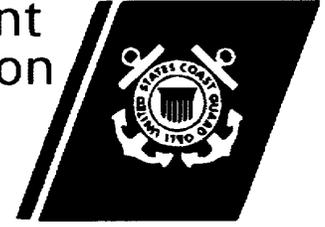


U.S. Department
of Transportation

United States
Coast Guard



Guide for Administration of Merchant Marine Engineering Examinations and Assessment (Engineering Guide)

**AUGUST
1998**

This Publication provides guidance for examination room proctors
and other personnel who actively monitor applicants in the exam room.

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Subj: GUIDE FOR THE ADMINISTRATION OF MERCHANT MARINE ENGINEERING EXAMINATIONS AND ASSESSMENT (ENGINEERING GUIDE)

1. PURPOSE. This manual provides guidance for the examination room proctors and other personnel who actively monitor merchant marine applicants in the exam room of the Regional Examination Centers.
2. ACTION. Personnel administering Merchant Marine Engineering Examinations are to use this publication to determine which modules are to be administered for a given license level and what training is acceptable in lieu of an examination module.
3. DISCUSSION.
 - a. The engineering examination system for merchant marine engineers has been revised to incorporate changes to 46 CFR implementing the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 as amended in 1995 (STCW Convention). While not completely abandoning the written examination, the Coast Guard is emphasizing that the use of written examination is only one of the key components in determining competency of the mariner. Merchant mariner competencies are to be verified by performance-based training program.
 - b. Currently, to be granted a license, the Coast Guard requires passing an examination to verify competency. The Assessment Guidelines (AG's) contained in this manual give training alternatives to existing Coast Guard written examinations, performance-based training requirements and the dates for implementation.
 - c. The Coast Guard has developed a system of electronic distribution of examination modules to improve examination quality and productivity. This manual reflects these changes and complements the use of the electronic distribution system.
4. PROCEDURE.
 - a. The AG's contained in this manual are effective upon receipt. The previous Engineering Guide dated July 1994, is superseded. Training alternatives listed in the Assessment Guidelines are optional after 31 July 1998. These alternatives will be mandatory after 31 January 2002, except as indicated in the AG remarks.

- b. The AG's contain detailed information for each license exam. Consult the AG's for unique directions, presentation order of examination modules, and guidance on courses used in lieu of an examination module.
5. PROCUREMENT INFORMATION. Regional Examination Centers will be provided with an initial supply of this publication. Replacement and additional copies are available through the Commanding Officer, National Maritime Center, (NMC-4B), 4200 Wilson Boulevard, Suite 510, Arlington, VA 22203-1803 or by calling (202) 493-1000 or from the Internet at <http://www.uscg.mil/hq/g-m/gmhome.html>.

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INTRODUCTION

This publication is primarily for the use of Coast Guard Regional Examination Center (REC) personnel who ensure applicants for a Coast Guard Merchant Marine Engineer's License are appropriately qualified. The public can use this publication for guidance on approved, performance-based courses as an alternative to examination modules. While not completely abandoning the written examination, the Coast Guard is emphasizing that the use of written examinations is only one of the key components in determining the competency of the mariner.

All training will be performance-based and will integrate practical and/or simulator demonstrations, or other practical lab exercises that can be observed to verify the student's abilities. It is essential to establish a set of objective, uniformly applied standards that will augment the evaluation process. Therefore, the performance-based exercise(s) and the overall assessment process by which each student's performance will be evaluated and recorded must be developed in conjunction with the training course. Guidance on developing practical demonstration and assessment can be found at the end of this publication. The appendices list the specific subject areas to be covered at a minimum (indicated by the letter "C") in the performance-based course of training. Each assessment guideline lists the appropriate appendix for an individual module.

This publication also informs the public of how the method of determining the competency of licensed engineers will change while implementing the Seafarers, Training, Certification and Watchkeeping (STCW) requirements. Some specified training courses that are not currently available may be submitted for future approval. Reference to a course approved as performance-based training in place of a subject on an exam module, as per the assessment guide sheet, should be cross-referenced with the appropriate subject appendix at the back of this publication and course guidelines that are available on the Internet:

www.uscg.mil/hq/g-m/gmhome.htm

The approved course data base, also provided on the Internet, can be reviewed to determine if an approved course is available in lieu of an examination module or will be required as part of the new assessment process.

Any questions concerning the engineering examinations or approved engineering courses should be referred to the:

Commanding Officer
National Maritime Center (NMC-4B)
4200 Wilson Blvd. Suite 510
Arlington VA. 22203-1804
or, via e-mail at Eteam@ballston.uscg.mil;
or, by phone at (202) 493-1000
or, by Fax at (202) 493-1062.

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Instructions for the Administration of Engineering Examinations

1. The book is divided into four sections. Each section contains an introduction and the assessment guidelines for all exams and required subjects in the section. The sections for the unlimited and limited engineering license examinations also contain an index to the examinations within the section and a quick reference table.
2. The introduction lists general policy applicable to all engineering examinations in each section.
3. Each section lists all the assessment guidelines within the specific section of the Engineering Guide and the number of the applicable *Assessment Guideline* for a particular examination and/or assessment process
4. The quick reference sheet shows at a glance the number of modules required for each examination and provides a quick comparison of the total number of modules required to test an applicant at each license level.
5. The applicable assessment guide contains the specific policy that applies to a particular license examination and/or its assessment process. The subjects for each examination or performance-based course indicated in each assessment guide are identified in the appendices attached to this publication.
6. A module code is a five digit number that specifically identifies an examination module. The *first* digit specifies the license area of the exam; e.g., 5XXXX, upper level licenses; 6XXXX, lower level licenses; and 8XXXX, QMED ratings. The *second* digit specifies the level of the exam, such as 50XXX, upper level, chief engineer, unlimited horsepower. The *third* digit specifies the subject area, such as 504XX, upper level, chief engineer, unlimited horsepower, electricity. The *fourth* and *fifth* digits refer to the version of the exam module, which varies with each module edition and is indicated by a double dash (--) in the *Assessment Guide*.

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SUMMARY OF EXAMINATION MODULES

PART ONE - UNLIMITED HORSEPOWER ENGINEERING LICENSES

MODULE CODE MODULE NAME

50XXX UNLIMITED CHIEF ENGINEER
51XXX UNLIMITED FIRST ASSISTANT ENGINEER
52XXX UNLIMITED SECOND ASSISTANT ENGINEER
53XXX UNLIMITED THIRD ASSISTANT ENGINEER
54XXX UNLIMITED CHIEF/FIRST ASSISTANT ENGINEER, ORIGINAL/ENDORSEMENT
55XXX UNLIMITED ENGINEERING LICENSES, RENEWAL EXERCISE

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65XXX UNINSPECTED FISHING VESSEL, CHIEF ENGINEER
66XXX UNINSPECTED FISHING VESSEL, ASSISTANT ENGINEER
68XXX LIMITED ASSISTANT ENGINEER/DESIGNATED DUTY ENGINEER, UNLIMITED HP
69XXX DESIGNATED DUTY ENGINEER, LIMITED HORSEPOWER

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87XXX OILER
88XXX PUMPMAN
89XXX OILER, MINERAL & OIL INDUSTRY
90XXX QMED RENEWAL EXERCISE

SECTION ONE

UNLIMITED
ENGINEERING LICENSE
ASSESSMENT GUIDELINES

CHIEF ENGINEER

FIRST ASSISTANT ENGINEER

SECOND ASSISTANT ENGINEER

THIRD ASSISTANT ENGINEER

INTRODUCTION
FOR THE ADMINISTRATION OF
UPPER LEVEL - UNLIMITED HORSEPOWER - ENGINEERING EXAMINATIONS

1. SCHEDULING, EXAM TIME LIMITS AND GRADING POLICY

There is no maximum time limit on any module except as necessary to accommodate the working hours of the examination room. Applicants starting to test in the morning, at the opening of the exam room, must complete a minimum of two modules that day when two or more modules in an examination are to be administered. If they desire, and time permits, they may complete more than two modules. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant for an unlimited license must complete the entire exam on consecutive business days. Modules should be administered in the published order. A minimum score of 70% is required to pass each module, except for the renewal module which requires a 90% to pass. All modules for engineers are graded individually.

2. EXAMINATION CYCLES

Subject to the requirements of paragraph 1, the examination cycle may begin on any business day, and at anytime during the day as designated by the SIP.

3. REFERENCE MATERIAL

Applicants are permitted to use the Merchant Marine Engineering Examination Illustration Book, 46 CFR Parts 1-199 and 33 CFR Parts 1-199 provided in the examination room. No other reference materials are permitted except for the open book renewal exercise. Nonprogrammable calculators are permitted.

4. INCREASING THE SCOPE OF PROPULSION MODE FOR CHIEF, FIRST, SECOND AND THIRD ASSISTANT ENGINEERS

Applicants wishing to increase the scope of their propulsion mode from either MOTOR or STEAM to STEAM and MOTOR are required to be tested with two modules in the new propulsion area. The required modules are defined for chief engineer in Assessment Guideline # 1-4, for first assistant engineer in Assessment Guideline # 1-11, for second assistant engineer in Assessment Guideline # 1-19, and for third assistant engineer in Assessment Guideline # 25.

5. LIMITED CHIEF ENGINEER CROSS OVER TO UNLIMITED SECOND ASSISTANT ENGINEER

A limited chief engineer (oceans) desiring to crossover to unlimited second assistant engineer - motor, who tested after July 1994, need only be tested on second assistant Motor Plants, Part II module. If the candidate tested before July 1994, all modules for second assistant engineer motor must be administered.

6. RENEWAL EXERCISE

The license renewal exercises for **chief, first, second, and third assistant engineers** are consolidated into one open book exercise. After January 31, 2002 a written Coast Guard examination for Unlimited Renewal will no longer be administered. Thereafter, an applicant who does not meet the sea service requirements but desiring to fully validate his/her license may renew by successfully completing an approved, performance-based renewal course. An applicant who does not meet the sea service and course completion requirements after January 31, 2002 may only renew for continuity purposes only.

7. QUESTIONS

Any questions should be referred to the Commanding Officer, National Maritime Center, Examination Administration Branch, Engineering Section, (202) 493-1046.

