties related to engineering watchkeeping.

Part 2 – Voyage Planning

General requirements

3 The intended voyage shall be planned in advance, taking into consideration all pertinent information, and any course laid down shall be checked before the voyage commences.

4 The chief engineer officer shall, in consultation with the master, determine in advance the needs of the intended voyage, taking into consideration the requirements for fuel, water, lubricants, chemicals, expendable and other spare parts, tools, supplies and any other requirements.

Planning prior to each voyage

5 Prior to each voyage, the master of every ship shall ensure that the intended route from the port of departure to the first port of call is planned using adequate and appropriate charts and other nautical publications necessary for the intended voyage, containing accurate, complete and up-to-date information regarding those navigational limitations and hazards which are of a permanent or predictable nature and which are relevant to the safe navigation of the ship.

Verification and display of planned route

6 When the route planning is verified, taking into consideration all pertinent information, the planned route shall be clearly displayed on appropriate charts and shall be continuously available to the officer in charge of the watch, who shall verify each course to be followed prior to using it during the voyage.

Deviation from planned route

7 If a decision is made, during a voyage, to change the next port of call of the planned route, or if it is necessary for the ship to deviate substantially from the planned route for other reasons, then an amended route shall be planned prior to deviating substantially from the route originally planned.

Part 3 – Watchkeeping principles in general

8 Watches shall be carried out based on the following bridge and engine-room resource management principles:

.1 proper arrangements for watchkeeping personnel shall be ensured in accordance with the situations;

.2 any limitation in qualifications or fitness of individuals shall be taken into account when deploying watchkeeping personnel;

.3 understanding of watchkeeping personnel regarding their individual roles, responsibility and team roles shall be established;

.4 the master, chief engineer officer and officer in charge of watch duties shall maintain a proper watch, making the most effective use of the resources available, such as information, installations/equipment and other personnel;

.5 watchkeeping personnel shall understand functions and operation of installations/equipment, and be familiar with handling them;

.6 watchkeeping personnel shall understand information and how to respond to information from each station/installation/equipment;

.7 information from the stations/installations/equipment shall be appropriately shared by all the watchkeeping personnel;

.8 watchkeeping personnel shall maintain an exchange of appropriate communication in any situation; and

.9 watchkeeping personnel shall notify the master/chief engineer officer/officer in charge of watch duties without any hesitation when in any doubt as to what action to take in the interest of safety.

Part 4 – Watchkeeping at sea

Principles applying to watchkeeping generally

9 Parties shall direct the attention of companies, masters, chief engineer officers and watchkeeping personnel to the following principles, which shall be observed to ensure that safe watches are maintained at all times.

10 The master of every ship is bound to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational or cargo watch. Under the master's general direction, the officers of the navigational watch are responsible for navigating the ship safely during their periods of duty, when they will be particularly concerned with avoiding collision and stranding.

11 The chief engineer officer of every ship is bound, in consultation with the master, to ensure that watchkeeping arrangements are adequate to maintain a safe engineering watch.

Protection of marine environment

12 The master, officers and ratings shall be aware of the serious effects of operational or accidental pollution of the marine environment and shall take all possible precautions to prevent such pollution, particularly within the framework of relevant international and port regulations.

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Part 4-2 – Principles to be observed in keeping an engineering watch

52 The term *engineering watch* as used in parts 4-2, 5-2 and 5-4 of this section means either a person or a group of personnel comprising the watch or a period of responsibility for an officer during which the physical presence in machinery spaces of that officer may or may not be required.

53 The *officer in charge of the engineering watch* is the chief engineer officer's representative and is primarily responsible, at all times, for the safe and efficient operation and upkeep of machinery affecting the safety of the ship and is responsible for the inspection, operation and testing, as required, of all machinery and equipment under the responsibility of the engineering watch.

Watch arrangements

54 The composition of the engineering watch shall, at all times, be adequate to ensure the safe operation of all machinery affecting the operation of the ship, in either automated or manual mode, and be appropriate to the prevailing circumstances and conditions.