ASSESSMENT GUIDELINE TABLE OF CONTENTS
FOR
UNLIMITED HORSEPOWER ENGINEERING LICENSES

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| First Assistant Engineer, Steam and motor | 1-14 |
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| Original | |
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QUICK REFERENCE - UPPER LEVEL - UNLIMITED HORSEPOWER LICENSES

CHIEF ENGINEER (See note)

| <u>SUBJECT</u> | <u>MODULE CODE</u> | <u>STEAM ONLY</u> | <u>MOTOR ONLY</u> | <u>STEAM & MOTOR</u> |
|---------------------------|--------------------|-------------------|-------------------|--------------------------|
| General Subjects, Part I | 501-- | X | X | X |
| General Subjects, Part II | 502-- | X | X | X |
| Steam Plants | 503-- | X ☞ | | X ☞* |
| Electricity | 504-- | X ☞ | X ☞ | X ☞ |
| Engineering Safety | 505-- | X | X | X |
| Motor Plants | 506-- | | X ☞ | X ☞* |
| O/E Steam Plants, Part II | 545-- | @ ☞ | | @ ☞* |
| O/E Motor Plants, Part II | 547-- | | @ ☞ | @ ☞* |

FIRST ASSISTANT ENGINEER

| <u>SUBJECT</u> | <u>MODULE CODE</u> | <u>STEAM ONLY</u> | <u>MOTOR ONLY</u> | <u>STEAM & MOTOR</u> |
|---------------------------|--------------------|-------------------|-------------------|--------------------------|
| General Subjects, Part I | 511-- | X | X | X |
| General Subjects, Part II | 512-- | X | X | X |
| Steam Plants | 513-- | X ☞ | | X ☞* |
| Electricity | 514-- | X ☞ | X ☞ | X ☞ |
| Engineering Safety | 515-- | X ☞ | X ☞ | X ☞ |
| Motor Plants | 516-- | | X ☞ | X ☞* |
| O/E Steam Plants, Part II | 545-- | @ ☞ | | @ ☞* |
| O/E Motor Plants, Part II | 547-- | | @ ☞ | @ ☞* |

SECOND ASSISTANT ENGINEER (See note)

| <u>SUBJECT</u> | <u>MODULE CODE</u> | <u>STEAM ONLY</u> | <u>MOTOR ONLY</u> | <u>STEAM & MOTOR</u> |
|-----------------------|--------------------|-------------------|-------------------|--------------------------|
| Motor Plants, Part I | 521-- | | X | X* |
| Motor Plants, Part II | 522-- | X | | X*+ |
| General Subjects | 523-- | X | X | X |
| Electricity | 524-- | X | X | X |
| Engineering Safety | 525-- | X | X | X |
| Steam Plants, Part I | 526-- | X | | X* |
| Steam Plants, Part II | 527-- | X | | X* |

THIRD ASSISTANT ENGINEER

| <u>SUBJECT</u> | <u>MODULE CODE</u> | <u>STEAM ONLY</u> | <u>MOTOR ONLY</u> | <u>STEAM & MOTOR</u> |
|-----------------------|--------------------|-------------------|-------------------|--------------------------|
| Motor Plants, Part I | 531-- | | X ☞ | X ☞* |
| Motor Plants, Part II | 532-- | | X ☞ | X ☞* |
| Engineering Safety | 533-- | X ☞ | X ☞ | X ☞ |
| General Subjects | 535-- | X | X | X |
| Electricity | 536-- | X ☞ | X ☞ | X ☞ |
| Steam Plants, Part I | 537-- | X ☞ | | X ☞* |
| Steam Plants, Part II | 538-- | X ☞ | | X ☞* |

X Indicates a module that is part of the core exam.

* An applicant increasing the scope of a license from steam only or motor only to steam and motor is only required to pass these modules.

@ An applicant for an original license must also test with these modules.

+ Only this module is required by limited chief engineer (oceans) applicant for cross over to second assistant if applicant tested for limited chief engineer (oceans) after July 1994.

☞ A Coast Guard approved course may substitute for this examination module.

Note: **After January 31, 2002 written examinations for any unlimited chief or unlimited assistant engineer will no longer be administered as the sole method for obtaining a license.** Each applicant must meet the training requirements outlined in the appropriate assessment guideline to be granted an unlimited chief or unlimited assistant engineer license.

| | | |
|--|--|---|
| ASSESSMENT GUIDELINE NO. 1-1 | License Type- CHIEF ENGINEER License Group- UNLIMITED License Action- RAISE IN GRADE License Condition- MOTOR | EXAM CODE 50CR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 501--, General Subjects, Part I | | |
| 502--, General Subjects, Part II | | |
| 504--, Electricity | Electrical Troubleshooting and Electronics ^{4c} | See assessment guideline 1-8 |
| 505--, Engineering Safety | Leadership and Management ^{4c} | See assessment guideline 1-8 |
| 506--, Motor Plants | | |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **Each candidate for unlimited chief engineer motor may upgrade by:**
 - a. having a valid license for unlimited first assistant engineer motor and
 - b. providing documentary evidence of the required sea service as provided in 46 CFR 10.510 and
 - c. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles before the candidate applies for an unlimited chief engineer's license.
 - d. An applicant for unlimited chief engineer having satisfied the criteria of 'a' through 'c', may be granted this license without further testing.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited chief engineer motor license.**

Note: When the completion of the courses and the included subject matter as indicated above were used to obtain an unlimited first assistant engineer's license, the training requirements in this Assessment Guideline are satisfied.

| | | |
|--|--|---|
| ASSESSMENT GUIDELINE NO. 1-2 | License Type - CHIEF ENGINEER License Group - UNLIMITED License Action - RAISE IN GRADE License Condition - STEAM | EXAM CODE 50BR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 501--, General Subjects, Part I | | |
| 502--, General Subjects, Part II | | |
| 503--, Steam Plants | | |
| 504--, Electricity | Electrical Troubleshooting and Electronics ^{4c} | See assessment guideline 1-9 |
| 505--, Engineering Safety | Leadership and Management ^{4c} | See assessment guideline 1-9 |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **Each candidate for an unlimited chief engineer steam license may upgrade by:**
 - a. having a valid license for unlimited first assistant engineer steam and
 - b. providing documentary evidence of the required sea service as provided in 46 CFR 10.510 and
 - c. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles before the candidate applies for an unlimited chief engineer's license.
 - d. An applicant for unlimited chief engineer having satisfied the criteria of 'a' through 'c' above, may be granted this license without further testing.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited chief engineer steam license.**

Note: When the completion of the courses and the included subject matter as indicated above were used to obtain an unlimited first assistant engineer's license, the training requirements in this Assessment Guideline are satisfied

| | | |
|---|--|---|
| ASSESSMENT GUIDELINE NO. 1-3 | License Type - CHIEF ENGINEER License Group - UNLIMITED License Action - RAISE IN GRADE License Condition - STEAM AND MOTOR | EXAM CODE 50AR |
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 501--, General Subjects, Part I | | |
| 502--, General Subjects, Part II | | |
| 503--, Steam Plants | | |
| 504--, Electricity | Electrical Troubleshooting and Electronics ^{4c} | See assessment guideline 1-10 |
| 505--, Engineering Safety | Leadership and Management ^{4c} | See assessment guideline 1-10 |
| 506--, Motor Plants | | |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an unlimited chief engineer steam and motor license may upgrade by:**
 - a. having a valid license for unlimited first assistant engineer steam and motor and
 - b. providing documentary evidence of the required sea service as provided in 46 CFR 10.510 and
 - c. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles before the candidate applies for an unlimited chief engineer's license.
 - d. An applicant for unlimited chief engineer having satisfied the criteria of 'a' through 'c' above, may be granted this license without further testing.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited chief engineer steam and motor license.**

Note: When the completion of the courses and the included subject matter as indicated above were used to obtain an unlimited first assistant engineer's license, the training requirements in this Assessment Guideline are satisfied.

| | | | |
|---|--|--|--------------------------|
| ASSESSMENT GUIDELINE NO. 1-4 | License Type - License Group - License Action - License Condition | CHIEF ENGINEER UNLIMITED INCREASING SCOPE STEAM AND MOTOR | EXAM CODE 50IA & 50IB |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| From Motor Exam Code 50IA | | | |
| 503-- Steam Plants | Steam Engineering ⁵ | See assessment guideline 1-8 | |
| 545-- Original/Endorsement Steam Plants Part II | Steam Engineering ⁵ | See assessment guideline 1-8 | |
| From Steam Exam Code 50IB | | | |
| 506-- Motor Plants | Marine Diesel engineering ⁶ | See assessment guideline 1-9 | |
| 547-- Original/Endorsement Motor Plants Part II | Marine Diesel engineering ⁶ | See assessment guideline 1-9 | |

Remarks:

1. This assessment guideline is for applicants who wish to increase the scope of their existing steam or motor license by obtaining a motor or steam endorsement respectively. Each applicant is required to be examined with two modules for the propulsion mode they are applying, as listed above.
2. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
3. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
4. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and is not to be used for any other license, endorsement or recency of sea service.
5. Completing an approved, performance-based steam engineering course meets the requirements of modules 503-- and 545--.
6. Completing an approved, performance-based marine diesel engineering course meets the requirements of modules 506-- and 547--.
7. **After July 31, 1998 each candidate for an endorsement to an unlimited chief engineer license for steam and motor may increase the scope of their current license by:**
 - a. completing an approved, performance-based training course and
 - b. when increasing scope from unlimited chief engineer motor providing documentary evidence of four months sea service as the engineer in charge of a watch aboard steam propelled vessels.
 - c. A candidate will only be granted an unlimited chief engineer motor/second assistant engineer steam license if the minimum sea service requirement has not been attained.
 - d. Upon successfully completing 'a' and 'b' and presenting documentary proof of four months sea service as engineer in charge of a watch aboard steam propelled vessels an applicant may be granted a unlimited chief engineer steam and motor license without further examination.
8. **After January 31, 2002 each applicant must meet the requirements of #7 above to increase the scope to an unlimited chief engineer steam and motor license.**

| ASSESSMENT GUIDELINE NO. 1-5 | License Type - CHIEF ENGINEER License Group - UNLIMITED License Action - ORIGINAL license Condition - MOTOR | EXAM CODE 50CO |
|---|--|---|
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 501--, General Subjects, Part I | | |
| 502--, General Subjects, Part II | | |
| 504--, Electricity | | |
| 505--, Engineering Safety | | |
| 506--, Motor Plants | | |
| 547--, Original/Endorsement Motor Plants, Part II | | |

Remarks:

1. **After, July 31, 1998 a written Coast Guard examination for an original license for unlimited chief engineer motor will no longer be administered.**
2. Each applicant must meet the requirements of assessment guideline 1-1 to be granted an unlimited chief engineer motor license.

| | | |
|---|--|---|
| ASSESSMENT GUIDELINE NO. 1-6 | License Type - CHIEF ENGINEER License Group - UNLIMITED License Action - ORIGINAL License Condition - STEAM | EXAM CODE 50BO |
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 501--, General Subjects, Part I | | |
| 502--, General Subjects, Part II | | |
| 503--, Steam Plants | | |
| 504--, Electricity | | |
| 505--, Engineering Safety | | |
| 545-, Original/Endorsement Steam Plants, Part II | | |

Remarks:

1. **After July 31, 1998 a written Coast Guard examination for and original license for unlimited chief engineer steam will no longer be administered.**
2. Each applicant must meet the requirements of assessment guideline 1-2 to be granted an unlimited chief engineer steam license.

| ASSESSMENT GUIDELINE NO. 1-7 | License Type - CHIEF ENGINEER License Group- UNLIMITED License Action - ORIGINAL License Condition - STEAM AND MOTOR | EXAM CODE 50AO |
|---|---|---|
| NO. OF MODULES: Eight (8) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 501--, General Subjects, Part I | | |
| 502--, General Subjects, Part II | | |
| 503--, Steam Plants | | |
| 504--, Electricity | | |
| 505--, Engineering Safety | | |
| 506--, Motor Plants | | |
| 545--, Original/Endorsement Steam Plants, Part II | | |
| 547--, Original/Endorsement Motor Plants, Part II | | |

Remarks:

1. **After July 31, 1998 a written Coast Guard examination for an original license of unlimited chief engineer steam and motor will no longer be administered.**
2. Each applicant must meet the requirements of assessment guideline 1-3 to be granted an unlimited chief engineer steam and motor license.

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| ASSESSMENT GUIDELINE NO. 1-8 | License Type - FIRST ASSISTANT ENGINEER License Group- UNLIMITED License Action - RAISE IN GRADE License Condition - MOTOR | EXAM CODE 51CR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 511--, General Subjects, Part I ⁵ | | |
| 512--, General Subjects, Part II ⁵ | | |
| 514--, Electricity | Electrical Troubleshooting and Electronics | Appendix II |
| 515--, Engineering Safety | Leadership and Management | Appendices V and VI |
| 516--, Motor Plants | Marine Diesel Engineering | Appendix IV |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter “C”) under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an unlimited first assistant engineer motor license may upgrade by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in charge of an engine watch on motor propelled vessels as provided in 46 CFR 10.512 and
 - b. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles and
 - c. having completed the training requirements for unlimited third assistant engineer before the candidate applies for an unlimited first engineer license.
 - d. An applicant satisfying the criteria of ‘a’ through ‘c’ above, must successfully complete the General Subjects modules listed above to be granted an unlimited first assistant engineer motor license.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited first assistant engineer motor license.**

| ASSESSMENT GUIDELINE NO. 1-9 | License Type - FIRST ASSISTANT ENGINEER License Group- UNLIMITED License Action - RAISE IN GRADE License Condition - STEAM | EXAM CODE 51BR |
|---|---|---------------------------------------|
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 511--, General Subjects, Part I ⁵ | Auxiliary Machinery | Appendix I |
| 512--, General Subjects, Part II ⁵ | Auxiliary Machinery | Appendix I |
| 513--, Steam Plants | Steam Engineering | Appendix III |
| 514--, Electricity | Electrical Troubleshooting/Electronics Course | Appendix II |
| 515--, Engineering Safety | Leadership and Management | Appendices V and VI |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used on lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an unlimited first assistant engineer steam license may upgrade by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in charge of an engine watch on steam propelled vessels as provided in 46 CFR 10.512 and
 - b. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles and
 - c. completing the training requirements for unlimited third assistant engineer before the candidate applies for an unlimited first engineer license.
 - d. Each applicant, satisfying the criteria of 'a' through 'c' above, must successfully complete the General Subjects modules listed above to be granted an unlimited first assistant engineer steam license.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited first assistant engineer motor license.**

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| ASSESSMENT GUIDELINE NO. 1-10 | License Type - FIRST ASSISTANT ENGINEER License Group- UNLIMITED License Action - RAISE IN GRADE License Condition - STEAM AND MOTOR | EXAM CODE 51AR |
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 511--, General Subjects, Part I ⁵ | | |
| 512--, General Subjects, Part II ⁵ | | |
| 513--, Steam Plants | Steam Engineering | Appendix III |
| 514--, Electricity | Electrical Troubleshooting/Electronics | Appendix II |
| 515--, Engineering Safety | Leadership and Management | Appendices V and VI |
| 516--, Motor Plants | Marine Diesel Engineering | Appendix IV |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an unlimited first assistant engineer steam and motor license may upgrade by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in charge of an engine watch on steam and motor propelled vessels as provided in 46 CFR 10.512 and 46 CFR 10.502 and
 - b. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles.
 - c. completing the training requirements for unlimited third assistant engineer before the candidate applies for an unlimited first engineer license.
 - d. Each applicant, satisfying the criteria of 'a' through 'c' above, must successfully complete the General Subjects modules listed above to be granted an unlimited first assistant engineer steam and motor license.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited first assistant engineer motor license.**

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| ASSESSMENT GUIDELINE NO. 1-11 | License Type - License Group - License Action - License Condition | FIRST ASSISTANT ENGINEER UNLIMITED INCREASING SCOPE STEAM AND MOTOR | EXAM CODE 51AI & 51AJ |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| From Motor Exam Code 51AI | | | |
| 513-- Steam Plants | Steam Engineering ³ | Appendix III | |
| 545-- Original/Endorsement Steam Plants Part II ¹ | Steam Engineering ³ | Appendix III | |
| From Steam Exam Code 50AJ | | | |
| 516-- Motor Plants | Marine Diesel Engineering ³ | Appendix IV | |
| 547-- Original/Endorsement Motor Plants Part II ¹ | Marine Diesel Engineering ³ | Appendix IV | |

Remarks:

1. This assessment guideline is for applicants who wish to increase the scope of their existing steam or motor license by obtaining a motor or steam endorsement respectively. Each applicant is required to be examined with two modules for the propulsion mode they are applying, as listed above.
2. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
3. Completion of an approved, performance-based steam engineering course meets the requirements of modules 513-- and 545--. Completion of an approved, performance-based marine diesel engineering course meets the requirements of modules 516-- and 547--.
4. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
5. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
6. **After July 31, 1998 each candidate for an endorsement to an unlimited first assistant engineer license for steam and motor may increase the scope of their current license by:**
 - a. completing an approved, performance-based training course on the appropriate propulsion mode and
 - b. when increasing scope from unlimited first assistant engineer motor provide documentary evidence of four months sea service as the engineer in charge of a watch aboard steam propelled vessels. A candidate will only be granted an unlimited first engineer motor/second assistant engineer steam license if the minimum sea service requirement has not been attained.
 - c. Upon successfully completing 'a' and 'b' above, and presenting documentary proof of four months sea service as engineer in charge of a watch aboard steam propelled vessels, an applicant may be granted a unlimited first assistant engineer steam and motor license without further examination.
7. **After January 31, 2002 each applicant must meet the requirements of #6 above to increase the scope to an unlimited first assistant engineer steam and motor license.**

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|---|---|---|
| ASSESSMENT GUIDELINE NO. 1-12 | License Type - FIRST ASSISTANT ENGINEER License Group- UNLIMITED License Action - ORIGINAL License Condition - MOTOR | EXAM CODE 51CO |
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 511--, General Subjects, Part I ⁵ | | |
| 512--, General Subjects, Part II ⁵ | | |
| 514--, Electricity | Electrical Troubleshooting and Electronics | Appendix II |
| 515--, Engineering Safety | Leadership and Management | Appendices V and VI |
| 516--, Motor Plants | | |
| 547--, Original/Endorsement Motor Plants, Part II | | |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an original - unlimited first assistant engineer motor license may be granted a license by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in charge of an engine watch on motor propelled vessels as provided in 46 CFR 10.512 and
 - b. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles and
 - c. completing the training requirements for unlimited third assistant engineer prior to the candidate applying for an unlimited first engineer license.
 - d. An applicant satisfying the criteria of 'a' through 'c' above, must successfully complete the General Subjects modules listed to be granted an unlimited first assistant engineer motor license.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited first assistant engineer motor license.**

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|---|---|---|
| ASSESSMENT GUIDELINE NO. 1-13 | License Type - FIRST ASSISTANT ENGINEER License Group- UNLIMITED License Action - ORIGINAL License Condition - STEAM | EXAM CODE 51BO |
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 511--, General Subjects, Part I ⁵ | | |
| 512--, General Subjects, Part II ⁵ | | |
| 513--, Steam Plants | | |
| 514--, Electricity | Electrical Troubleshooting and Electronics | Appendix II |
| 515--, Engineering Safety | Leadership and Management | Appendices V and VI |
| 545--, Original/Endorsement Steam Plants, Part II | | |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter “C”) under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an original - unlimited first assistant engineer steam license may be granted a license by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in charge of an engine watch on steam propelled vessels as provided in 46 CFR 10.512 and
 - b. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles and
 - c. completing the training requirements for unlimited third assistant engineer prior to the candidate applying for an unlimited first engineer license.
 - d. An applicant satisfying the criteria of ‘a’ through ‘c’ above, must successfully complete the General Subjects modules listed above to be granted an unlimited first assistant engineer license.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited first assistant engineer steam license.**

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| ASSESSMENT GUIDELINE NO. 1-14 | License Type - FIRST ASSISTANT ENGINEER License Group- UNLIMITED License Action - ORIGINAL License Condition - STEAM AND MOTOR | EXAM CODE 51AO |
| NO. OF MODULES: Eight (8) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 511--, General Subjects, Part I ⁵ | | |
| 512--, General Subjects, Part II ⁵ | | |
| 513--, Steam Plants | | |
| 514--, Electricity | Electrical Troubleshooting and Electronics | Appendix II |
| 515--, Engineering Safety | Leadership and Management | Appendices V and VI |
| 516--, Motor Plants | | |
| 545--, Original/Endorsement Steam Plants, Part II | | |
| 547--, Original/Endorsement Motor Plants, Part II | | |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an original - unlimited first assistant engineer steam and motor license may be granted a license by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in charge of an engine watch on steam and motor propelled vessels as provided in 46 CFR 10.512 and 46 CFR 10.502 and
 - b. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles and
 - c. completing the training requirements for unlimited third assistant engineer prior to the candidate applying for an unlimited first engineer license.
 - d. An applicant satisfying the criteria of 'a' through 'c' above, must successfully complete the General Subjects modules listed above to be granted an unlimited first assistant engineer license .
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an unlimited first assistant engineer motor license.**

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| ASSESSMENT GUIDELINE NO. 1-15 | License Type - SECOND ASSISTANT ENGINEER License Group- UNLIMITED License Action - RAISE IN GRADE License Condition - MOTOR | EXAM CODE 52CR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 521--, Motor Plants, Part I | | See assessment guideline 1-22 |
| 522--, Motor Plants, Part II | | See assessment guideline 1-22 |
| 523--, General Subjects | | See assessment guideline 1-22 |
| 524--, Electricity | | See assessment guideline 1-22 |
| 525--, Engineering Safety | | See assessment guideline 1-22 |