55 When deciding the composition of the engineering watch, which may include appropriately qualified ratings, the following criteria, *inter alia*, shall be taken into account:

.1 the type of ship and the type and condition of the machinery;

.2 the adequate supervision, at all times, of machinery affecting the safe operation of the ship;

.3 any special modes of operation dictated by conditions such as weather, ice, contaminated water, shallow water, emergency conditions, damage containment or pollution abatement;

.4 the qualifications and experience of the engineering watch;

.5 the safety of life, ship, cargo and port, and protection of the environment;

.6 the observance of international, national and local regulations; and

.7 maintaining the normal operations of the ship.

Taking over the watch

56 The officer in charge of the engineering watch shall not hand over the watch to the relieving officer if there is reason to believe that the latter is obviously not capable of carrying out the watchkeeping duties effectively, in which case the chief engineer officer shall be notified.

57 The relieving officer of the engineering watch shall ensure that the members of the relieving engineering watch are apparently fully capable of performing their duties effectively.

58 Prior to taking over the engineering watch, relieving officers shall satisfy themselves regarding at least the following:

.1 the standing orders and special instructions of the chief engineer officer relating to the operation of the ship's systems and machinery;

.2 the nature of all work being performed on machinery and systems, the personnel involved and potential hazards;

.3 the level and, where applicable, the condition of water or residues in bilges, ballast tanks, slop tanks, reserve tanks, fresh water tanks, sewage tanks and any special requirements for use or disposal of the contents thereof;

.4 the condition and level of fuel in the reserve tanks, settling tank, day tank and other fuel storage facilities;

.5 any special requirements relating to sanitary system disposals;

.6 condition and mode of operation of the various main and auxiliary systems, including the electrical power distribution system;

.7 where applicable, the condition of monitoring and control console equipment, and which equipment is being operated manually;

.8 where applicable, the condition and mode of operation of automatic boiler controls such as flame safeguard control systems, limit control systems, combustion control systems, fuel-supply control systems and other equipment related to the operation of steam boilers;

.9 any potentially adverse conditions resulting from bad weather, ice, or contaminated or shallow water;

.10 any special modes of operation dictated by equipment failure or adverse ship conditions;

.11 the reports of engine-room ratings relating to their assigned duties;

.12 the availability of fire-fighting appliances; and

.13 the state of completion of the engine-room log.

Performing the engineering watch

59 The officer in charge of the engineering watch shall ensure that the established watchkeeping arrangements are maintained and that, under direction, engine-room ratings, if forming part of the engineering watch, assist in the safe and efficient operation of the propulsion machinery and auxiliary equipment.

60 The officer in charge of the engineering watch shall continue to be responsible for machinery-space operations, despite the presence of the chief engineer officer in the machinery

spaces, until specifically informed that the chief engineer officer has assumed that responsibility and this is mutually understood.

61 All members of the engineering watch shall be familiar with their assigned watchkeeping duties. In addition, every member shall, with respect to the ship they are serving in, have knowledge of:

.1 the use of appropriate internal communication systems;

.2 the escape routes from machinery spaces;

.3 the engine-room alarm systems and be able to distinguish between the various alarms, with special reference to the fire-extinguishing media alarm; and

.4 the number, location and types of fire-fighting equipment and damage-control gear in the machinery spaces, together with their use and the various safety precautions to be observed.

62 Any machinery not functioning properly, expected to malfunction or requiring special service shall be noted along with any action already taken. Plans shall be made for any further action if required.

63 When the machinery spaces are in the manned condition, the officer in charge of the engineering watch shall at all times be readily capable of operating the propulsion equipment in response to needs for changes in direction or speed.

64 When the machinery spaces are in the periodic unmanned condition, the designated duty officer in charge of the engineering watch shall be immediately available and on call to attend the machinery spaces.

65 All bridge orders shall be promptly executed. Changes in direction or speed of the main propulsion units shall be recorded, except where an Administration has determined that the size or characteristics of a particular ship make such recording impracticable. The officer in charge of the engineering watch shall ensure that the main propulsion unit controls, when in the manual mode of operation, are continuously attended under stand-by or manoeuvring conditions.

66 Due attention shall be paid to the ongoing maintenance and support of all machinery, including mechanical, electrical, electronic, hydraulic and pneumatic systems, their control apparatus and associated safety equipment, all accommodation service systems equipment and the recording of stores and spare gear usage.