Remarks:

1. **After July 31, 1998 each candidate for an unlimited second assistant engineer motor license may upgrade by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in charge of an engine watch on motor propelled vessels as provided in 46 CFR 10.514 and
 - b. providing documentary evidence of having successfully completed an approved performance-based course of training listed in Assessment Guideline 1-22 and
 - c. Completing the training requirements for unlimited third assistant engineer prior to the candidate applying for an unlimited second assistant engineer license.
 - d. An applicant for unlimited second assistant engineer satisfying the criteria of 'a' through 'c' above, may be granted an unlimited second assistant engineer motor license without further examination.
2. **After January 31, 2002 each applicant must meet the requirements of #1 above to be granted an unlimited second assistant engineer motor license.**

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| ASSESSMENT GUIDELINE NO. 1-16 | License Type - SECOND ASSISTANT ENGINEER License Group- UNLIMITED License Action - RAISE IN GRADE License Condition - STEAM | EXAM CODE 52BR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 523--, General Subjects | | See assessment guideline 1-23 |
| 524--, Electricity | | See assessment guideline 1-23 |
| 525--, Engineering Safety | | See assessment guideline 1-23 |
| 526--, Steam Plants, Part I | | See assessment guideline 1-23 |
| 527--, Steam Plants, Part II | | See assessment guideline 1-23 |

Remarks:

1. **After July 31, 1998 each candidate for an unlimited second assistant engineer steam license may upgrade by:**
 - a. providing documentary evidence of the required sea service as an engineer officer in-charge of an engine watch on steam propelled vessels as provided in 46 CFR 10.514 and
 - b. providing documentary evidence of having successfully completed an approved performance-based course of training listed in assessment guideline 1-23 and
 - c. completing the training requirements for unlimited third assistant engineer prior to the candidate applying for an unlimited second assistant engineer's license.
 - d. An applicant for unlimited second assistant engineer satisfying the criteria of 'a' through 'c' above, may be granted an unlimited second assistant engineer steam license without further examination.

1. **After January 31, 2002 each applicant must meet the requirements of #1 above to be granted an unlimited second assistant engineer motor license.**

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| ASSESSMENT GUIDELINE NO. 1-17 | License Type - SECOND ASSISTANT ENGINEER License Group- UNLIMITED License Action - RAISE IN GRADE License Condition - STEAM AND MOTOR | EXAM CODE 52AR |
| NO. OF MODULES: Seven (7) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 521--, Motor Plants, Part I | | See assessment guideline 1-24 |
| 522--, Motor Plants, Part II | | See assessment guideline 1-24 |
| 523--, General Subjects | | See assessment guideline 1-24 |
| 524--, Electricity | | See assessment guideline 1-24 |
| 525--, Engineering Safety | | See assessment guideline 1-24 |
| 526--, Steam Plants, Part I | | See assessment guideline 1-24 |
| 527--, Steam Plants, Part II | | See assessment guideline 1-24 |

Remarks:

1. **After July 31, 1998 each candidate for an unlimited second assistant engineer steam and motor license may upgrade by:**
 - a. Providing documentary evidence of the required sea service as an engineer officer in-charge of an engine watch on steam and motor propelled vessels as provided in 46 CFR 10.514 and 46 CFR 10.502 and
 - b. Providing documentary evidence of having successfully completed an approved performance-based course of training listed in assessment guideline 1-24 and
 - c. completing the training requirements for unlimited third assistant engineer prior to the candidate applying for an unlimited second assistant engineer's license.
 - d. An applicant for unlimited second assistant engineer having satisfied the criteria of 'a' through 'c' above, may be granted an unlimited second assistant engineer steam and motor license without further examination.
2. **After January 31, 2002 each applicant must meet the requirements of #1 above to be granted an unlimited second assistant engineer motor license.**

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|---|---|--|----------------------|
| ASSESSMENT GUIDELINE NO. 1-18 | License Type - License Group- License Action - License Condition - | SECOND ASSISTANT ENGINEER FROM CHIEF ENGINEER LIMITED - OCEANS UNLIMITED RAISE IN GRADE MOTOR | EXAM CODE 52AA |
| NO. OF MODULES: one (1) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 521--, Motor Plants II | Marine Diesel engineering | See assessment guideline 1-22 | |

Remarks:

1. **After July 31, 1998 each candidate for an increase in grade from limited chief engineer - oceans to unlimited second assistant engineer motor license may upgrade by:**
 - a. providing documentary evidence of the required sea service as engineer officer in charge of a watch as provided in 46 CFR 10.514 and
 - b. providing documentary evidence of having successfully completed an approved performance-based course of training from an approved training program or course completion certificates for the required approved performance-based courses listed in Assessment Guideline 1-22.
 - c. An applicant for unlimited second assistant engineer having satisfied the criteria of 'a' and 'b' above, may be granted an unlimited second assistant engineer license without further testing or assessment.
2. **After January 31, 2002 each applicant must meet the requirements of #1 above to be granted an unlimited second assistant engineer motor license when upgrading from limited chief engineer - oceans.**

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|---|--|---|--------------------------|
| ASSESSMENT GUIDELINE NO. 1-19 | License Type - License Group - License Action - License Condition | SECOND ASSISTANT ENGINEER UNLIMITED INCREASING SCOPE STEAM AND MOTOR | EXAM CODE 52AI & 52BI |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| From Motor Exam Code 52AI | | | |
| 526-- Steam Plants | Steam Engineering ³ | See assessment guideline 1-24 | |
| 527-- Steam Plants Part II | Steam Engineering ³ | See assessment guideline 1-24 | |
| From Steam Exam Code 52BI | | | |
| 521-- Motor Plants | Marine Diesel engineering ³ | See assessment guideline 1-24 | |
| 522-- Motor Plants Part II | Marine Diesel engineering ³ | See assessment guideline 1-24 | |

Remarks:

1. This assessment guideline is for applicants who wish to increase the scope of their existing steam or motor license by obtaining a motor or steam endorsement respectively. Each applicant is required to be examined with two modules for the propulsion mode they are applying, as listed above.
2. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
3. Completion of an approved, performance-based steam engineering course meets the requirements of modules 526-- and 527--. Completion of an approved, performance-based marine diesel engineering course meets the requirements of modules 521-- and 522--.
4. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
5. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license may not be used for any other license, endorsement or recency of sea service.
6. Each applicant for an increase in scope to unlimited second assistant engineer steam and motor must meet the requirements of 46 CFR 10.502.
7. **After January 31, 2002, a written Coast Guard examination for an increase in scope of an unlimited second assistant engineer license will no longer be administered as the sole method for obtaining a license.**

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| ASSESSMENT GUIDELINE NO. 1-20 | License Type - License Group- License Action - License Condition - | SECOND ASSISTANT ENGINEER STEAM & THIRD ASSISTANT ENGINEER MOTOR UNLIMITED ORIGINAL STEAM AND MOTOR | EXAM CODE 52BO |
| NO. OF MODULES: Seven (7) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 523--, General Subjects | | See assessment guideline 1-24 | |
| 524--, Electricity | | See assessment guideline 1-24 | |
| 525--, Engineering Safety | | See assessment guideline 1-24 | |
| 526--, Steam Plants, Part I | | See assessment guideline 1-24 | |
| 527--, Steam Plants, Part II | | See assessment guideline 1-24 | |
| 531--, 3 rd A/E Motor Plants, Part I | | See assessment guideline 1-24 | |
| 532--, 3 rd A/E Motor Plants, Part II | | See assessment guideline 1-24 | |

Remarks:

1. **After July 31, 1998 a written Coast Guard examination for an original unlimited second assistant engineer steam/ third assistant engineer motor license will no longer be administered.**
2. Each applicant must meet the requirements of assessment guideline 1-17 to be granted an unlimited second assistant engineer steam third assistant engineer motor license.

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|---|---|--|----------------------|
| ASSESSMENT GUIDELINE NO. 1-21 | License Type - License Group- License Action - License Condition - | SECOND ASSISTANT ENGINEER MOTOR & THIRD ASSISTANT ENGINEER STEAM UNLIMITED ORIGINAL STEAM AND MOTOR | EXAM CODE 52CO |
| NO. OF MODULES: Seven (7) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 521--, Motor Plants, Part I | | See assessment guideline 1-24 | |
| 522--, Motor Plants, Part II | | See assessment guideline 1-24 | |
| 525--, Engineering Safety | | See assessment guideline 1-24 | |
| 523--, General Subjects | | See assessment guideline 1-24 | |
| 524--, Electricity | | See assessment guideline 1-24 | |
| 537--, 3rd A/E Steam Plants, Part I | | See assessment guideline 1-24 | |
| 538--, 3rd A/E Steam Plants, Part II | | See assessment guideline 1-24 | |

Remarks:

1. **After July 31, 1998 a written Coast Guard examination for an original unlimited second assistant engineer steam/ third assistant engineer motor license will no longer be administered.**
2. Each applicant must meet the requirements of assessment guideline 1-17 to be granted an unlimited second assistant engineer steam third assistant engineer motor license.

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|---|---|---|
| ASSESSMENT GUIDELINE NO. 1-22 | License Type - THIRD ASSISTANT ENGINEER License Group- UNLIMITED License Action - ORIGINAL License Condition - MOTOR | EXAM CODE 53CO |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER ^{4E} | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 531--, Motor Plants, Part I | Marine Diesel engineering | Appendix IV |
| 532--, Motor Plants, Part II | Marine Diesel engineering | Appendix IV |
| 533--, Engineering Safety | Engineering Safety and Environmental Protection | Appendix V |
| 535--, General Subjects | Auxiliary Machinery | Appendix I |
| 536--, Electricity | Electricity and Electronics | Appendix II |

Remarks:

1. A Coast Guard approved, performance-based course may be accepted for the examination subject matter (identified by the letters "C" or "D") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an unlimited third assistant engineer motor license may be granted a license by:**
 - a. providing documentary evidence of the required sea service as provided in 46 CFR 10.516 and
 - b. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Table A-III/1. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above.
 - c. An applicant for unlimited third assistant engineer satisfying the criteria of 'a' and 'b' above, must satisfactorily complete modules listed above to be granted an unlimited third assistant engineer license.
 - d. An applicant maintaining an 80% or grade equivalent average in the professional courses of an approved training program need only complete module 535--, General Subjects module to be granted a third assistant engineer license
5. **After January 31, 2002 each candidate must meet the requirements of #4 above to be granted a third assistant engineer motor license.**

| | | |
|--|---|---|
| ASSESSMENT GUIDELINE NO. 1-23 | License Type - THIRD ASSISTANT ENGINEER License Group- UNLIMITED License Action - ORIGINAL License Condition - STEAM | EXAM CODE 53BO |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: ^{4e} | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 533--, Engineering Safety | Engineering Safety and Environmental Protection | Appendix V |
| 535--, General Subjects | Auxiliary Machinery | Appendix I |
| 536--, Electricity | Electricity and Electronics | Appendix II |
| 537--, Steam Plants, Part I | Steam Engineering | Appendix III |
| 538--, Steam Plants, Part II | Steam Engineering | Appendix III |

Remarks:

1. A Coast Guard approved course may be accepted for the examination subject matter (identified by the letters "C" or "D") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
3. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for an unlimited third assistant engineer steam license may be granted a license by:**
 - a. providing documentary evidence of the required sea service as provided in 46 CFR 10.516 and
 - b. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Table A-III/1. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above.
 - c. An applicant for unlimited third assistant engineer satisfying the criteria of 'a' and 'b' above, must satisfactorily complete modules listed above to be granted an unlimited third assistant engineer license.
 - d. An applicant maintaining an 80% or grade equivalent average in the professional courses of an approved training program need only complete module 535--, General Subjects module to be granted a third assistant engineer license
5. **After January 31, 2002 each candidate must meet the requirements of #4 above to be granted a third assistant engineer steam license.**

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| ASSESSMENT GUIDELINE NO. 1-24 | License Type - THIRD ASSISTANT ENGINEER License Group- UNLIMITED License Action - ORIGINAL License Condition - STEAM AND MOTOR | EXAM CODE 53AO |
| NO. OF MODULES: Seven (7) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 531--, Motor Plants, Part I | Marine Diesel engineering ⁵ | Appendix IV |
| 532--, Motor Plants, Part II | Marine Diesel engineering ⁵ | Appendix IV |
| 533--, Engineering Safety ¹ | Engineering Safety and Environmental Protection | Appendix V |
| 535--, General Subjects | Auxiliary Equipment | Appendix I |
| 536--, Electricity | Electricity /Electronics | Appendix II |
| 537--, Steam Plants, Part I | Steam Engineering ⁵ | Appendix III |
| 538--, Steam Plants, Part II | Steam Engineering ⁵ | Appendix III |

Remarks:

1. Each applicant qualified to examine simultaneously for **third mate** and **unlimited third assistant engineer** is not required to complete this module but must successfully complete the **133--**, **third mate deck safety** module to receive a **third assistant engineer** license.
2. A Coast Guard approved course may be accepted for the examination subject matter (identified by the letters "C" or "D") under the appropriate license level and propulsion mode in the indicated appendix.
3. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for license upgrade or increase in scope. A copy of the certificate shall be retained with the application.
4. The course completion certificate, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
5. **After July 31, 1998 each candidate for an unlimited third assistant engineer steam and motor license may be granted a license by:**
 - a. providing documentary evidence of the required sea service as provided in 46 CFR 10.516 and
 - b. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Table A-III/1. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above.
 - c. An applicant for unlimited third assistant engineer satisfying the criteria of 'a' and 'b' above, must satisfactorily complete modules listed above to be granted an unlimited third assistant engineer license.
 - d. An applicant maintaining an 80% or grade equivalent average in the professional courses of an approved training program need only complete module 535--, General Subjects module to be granted a third assistant engineer license.
6. **After January 31, 2002 each candidate must meet the requirements of #5 above to be granted an unlimited third assistant engineer steam and motor license..**

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|---|--|--|--------------------------|
| ASSESSMENT GUIDELINE NO. 1-25 | License Type - License Group - License Action - License Condition | THIRD ASSISTANT ENGINEER UNLIMITED INCREASING SCOPE STEAM AND MOTOR | EXAM CODE 53AI & 53BI |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| From Motor Exam Code 53AI | | | |
| 537-- Steam Plants | Steam Engineering ³ | Appendix III | |
| 538-- Steam Plants Part II | Steam Engineering ³ | Appendix III | |
| From Steam Exam Code 53BI | | | |
| 531-- Motor Plants | Marine Diesel engineering ⁴ | Appendix IV | |
| 532-- Motor Plants Part II | Marine Diesel engineering ⁴ | Appendix IV | |

Remarks:

1. This assessment guideline is for applicants who wish to increase the scope of their existing steam or motor license by obtaining a motor or steam endorsement respectively. Each applicant is required to be examined with two modules for the propulsion mode they are applying as listed above.
2. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letters “C” or “D”) under the appropriate license level and propulsion mode in the indicated appendix.
3. Completion of an approved, performance-based steam engineering course will meet the requirements both 537-- and 538-- modules. Completion of an approved, performance-based marine diesel engineering course will meet the requirements both 531-- and 532-- modules.
4. A certificate of course completion must be presented when application is made. A copy of the certificate shall be retained with the application.
5. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and is not to be used for any other license , endorsement or recency of sea service.
6. **After July 31, 1998 each candidate for an increase on scope of an unlimited third assistant engineer license may increase the scope of their current license by:**
 - a. providing documentary evidence of the required sea service as provided in 46 CFR 10.502 and
 - b. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Table A-III/1. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above.
 - c. An applicant for unlimited third assistant engineer satisfying the criteria of ‘a’ and ‘b’ above, must satisfactorily complete modules listed above to be granted an unlimited third assistant engineer’s license.
7. **After January 31, 2002 each candidate must meet the requirements of #6 above for an increase in scope of a third assistant engineer license.**

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|---|---|---|
| ASSESSMENT GUIDELINE NO. 1-26 | License Type - ENGINEERING (RENEWAL) License Group- UNLIMITED License Action - RENEWAL License Condition - MOTOR | EXAM CODE 55AB |
| NO. OF MODULES: One (1) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 551--, Unlimited Engineering Renewal Exercise, Motor | Comprehensive Renewal Motor | Appendices I, II, III, and V |

| | | |
|---|---|---|
| ASSESSMENT GUIDELINE NO. 1-27 | License Type - ENGINEERING (RENEWAL) License Group- UNLIMITED License Action - RENEWAL License Condition - STEAM | EXAM CODE 55AC |
| NO. OF MODULES: One (1) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 552--, Unlimited Engineering Renewal Exercise, Steam | Comprehensive Renewal Steam | Appendices I, II, IV and V |

Grading Policy: The minimum passing score is 90%.

Remarks:

1. The renewal exercise is open book.
2. Each applicant should be given one attempt to correct missed questions. If unsuccessful at obtaining a passing score after reviewing the missed questions, the applicant should be given a different version of the exercise and the process repeated.
3. A certificate of course completion, used in lieu of an examination module, must be presented when application is made and a copy of the certificate retained with the application.
4. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
5. **After January 31, 2002 an applicant who does not meet the minimum sea service requirements must complete an approved, performance-based course to renew their unlimited engineer license. A candidate may renew their license for continuity purposes only if a renewal course is not completed.**

| | | |
|---|---|---|
| ASSESSMENT GUIDELINE NO. 1-28 | License Type - ENGINEERING (RENEWAL) License Group- UNLIMITED License Action - RENEWAL License Condition - STEAM AND MOTOR | EXAM CODE 55AA |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 551--, Unlimited Engineering Renewal Exercise, Motor | Comprehensive Renewal | Appendices I, II, III, IV and V |
| 552--, Unlimited Engineering Renewal Exercise, Steam | Comprehensive Renewal | Appendices I, II, IV and V |

Grading Policy: The minimum passing score is 90%.

Remarks:

1. The renewal exercise is open book.
2. Each applicant should be given one attempt to correct missed questions. If unsuccessful at obtaining a passing score after reviewing the missed questions, the applicant should be given a different version of the exercise and the process repeated.
3. A certificate of course completion, used in lieu of an examination module, must be presented when application is made. A copy of the certificate shall be retained with the application.
4. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and is not to be used for any other license, endorsement or recency of sea service.
5. **After January 31, 2002 an applicant who does not meet minimum sea service requirements must complete an approved, performance-based course to renew their unlimited engineer license. A candidate may renew their license for continuity purposes only if a renewal course is not completed.**

SECTION TWO

LIMITED

ENGINEERING LICENSES

ASSESSMENT GUIDELINES

CHIEF ENGINEER - LIMITED

ASSISTANT ENGINEER - LIMITED

DESIGNATED DUTY ENGINEER - UNLIMITED

DESIGNATED DUTY ENGINEER - LIMITED

CHIEF ENGINEER, UNINSPECTED FISHING INDUSTRY VESSEL

ASSISTANT ENGINEER, UNINSPECTED FISHING INDUSTRY VESSEL

CHIEF ENGINEER, OFFSHORE SUPPLY VESSEL

ENGINEER, OFFSHORE SUPPLY VESSEL

INTRODUCTION
FOR THE ADMINISTRATION OF
LIMITED HORSEPOWER/TONNAGE ENGINEERING EXAMINATIONS

1. OVERVIEW

Only the motor propulsion mode for limited license examinations will be made available to the REC's. The **steam propulsion** mode for limited power/tonnage engineering licenses is not considered viable due to the small number of these vessels. An engineer desiring to have their license endorsed for steam plants of limited power/limited tonnage must first hold a comparable motor license and attend a training course established for the operation of a limited horsepower steam plant to obtain this endorsement. Where a specific need is determined for the operation of limited horsepower steam vessels, the owner/operator of these vessels is responsible for verifying the engineers' competency in the operation of these plants

2. TIME OF EXAMINATION AND GRADING POLICY

There is no maximum time limit on any module except as necessary to accommodate the working hours of the examination room. Applicants starting to test in the morning, at the opening of the exam room, must complete a minimum of two modules that day when two or more modules in an exam series are to be administered. If time permits, they may complete more than two modules. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant for a limited license must complete the entire exam on consecutive business days. Modules should be administered in the published order. A minimum score of 70% is required to pass each module, except the renewal module which requires 90% to pass. All modules are graded separately.

3. EXAMINATION CYCLES

Subject to the requirements of paragraph 1, the examination cycle may begin on any workday, and at anytime during the day as designated by the SIP.

4. REFERENCE MATERIAL

Applicants are permitted to use the Merchant Marine Engineering Examination Illustration Book, 46 CFR Parts 1-199 and 33 CFR Parts 1-199 provided in the examination room. No other reference materials are permitted except for the open book renewal exercise. Nonprogrammable calculators are permitted.

5. RENEWAL EXERCISE

The renewal exercises for **limited chief** and **assistant engineer, uninspected fishing industry vessel chief engineer** and **assistant engineer**, and **DDE unlimited** and **DDE limited** have been consolidated into one exercise. **After January 31, 2002 a written Coast Guard examination for the renewal of limited licenses will no longer be administered**, each applicant will have to successfully complete an approved, performance-based course to renew their limited license as outlined in Assessment Guideline 2-10.