67 The chief engineer officer shall ensure that the officer in charge of the engineering watch is informed of all preventive maintenance, damage control, or repair operations to be performed during the engineering watch. The officer in charge of the engineering watch shall be responsible for the isolation, bypassing and adjustment of all machinery under the responsibility of the engineering watch that is to be worked on, and shall record all work carried out.

68 When the engine-room is put in a stand-by condition, the officer in charge of the engineering watch shall ensure that all machinery and equipment which may be used during manoeuvring is in a state of immediate readiness and that an adequate reserve of power is available for steering gear and other requirements.

69 Officers in charge of an engineering watch shall not be assigned or undertake any duties which would interfere with their supervisory duties in respect of the main propulsion system and

ancillary equipment. They shall keep the main propulsion plant and auxiliary systems under constant supervision until properly relieved, and shall periodically inspect the machinery in their charge. They shall also ensure that adequate rounds of the machinery and steering-gear spaces are made for the purpose of observing and reporting equipment malfunctions or breakdowns, performing or directing routine adjustments, required upkeep and any other necessary tasks.

70 Officers in charge of an engineering watch shall direct any other member of the engineering watch to inform them of potentially hazardous conditions which may adversely affect the machinery or jeopardize the safety of life or of the ship.

71 The officer in charge of the engineering watch shall ensure that the machinery space watch is supervised, and shall arrange for substitute personnel in the event of the incapacity of any engineering watch personnel. The engineering watch shall not leave the machinery spaces unsupervised in a manner that would prevent the manual operation of the engine-room plant or throttles.

72 The officer in charge of the engineering watch shall take the action necessary to contain the effects of damage resulting from equipment breakdown, fire, flooding, rupture, collision, stranding, or other cause.

73 Before going off duty, the officer in charge of the engineering watch shall ensure that all events related to the main and auxiliary machinery which have occurred during the engineering watch are suitably recorded.

74 The officer in charge of the engineering watch shall co-operate with any engineer in charge of maintenance work during all preventive maintenance, damage control or repairs. This shall include, but not necessarily be limited to:

.1 isolating and bypassing machinery to be worked on;

.2 adjusting the remaining plant to function adequately and safely during the maintenance period;

.3 recording, in the engine-room log or other suitable document, the equipment worked on and the personnel involved, and which safety steps have been taken and by whom, for the benefit of relieving officers and for record purposes; and

.4 testing and putting into service, when necessary, the repaired machinery or equipment.

75 The officer in charge of the engineering watch shall ensure that any engine-room ratings who perform maintenance duties are available to assist in the manual operation of machinery in the event of automatic equipment failure.

76 The officer in charge of the engineering watch shall bear in mind that changes in speed, resulting from machinery malfunction, or any loss of steering may imperil the safety of the ship and life at sea. The bridge shall be immediately notified in the event of fire and of any impending action in machinery spaces that may cause reduction in the ship’s speed, imminent steering failure, stoppage of the ship’s propulsion system or any alteration in the generation of electric power or similar threat to safety. This notification, where possible, shall be accomplished before changes are made, in order to afford the bridge the maximum available time to take whatever action is possible to avoid a potential marine casualty.

77 The officer in charge of the engineering watch shall notify the chief engineer officer without delay:

.1 when engine damage or a malfunction occurs which may be such as to endanger the safe operation of the ship;

.2 when any malfunction occurs which, it is believed, may cause damage or breakdown of propulsion machinery, auxiliary machinery or monitoring and governing systems; and

.3 in any emergency or if in any doubt as to what decision or measures to take.

78 Despite the requirement to notify the chief engineer officer in the foregoing circumstances, the officer in charge of the engineering watch shall not hesitate to take immediate action for the safety of the ship, its machinery and crew where circumstances require.

79 The officer in charge of the engineering watch shall give the watchkeeping personnel all appropriate instructions and information which will ensure the keeping of a safe engineering watch. Routine machinery upkeep, performed as incidental tasks as a part of keeping a safe watch, shall be set up as an integral part of the watch routine. Detailed repair maintenance involving repairs to electrical, mechanical, hydraulic, pneumatic or applicable electronic equipment throughout the ship shall be performed with the cognizance of the officer in charge of the engineering watch and chief engineer officer. These repairs shall be recorded.