6. QUESTIONS

Any questions should be referred to the National Maritime Center, Examination Administration Branch, Engineering Section, 703/235-0018.

ASSESSMENT GUIDELINE TABLE OF CONTENTS

FOR

LIMITED ENGINEERS

HORSEPOWER/TONNAGE

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| Limited Chief Engineer, Oceans | 2-1 |
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QUICK REFERENCE - LIMITED ENGINEER HORSEPOWER/TONNAGE LICENSES

CHIEF ENGINEER - LIMITED

| <u>SUBJECT</u> | MODULE CODE | Oceans | Near Coastal |
|----------------------------|--------------------|---------------|---------------------|
| General Subjects | 601-- | X | X |
| Motor Plants | 602-- | X☒ | X☒ |
| Engineering Safety | 603-- | X☒ | X☒ |
| Electricity - Oceans | 605-- | | X |
| Electricity – Near Coastal | 606-- | X☒ | |

ASSISTANT ENGINEER - LIMITED/DESIGNATED DUTY ENGINEER - UNLIMITED

| <u>SUBJECT</u> | MODULE CODE | Required modules |
|-----------------------|--------------------|-------------------------|
| General Subjects | 681-- | X |
| Motor Plants | 682-- | X☒ |
| Engineering Safety | 683-- | X☒ |

UNINSPECTED FISHING INDUSTRY VESSEL - CHIEF /ASSISTANT ENGINEER

| <u>SUBJECT</u> | MODULE CODE | Chief | Assistant |
|-----------------------|--------------------|--------------|------------------|
| General Subjects | 651-- | X | |
| Motor Plants | 652-- | X☒ | |
| Engineering Safety | 653-- | X☒ | |
| General Subjects | 661-- | | X☆ |
| Motor Plants | 662 | | X☒☆ |
| Engineering Safety | 663 | | X☒☆ |

CHIEF AND ENGINEER OFFSHORE SUPPLY VESSELS

| <u>SUBJECT</u> | MODULE CODE | Chief | Engineer |
|-----------------------|--------------------|--------------|-----------------|
|-----------------------|--------------------|--------------|-----------------|

Must meet the training requirements of STCW Table A-III/2 as outlined in Assessment Guidelines 2-8 and 2-9.

DESIGNATED DUTY ENGINEER - LIMITED HORSEPOWER

| <u>SUBJECT</u> | MODULE CODE | Required Modules |
|-----------------------|--------------------|-------------------------|
| General Subjects | 691-- | X |
| Motor Plants | 692-- | X☒ |
| Engineering Safety | 693-- | X☒ |

Remarks:

X Indicates a module that is part of the core exam.

☒ A Coast Guard approved course may substitute for these modules.

☆ Indicates a new module that replaces the 50 question portion of a 50/70 exams.

| | | |
|--|---|---|
| ASSESSMENT GUIDELINE NO. 2-1 | License Type - CHIEF ENGINEER License Group - LIMITED - OCEANS License Action - RAISE IN GRADE | EXAM CODE 60AR |
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 601--, General Subjects | Auxiliary Equipment | Appendix I |
| 602--, Motor Plants | Marine Diesel Engineering | Appendix IV |
| 603--, Engineering Safety | Leadership and Management | Appendix VI |
| 605--, Electricity | Electrical Troubleshooting and Electronics | Appendix II |

Remarks:

1. A Coast Guard approved, performance-based approved course may be accepted for the subject matter (identified by the letter "C") under the appropriate license level in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when each candidate applies for this license. A copy of the certificate shall be retained with the application.
3. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license may not be used for any other license, endorsement or recency of sea service.
4. **After July 31, 1998 each candidate for a limited chief engineer (oceans) license may upgrade by:**
 - a. having a valid engineers license and
 - b. providing documentary evidence of meeting the sea service requirements of 46 CFR 10.518 and
 - c. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics and leadership/management principles and
 - d. completing the training requirements for limited assistant engineer before applying for a limited chief engineer (oceans) license.
 - e. An applicant for limited chief engineer (oceans) satisfying the criteria of 'a' through 'd' above, may be granted this license without further examination.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an limited chief engineer (oceans) license.**
6. If candidate is evaluated as being qualified for steam propulsion at the limited level, they are to be examined by steam propulsion modules 526XX Steam I and 527XX Steam II.

Note: When the courses in the subject areas were used to obtain an limited chief engineer (near coastal) license, the training requirements are satisfied.

| ASSESSMENT GUIDELINE NO. 2-2 | License Type - CHIEF ENGINEER License Group - LIMITED - NEAR COASTAL License Action - RAISE IN GRADE | EXAM CODE 60CR |
|--|---|---|
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 601--, General Subjects | Auxiliary Equipment | Appendix I |
| 602--, Motor Plants | Marine Diesel Engineering | Appendix IV |
| 603--, Engineering Safety | Leadership and Management | Appendix VI |
| 606--, Electricity | Electrical Troubleshooting | Appendix II |

Remarks:

1. A Coast Guard performance-based approved course may be accepted for the subject matter (identified by the letter "C") under the appropriate license level in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made. A copy of the certificate shall be retained with the application.
3. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. **Each candidate for a limited chief engineer (near coastal) license may upgrade by:**
 - a. having a valid engineers license and
 - b. providing documentary evidence of the required sea service as provided in 46 CFR 10.520 and
 - c. providing documentary evidence of having successfully completed an approved, performance-based course in leadership/management principles and
 - d. completing the training requirements for limited assistant engineer before the candidate applies for an limited chief engineer (near coastal) license.
 - e. An applicant for limited chief engineer (near coastal) having satisfied the criteria of 'a' through 'd' above, may be granted this license without further examination.
5. **After January 31, 2002 each applicant must meet the requirements of #4 above to be granted an limited chief engineer (near coastal) license.**

| ASSESSMENT GUIDELINE NO. 2-3 | License Type - ASSISTANT ENGINEER License Group - LIMITED - OCEANS License Action - ORIGINAL | EXAM CODE 68CR |
|---|---|---|
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 681--, General Subjects | Auxiliary Equipment | Appendix I |
| 682--, Motor Plants | Marine Diesel Engineering | Appendix IV |
| 683--, Engineering Safety | Engineering Safety and Environmental Protection | Appendix VI |
| | Industry Specific Training | Appendix I ^{5,6} |

Remarks:

1. An applicant with a valid designated duty engineer, (unlimited) license is not required to examine for crossover when sea service has been evaluated as appropriate.
2. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
3. The certificate of course completion, used in lieu of an examination module, must be presented when application is made for raise in grade. A copy of the certificate shall be retained with the application.
4. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
5. An approved, performance-based course for "industry specific training" is to cover operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted
6. **After July 31, 1998 each candidate for a limited assistant engineer license may be granted a license by:**
 - a. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Tables A-III/1 and 2. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above including an industry specific training course covering operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
 - b. An applicant for assistant engineer having satisfied the criteria of 'a' above, may be granted this license without further examination.
7. **After January 31, 2002, each applicant must meet the requirements of #6 above to be granted a limited assistant engineer license.**

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| ASSESSMENT GUIDELINE NO. 2-4 | License Type - DESIGNATED DUTY ENGINEER License Group - UNLIMITED License Action - ORIGINAL | EXAM CODE 68CY |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 681--, General Subjects | Auxiliary Equipment | Appendix I |
| 682--, Motor Plants | Marine Diesel Engineering | Appendix IV |
| 683--, Engineering Safety | Engineering Safety and Environmental Protection | Appendix VI |
| | Industry Specific Training | Appendix I ⁵ |

Remarks:

1. Each applicant with a valid limited assistant engineer license is not required to examine for crossover when sea service has been evaluated as appropriate.
2. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letter "C") under the appropriate license level in the indicated appendix.
3. The certificate of course completion, used in lieu of an examination module, must be presented when application is made for raise in grade. A copy of the certificate shall be retained with the application.
4. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
5. An approved, performance-based course for "industry specific training" is to cover operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
6. **After July 31, 1998 each candidate for a designated duty engineer (unlimited) license and an STCW '95 certificate may be granted each by:**
 - a. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Tables A-III/1 and 2. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above including an industry specific training course covering operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
 - b. Each applicant for designated duty engineer (unlimited) having satisfied the criteria of 'a' above, may be granted this license without further examination.
7. **After January 31, 2002 each applicant for a designated duty engineer (unlimited) license and an STCW '95 certificate must meet the requirements of #6 above.**

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| ASSESSMENT GUIDELINE NO. 2-5 | License Type - DESIGNATED DUTY ENGINEER License Group - LIMITED License Action - ORIGINAL | EXAM CODE 69CR |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 691--, General Subjects | Auxiliary Equipment | Appendix I |
| 692--, Motor Plants | Marine Diesel engineering | Appendix IV |
| 693--, Engineering Safety | Engineering Safety and | Appendix VI |
| | Industry Specific Training | Appendix I ⁴ |

Remarks:

1. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letter “C”) under the appropriate license level in the indicated appendix.
2. The certificate of course completion, used in lieu of an examination module, must be presented when application is made for raise in grade. A copy of the certificate shall be retained with the application.
3. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. A Coast Guard approved, performance-based course for “industry specific training” is to cover operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry.
5. **After July 31, 1998 each candidate for a designated duty engineer (unlimited) license and an STCW '95 certificate may be granted each by:**
 - a. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Tables A-III/1 and 2. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above including an industry specific training course covering operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
 - b. Each applicant for designated duty engineer (limited) having satisfied the criteria of ‘a’ above, may be granted this license without further examination.
6. **After January 31, 2002 each applicant for a designated duty engineer (unlimited) license and an STCW '95 certificate must meet the requirements of #6 above.**

7.

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|---|--|---|-------------------|
| ASSESSMENT GUIDELINE NO. 2-6 | License Type - License Group - License Action - License Condition - | CHIEF ENGINEER LIMITED RAISE IN GRADE UNINSPECTED FISHING INDUSTRY VESSELS | EXAM CODE 65CF |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 651--, General Subjects | Auxiliary Equipment | Appendix I | |
| 652--, Motor Plants | Marine Diesel Engineering | Appendix IV | |
| 653--, Engineering Safety | Leadership and Management | Appendix VI | |
| | Industry Specific Training | Appendix I ⁴ | |

Remarks:

1. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letter “C”) under the appropriate license level in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for a raise in grade. A copy of the certificate shall be retained with the application.
3. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
4. A Coast Guard approved, performance-based course for “industry specific training” is to cover operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry.
5. **Each candidate for an limited chief engineer UFIV license may upgrade by:**
 - a. having a valid engineers license and
 - b. providing documentary evidence of the required sea service as provided in 46 CFR 10.530 and
 - c. providing documentary evidence of having successfully completed an approved, performance-based course in the subject areas of electrical troubleshooting/electronics, leadership/management principles and industry specific training and
 - d. completing the training requirements for limited assistant engineer UFIV prior to the candidate applying for an limited chief engineer UFIV license.
 - e. An applicant for limited chief engineer UFIV having satisfied the criteria of ‘a’ through ‘d’ above, may be granted this license without further examination.
6. **After January 31, 2002 each applicant must meet the requirements of #5 above to be granted a limited chief engineer UFIV license.**

Note: When the completion of (an) approved course(s) covering the subject matter as indicated above including an industry specific course were used to obtain an limited assistant engineer UFIV license, the training requirements of this Assessment Guideline are considered to have been satisfied.

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|---|--|---|-------------------|
| ASSESSMENT GUIDELINE No. 2-7 | License Type - License Group - License Action - License Condition - | ASSISTANT ENGINEER LIMITED ORIGINAL UNINSPECTED FISHING INDUSTRY VESSELS | EXAM CODE 66CF |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 661--, General Subjects | Auxiliary Equipment | Appendix I | |
| 662--, Motor Plants | Marine Diesel Engineering | Appendix IV | |
| 663--, Engineering Safety | Engineering Safety and Environmental Protection | Appendix VI | |
| | Industry Specific Training | Appendix I ⁵ | |

Remarks:

1. A Coast Guard approved, performance-based course, used in lieu of an examination module, may be accepted for the subject matter (identified by the letter "C") under the appropriate license level and propulsion mode in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made for an original license. A copy of the certificate shall be retained with the application.
3. The completed course may only be recognized for obtaining this license and may not be used
4. for any other license, endorsement or recency of sea service.
5. An approved, performance-based course for "industry specific training" is to cover the subject areas of operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
6. **After July 31, 1998 each candidate for a limited assistant engineer UFIV license may be granted a license by:**
 - a. successfully completing (an) approved, performance-based course(s). Approved, performance-based courses are to cover the engineering subject areas listed above, including an industry specific training course covering operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
 - b. An applicant for limited assistant engineer UFIV having satisfied the criteria of 'a' above, may be granted this license without further examination.
7. **After January 31, 2002, each applicant must meet the requirements of #5 above to be granted a limited assistant engineer UFIV license.**

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| ASSESSMENT GUIDELINE No. 2-8 | License Type - License Group - License Action - License Condition - | CHIEF ENGINEER LIMITED RAISE IN GRADE OFFSHORE SUPPLY VESSELS (OSV) | EXAM CODE 68CF |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 701--, GENERAL SUBJECTS | Auxiliary Equipment | Appendix I | |
| 702--, MOTOR PLANTS | Marine Diesel engineering | Appendix IV | |
| 703--, SAFETY | Engineering Safety and Environmental Protection | Appendix VI | |
| 704--, ELECTRICITY | Electricity | Appendix II | |
| 706--, SURVIVAL CRAFT | Proficiency in Survival Craft ⁴ | | |
| | Industry Specific Training | Appendix I ¹ | |

Remarks:

1. A Coast Guard approved, performance-based course for “industry specific training” is to cover operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry.
2. **Each candidate for a limited chief engineer OSV license must upgrade by:**
 - a. providing documentary evidence of meeting the requirements of 46 CFR 10.553 and
 - b. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Table A-III/2. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above including an industry specific training course covering operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
 - c. An applicant for chief engineer OSV having satisfied the criteria of ‘a’ and ‘b’ above, may be granted this license without further examination.
3. The OCMI may exempt an applicant from meeting any requirement of “2b” above, as set forth in STCW Table A-III/2, that the OCMI determines to be inappropriate or unnecessary for service on an OSV, or that the applicant meets under the equivalency provisions of Article IX of STCW.
4. Each candidate for a chief engineer OSV license must complete module 706XX if they have not previously completed this module or completed an approved course of training on personal survival craft.

Note: When the completion of the approved program of performance-based training was used to obtain an engineer OSV license, the training requirements of this Assessment Guideline are considered to have been satisfied.

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| ASSESSMENT GUIDELINE No. 2-9 | License Type - License Group - License Action - License Condition - | ENGINEER LIMITED ORIGINAL OFFSHORE SUPPLY VESSELS (OSV) | EXAM CODE 68EF |
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 711--, GENERAL SUBJECTS | Auxiliary Equipment | Appendix I | |
| 712--, MOTOR PLANTS | Marine Diesel engineering | Appendix IV | |
| 713--, SAFETY | Engineering Safety and Environmental Protection | Appendix VI | |
| 706--, SURVIVAL CRAFT | Proficiency in Survival Craft ⁴ | | |
| | Industry Specific Training | Appendix I ¹ | |

Remarks:

1. A Coast Guard approved, performance-based course for “industry specific training” is to cover operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry.
2. **Each candidate for an engineer OSV license must:**
 - a. provide documentary evidence of the meeting the requirements of 46 CFR 10.555 and
 - b. providing documentary evidence of completing an approved program of performance-based training as set forth in STCW Table A-III/1. This training program is to be at least 30 months duration, include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above including an industry specific training course covering operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
 - c. An applicant for engineer OSV having satisfied the criteria of ‘a’ and ‘b’ above, may be granted this license without further examination.
3. The OCMI may exempt an applicant from meeting any requirement of “2b” above, as set forth in STCW Table A-III/2, that the OCMI determines to be inappropriate or unnecessary for service on an OSV, or that the applicant meets under the equivalency provisions of Article IX of STCW.
4. Each candidate for an engineer OSV license must complete module 706XX if they have not previously completed this module or completed an approved course of training on personal survival craft.

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|-------------------------------------|---|--|-------------------|
| ASSESSMENT GUIDELINE NO. 2-10 | License Type - License Group - License Action - | ENGINEERING (RENEWAL) LIMITED RENEWAL | EXAM CODE 61AI |
| NO. OF MODULES: One (1); | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 617--, Limited Renewal Exercise. | Performance-based Renewal Course | Appendices I, II, IV, and V | |

Grading Policy: The minimum passing score is 90%.

Remarks:

1. The renewal exercise is open book.
2. A Coast Guard performance-based approved course may be accepted for the subject matter (identified by the letter "C") under the appropriate license level in the indicated appendix.
3. Applicants should be given one attempt to correct missed questions. If unsuccessful at obtaining a passing score after reviewing the missed questions, the applicant should be given a different version of the exercise and the process repeated.
4. A certificate of completion of an approved, performance-based course, used in lieu of an examination module, must be presented when application is made. A copy of the certificate shall be retained with the application.
5. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
6. **After January 31, 2002 each candidate who does not meet minimum sea service requirements for chief engineer, limited - oceans, chief engineer, limited - near coastal, limited assistant engineer, chief engineer (OSV) and engineer (OSV) must complete an approved, performance-based course to renew their engineering license. A candidate may renew their license for continuity purposes only if a renewal course is not completed.**

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| ASSESSMENT GUIDELINE No. 2-11 | License Type - License Group- License Action - License Condition - | CHIEF ENGINEER LIMITED-DOMESTIC, NEAR COASTAL ORIGINAL OFFSHORE SUPPLY VESSELS (OSV) | EXAM CODE 68CF |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING | |
| 701--, GENERAL SUBJECTS | Auxiliary Equipment | Appendix I | |
| 702--, MOTOR PLANTS | Marine Diesel engineering | Appendix IV | |
| 703--, SAFETY | Engineering Safety and Environmental Protection | Appendix VI | |
| 704--, ELECTRICITY | Electricity | Appendix II | |
| 706--, SURVIVAL CRAFT | Proficiency in Survival Craft ⁴ | | |
| | Industry Specific Training | Appendix I ¹ | |

Remarks:

1. A Coast Guard approved, performance-based course for “industry specific training” is to cover operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry.
2. **Each candidate for an original limited, chief engineer OSV near coastal, domestic license must upgrade by:**
 - a. provide documentary evidence of meeting the requirements of 46 CFR 10.553 and
 - b. provide documentary evidence of completing an approved program of performance-based training as set forth in STCW Table A-III/2. This training program is to include the completion of a Training Record Book, and be supplemented by the subject areas identified in the appendices listed above including an industry specific training course covering operation, function, maintenance and troubleshooting for equipment and systems unique to that segment of the maritime industry for the license to be granted.
3. The OCMI may exempt an applicant from meeting any requirement of “2b” above, as set forth in STCW Table A-III/2, that the OCMI determines to be inappropriate or unnecessary for service on an OSV, or that the applicant meets under the equivalency provisions of Article IX of STCW.
4. Each candidate for a chief engineer OSV license must complete module 706XX if they have not previously completed this module or completed an approved course of training on personal survival craft.

SECTION THREE

MOBILE OFFSHORE DRILLING UNIT

ENGINEERING LICENSE

ASSESSMENT GUIDELINES

CHIEF ENGINEER (MODU)

ASSISTANT ENGINEER (MODU)

INTRODUCTION

MODU EXAMINATIONS

1. TIME OF EXAMINATION AND GRADING POLICY

There is no maximum time limit on any module except as necessary to accommodate the working hours of the examination room. Applicants starting to test in the morning, at the opening of the exam room, must complete a minimum of two modules that day and may complete more if they desire and time permits. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant for a Mobile Offshore Drilling Unit (MODU) engineer's license must complete the entire exam on consecutive business days. Modules should be administered in the published order. A minimum score of 70% is required to pass all modules, except for the renewal module. The renewal module required a minimum score of 90% to pass. All modules are graded separately.

2. EXAMINATION CYCLES

Subject to the requirements of paragraph 1, the examination cycle may begin on any business day and at anytime during the day as designated by the SIP.

3. RENEWAL EXERCISE

The renewal exercises for chief and assistant Engineers (MODU) have been consolidated into one open book exercise.

4. REFERENCE MATERIAL

Applicants are permitted to use the Merchant Marine Engineering Examination Illustration Book, 46 CFR Parts 1-199 and 33 CFR Parts 1-199 provided in the examination room. No other reference materials are permitted except for the open book renewal exercise. Nonprogrammable calculators are permitted.

5. QUESTIONS

Any questions should be referred to the National Maritime Center, Examination Administration Branch, Engineering Section, (703) 235-0016.