Engineering watchkeeping under different conditions and in different areas

Restricted visibility

80 The officer in charge of the engineering watch shall ensure that permanent air or steam pressure is available for sound signals and that at all times bridge orders relating to changes in speed or direction of operation are immediately implemented and, in addition, that auxiliary machinery used for manoeuvring is readily available.

Coastal and congested waters

81 The officer in charge of the engineering watch shall ensure that all machinery involved with the manoeuvring of the ship can immediately be placed in the manual mode of operation when notified that the ship is in congested waters. The officer in charge of the engineering watch shall also ensure that an adequate reserve of power is available for steering and other manoeuvring requirements. Emergency steering and other auxiliary equipment shall be ready for immediate operation.

Ship at anchor

82 At an unsheltered anchorage the chief engineer officer shall consult with the master whether or not to maintain the same engineering watch as when under way.

83 When a ship is at anchor in an open roadstead or any other virtually “at-sea” condition, the engineer officer in charge of the engineering watch shall ensure that:

.1 an efficient engineering watch is kept;

.2 periodic inspection is made of all operating and stand-by machinery;

.3 main and auxiliary machinery is maintained in a state of readiness in accordance with orders from the bridge;

.4 measures are taken to protect the environment from pollution by the ship, and that applicable pollution-prevention regulations are complied with; and

.5 all damage-control and fire-fighting systems are in readiness.

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Part 5 – Watchkeeping in port

Principles applying to all watchkeeping

General

90 On any ship safely moored or safely at anchor under normal circumstances in port, the master shall arrange for an appropriate and effective watch to be maintained for the purpose of safety. Special requirements may be necessary for special types of ships' propulsion systems or ancillary equipment and for ships carrying hazardous, dangerous, toxic or highly flammable materials or other special types of cargo.

Watch arrangements

91 Arrangements for keeping a deck watch when the ship is in port shall at all times be adequate to:

.1 ensure the safety of life, of the ship, the port and the environment, and the safe operation of all machinery related to cargo operation;

.2 observe international, national and local rules; and

.3 maintain order and the normal routine of the ship.

92 The master shall decide the composition and duration of the deck watch depending on the conditions of mooring, type of the ship and character of duties.

93 If the master considers it necessary, a qualified officer shall be in charge of the deck watch.

94 The necessary equipment shall be so arranged as to provide for efficient watchkeeping.

95 The chief engineer officer, in consultation with the master, shall ensure that engineering watchkeeping arrangements are adequate to maintain a safe engineering watch while in port. When deciding the composition of the engineering watch, which may include appropriate engine-room ratings, the following points are among those to be taken into account:

.1 on all ships of 3,000 kW propulsion power and over there shall always be an officer in charge of the engineering watch;

.2 on ships of less than 3,000 kW propulsion power there may be, at the master's discretion and in consultation with the chief engineer officer, no officer in charge of the engineering watch; and

.3 officers, while in charge of an engineering watch, shall not be assigned or undertake any task or duty which would interfere with their supervisory duty in respect of the ship's machinery system.

Taking over the watch

96 Officers in charge of the deck or engineering watch shall not hand over the watch to their relieving officer if they have any reason to believe that the latter is obviously not capable of carrying out watchkeeping duties effectively, in which case the master or chief engineer shall be notified accordingly. Relieving officers of the deck or engineering watch shall ensure that all members of their watch are apparently fully capable of performing their duties effectively.

97 If, at the moment of handing over the deck or engineering watch, an important operation is being performed, it shall be concluded by the officer being relieved, except when ordered otherwise by the master or chief engineer officer.

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Part 5-2 – Taking over the engineering watch

100 Prior to taking over the engineering watch, the relieving officer shall be informed by the officer in charge of the engineering watch as to:

.1 the standing orders of the day, any special orders relating to the ship operations, maintenance functions, repairs to the ship's machinery or control equipment;

.2 the nature of all work being performed on machinery and systems on board ship, personnel involved and potential hazards;

.3 the level and condition, where applicable, of water or residue in bilges, ballast tanks, slop tanks, sewage tanks, reserve tanks and special requirements for the use or disposal of the contents thereof;

.4 any special requirements relating to sanitary system disposals;

.5 the condition and state of readiness of portable fire-extinguishing equipment and fixed fire-extinguishing installations and fire-detection systems;

.6 authorized repair personnel on board engaged in engineering activities, their work locations and repair functions and other authorized persons on board and the required crew;

.7 any port regulations pertaining to ship effluents, fire-fighting requirements and ship readiness, particularly during potential bad weather conditions;

.8 the lines of communication available between the ship and shore personnel, including port authorities, in the event of an emergency arising or assistance being required;

.9 any other circumstance of importance to the safety of the ship, its crew, cargo or the protection of the environment from pollution; and

.10 the procedures for notifying the appropriate authority of environmental pollution resulting from engineering activities.

101 Relieving officers, before assuming charge of the engineering watch, shall satisfy themselves that they are fully informed by the officer being relieved, as outlined above, and:

.1 be familiar with existing and potential sources of power, heat and lighting and their distribution;

.2 know the availability and condition of ship's fuel, lubricants and all water supplies; and

.3 be ready to prepare the ship and its machinery, as far as is possible, for stand-by or emergency conditions as required.

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Part 5-4 – Performing the engineering watch

103 Officers in charge of the engineering watch shall pay particular attention to:

.1 the observance of all orders, special operating procedures and regulations concerning hazardous conditions and their prevention in all areas in their charge;

.2 the instrumentation and control systems, monitoring of all power supplies, components and systems in operation;

.3 the techniques, methods and procedures necessary to prevent violation of the pollution regulations of the local authorities; and

.4 the state of the bilges.

104 Officers in charge of the engineering watch shall:

.1 in emergencies, raise the alarm when, in their opinion, the situation so demands, and take all possible measures to prevent damage to the ship, persons on board and cargo;

.2 be aware of the deck officer's needs relating to the equipment required in the loading or unloading of the cargo and the additional requirements of the ballast and other ship stability control systems;

.3 make frequent rounds of inspection to determine possible equipment malfunction or failure, and take immediate remedial action to ensure the safety of the ship, of cargo operations, of the port and the environment;

.4 ensure that the necessary precautions are taken, within their area of responsibility, to prevent accidents or damage to the various electrical, electronic, hydraulic, pneumatic and mechanical systems of the ship; and

.5 ensure that all important events affecting the operation, adjustment or repair of the ship's machinery are satisfactorily recorded.

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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.

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

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:

.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.

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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/3
Guidance regarding the certification of chief engineer officers and second engineer officers of ships powered by main propulsion machinery between 750 kW and 3,000 kW propulsion power

(No provisions)

Chapter VIII
Guidance regarding watchkeeping

Section B-VIII/2
Guidance regarding watchkeeping arrangements and principles to be observed

1 The following operational guidance should be taken into account by companies, masters and watchkeeping officers.

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Part 4 – Guidance on watchkeeping at sea

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Part 4-2 – Guidance on keeping an engineering watch

6 Particular guidance may be necessary for special types of propulsion systems or ancillary equipment and for ships carrying hazardous, dangerous, toxic or highly flammable materials or other special types of cargo. The chief engineer officer should provide this operational guidance as appropriate.

7 It is essential that officers in charge of the engineering watch appreciate that the efficient performance of engineering watchkeeping duties is necessary in the interest of the safety of life and property at sea and of preventing pollution of the marine environment.

8 The relieving officer, before assuming charge of the engineering watch, should:

- **.1** be familiar with the location and use of the equipment provided for the safety of life in a hazardous or toxic environment;
- **.2** ascertain that materials for the administration of emergency medical first aid are readily available, particularly those required for the treatment of burns and scalds; and
- **.3** when in port, safely anchored or moored, be aware of:
  - **.3.1** cargo activities, the status of maintenance and repair functions and all other operations affecting the watch, and
  - **.3.2** the auxiliary machinery in use for passenger or crew accommodation services, cargo operations, operational water supplies and exhaust systems.