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| ASSESSMENT GUIDELINE NO. 3-1 | License Type - CHIEF ENGINEER - MODU License Group - RAISE IN GRADE | EXAM CODE 62ER |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 621--, General Subjects | Auxiliary Equipment | Appendix I |
| 622--, Auxiliary Machinery | MODU Engineering | Appendices I, II, and IV |
| 623--, Engineering Safety | Leadership and Management | Appendices V and VI |

- Remarks:
1. A Coast Guard performance-based approved course may be accepted for the subject matter (identified by the letter “C”) under the appropriate license level in the indicated appendix.
 2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made. A copy of the certificate shall be retained with the application.
 3. The completed course, used in lieu of an examination module, may only be used for obtaining this license and may not be used for any other license, endorsement or recency of sea service.
 4. **Each candidate for a chief engineer MODU license may upgrade by:**
 - a. providing documentary evidence of the required sea service as provided in 46 CFR 10.542 and
 - b. providing documentary evidence of having successfully completed an approved, performance-based course in the subject area of leadership/management principles and
 - c. Completing the training requirements for assistant engineer MODU prior to the candidate applying for an chief engineer MODU license.
 - d. An applicant for chief engineer MODU having satisfied the criteria of ‘a’ through ‘c’ above, may be granted the license without further examination.

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| ASSESSMENT GUIDELINE NO. 3-2 | License Type - ASSISTANT ENGINEER - MODU License Group - ORIGINAL | EXAM CODE 63FO |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 631--, General Subjects | Auxiliary Equipment | Appendix I |
| 632--, Auxiliary Machinery | MODU Engineering | Appendices I, II and IV |
| 633--, Engineering Safety | Engineering Safety and Environmental Protection | Appendix V |

Remarks:

1. A Coast Guard approved course may be accepted for the subject matter (identified by the letter "C") under the appropriate license level in the indicated appendix.
2. A certificate of course completion, used in lieu of an examination module, must be presented when application is made. A copy of the certificate shall be retained with the application.
3. The completed course, used in lieu of an examination module, may only be used for obtaining this license and may not be used for any other license , endorsement or recency of sea service.
4. **Each candidate for assistant engineer MODU may be granted a license by:**
 - a. providing documentary evidence of the required sea service as provided in 46 CFR 10.544 and
 - b. providing documentary evidence of successfully completing an approved, performance-based course in the subject areas of MODU engineering and engineering Safety and Environmental Protection.
 - c. An applicant for assistant engineer MODU having satisfied the criteria of 'a' and 'b' above, may be granted this license without further examination.

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| ASSESSMENT GUIDELINE No. 3-3 | License Type - ENGINEERING (RENEWAL) License Group - MODU - CHIEF AND ASSISTANT | EXAM CODE 63EN |
| NO. OF MODULES: One (1) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 634--, MODU Renewal Exercise | MODU Engineer renewal Course | Appendices I, II, IV, and V |

Grading Policy: The minimum passing score is 90%.

Remarks:

1. The renewal exercise is "open book."
2. MODU chief and assistant engineer use the same renewal exercise.
3. Each applicant should be given one attempt to correct missed questions. If unsuccessful at obtaining a passing score after reviewing the missed questions, the applicant should be given a different version of the test and the process repeated.
4. A MODU engineer applicant may complete the examination by mail.
5. A Coast Guard approved course may be accepted for the subject matter (identified by the letter "C") under the appropriate license level in the indicated appendix.
6. A certificate of course completion, used in lieu of an examination module, must be presented when application is made. A copy of the certificate shall be retained with the renewal application.
7. The completed course, used in lieu of an examination module, may only be recognized for obtaining this license and may not be issued for any other license, endorsement or recency of sea service.

SECTION FOUR
UNLICENSED RATINGS
ENGINEERING EXAMINATIONS
ASSESSMENT GUIDELINES

GENERAL SAFETY

JUNIOR ENGINEER

DECK ENGINEER

ELECTRICIAN

REFRIGERATING ENGINEER

MACHINIST

OILER

FIREMAN/WATERTENDER

PUMPMAN

OILER, MINERAL & OIL

QMED RENEWAL EXERCISE

INTRODUCTION

UNLICENSED RATING ENGINEERING EXAMINATIONS

1. TIME OF EXAMINATION AND GRADING POLICY

There is no maximum time limit on any module except as necessary to accommodate the working hours of the examination room. An applicant may test for as many ratings for which they are qualified, however, they must pass the General Safety module before taking any of the unlicensed rating modules. An applicant starting to test in the morning, at the opening of the exam room, must complete a minimum of two modules that day when two or more test modules are required. They may complete more than two if they desire and time permits. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant testing in three or more modules must complete all exam modules on consecutive business days once testing has started. A minimum score of 70% is required to pass each module except for the renewal exercise which requires a 90% to pass. All modules are graded separately.

2. EXAMINATION CYCLES

Subject to the requirements of paragraph 1, the examination cycle may begin on any business day, and at anytime during the day as designated by the SIP.

3. REFERENCE MATERIAL

Applicants are permitted to use the Merchant Marine Engineering Examination Illustration Book, 46 CFR Parts 1-199 and 33 CFR Parts 1-199 provided in the examination room. No other reference materials are permitted except for the open book renewal exercise. Nonprogrammable calculators are permitted.

4. QUESTIONS

Any questions should be referred to the National Maritime Center, Examination Administration Branch, Engineering Section, 703/235-0016.

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| ASSESSMENT GUIDELINE NO. 4-1 | License Type - JUNIOR ENGINEER License Group - UNLICENSED RATINGS | EXAM CODE 81UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ² | Appendix XI |
| 81—Junior Engineer ⁴ | Junior Engineer ³ | Appendices VII, VIII, XI, and X |

| | | |
|---|--|---|
| ASSESSMENT GUIDELINE NO. 4-2 | License Type - DECK ENGINEER License Group - UNLICENSED RATINGS | EXAM CODE 82UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ² | Appendix XI |
| 82—Deck Engineer ⁴ | Junior Engineer ³ | Appendices VII, VIII, XI, and X, |

Remarks:

1. The General Safety module is to be administered first and must be successfully completed before modules for unlicensed ratings can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed ratings during this period.
2. Successful completion of an approved fireman/watertender - oiler course is considered to meet the requirements of the General Safety module.
3. Each applicant should have one year sea service as an oiler - fireman/watertender to be accepted to attend an approved junior engineer course.
4. **After January 31, 2002** each candidate for an unlicensed engineering rating must complete a program of approved, performance-based courses in the subject areas listed above to be granted this document.

| | | |
|---|--|---|
| ASSESSMENT GUIDELINE NO. 4-3 | License Type - ELECTRICIAN License Group - UNLICENSED RATINGS | EXAM CODE 83UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ³ | Appendix XI |
| 83—Electrician ⁵ | Electrician ³ | Appendices VII, VIII, IX, and X |

| | | |
|---|---|---|
| ASSESSMENT GUIDELINE NO. 4-4 | License Type - REFRIGERATING ENGINEER License Group - UNLICENSED RATINGS | EXAM CODE 84UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ³ | Appendix XI |
| 84--, Refrigerating Engineer ⁵ | Junior Engineer ⁴ | |

Remarks:

1. The General Safety module is to be administered first and must be successfully completed before modules for unlicensed ratings can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed ratings during this period.
2. Successful completion of an approved fireman/watertender - oiler course is considered to meet the requirements of the General Safety module with no time limit.
3. Each applicant should have six months sea service as a junior engineer or fireman/watertender - oiler while holding a junior engineer rating to be considered for an approved electrician course.
4. Applicants should have one year sea service as an oiler - fireman/watertender to be accepted to attend an approved junior engineer course.
5. **After January 31, 2002** each candidate for an unlicensed engineering rating must complete a program of approved, performance-based courses in the subject areas listed above to be granted his/her merchant mariner's document.

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| ASSESSMENT GUIDELINE NO. 4-5 | License Type - MACHINIST License Group- UNLICENSED RATINGS | EXAM CODE 85UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ³ | Appendix XI |
| 85--, Machinist ⁴ | | |

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| ASSESSMENT GUIDELINE NO. 4-6 | License Type - FIREMAN/WATERTENDER License Group- UNLICENSED RATINGS | EXAM CODE 86UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ³ | Appendix XI |
| 86--, Fireman Watertender ⁴ | Fireman/Watertender - Oiler | Appendices VII, VIII, IX, and X |

Remarks:

1. The General Safety module is to be administered first and must be successfully completed before modules for ratings can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed ratings during this period.
2. Successful completion of an approved fireman/watertender - oiler course meets the requirement of the General Safety module.
3. **After January 31, 2002** each candidate for an unlicensed engineering rating must complete a program of approved, performance-based courses in the subject areas listed above to be granted his/her merchant mariner's document.

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| ASSESSMENT GUIDELINE NO. 4-7 | License Type - OILER License Group - UNLICENSED RATINGS | EXAM CODE 87UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ³ | Appendix XI |
| 87--, Oiler ⁴ | Fireman/Watertender - Oiler | Appendices VII, VIII, IX, and X |

| | | |
|---|--|---|
| ASSESSMENT GUIDELINE NO. 4-8 | License Type - PUMPMAN License Group - UNLICENSED RATINGS | EXAM CODE 88UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Fireman/Watertender - Oiler ³ | Appendix XI |
| 88--, Pumpman ⁴ | Pumpman - Tankerman Assist ⁴ | Appendices VII, VIII, and XI |

Remarks:

1. The General Safety module is to be administered first and must be successfully completed before modules for unlicensed ratings can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed Ratings during this period.
2. Successful completion of an approved fireman/watertender - oiler course is considered to meet the requirement of the General Safety module.
3. Each applicant should have three months sea service as a junior engineer or fireman/watertender - oiler while holding a junior engineer rating to be accepted to attend an approved Pumpman course.
4. **After January 31, 2002** each candidate for an unlicensed engineering rating must complete a program of approved, performance-based courses in the subject areas listed above to be granted his/her merchant mariner's document.

| | | |
|---|--|---|
| ASSESSMENT GUIDELINE NO. 4-9 | License Type - OILER, MINERAL AND OIL License Group- UNLICENSED RATINGS | EXAM CODE 89UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 80--, General Safety ² | Engineman Utility or Fireman/Watertender - Oiler ³ | Appendix XI |
| 89--, Oiler Mineral and Oil ⁵ | QMED- Engineman Utility ⁴ | Appendices VII, VIII, IX, and X |

Remarks:

1. General Safety module is to be administered first and must be successfully completed before modules for ratings can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed ratings during this period.
2. Successful completion of an approved engineman utility course meets the requirement of the General Safety module.
3. The engineman utility course is to be based on the needs of industry requiring unlicensed supervision of machinery on motor propelled vessels of less than 1600 GT.
4. An individual holding a rating of engineman utility and desiring to obtain an unlimited rating of fireman/watertender - oiler must complete and approved fireman/watertender - oiler course.
5. **After January 31, 2002** each candidate for an unlicensed engineering rating must complete a program of approved, performance-based courses in the subject areas listed above to be granted his/her merchant mariner's document.

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| ASSESSMENT GUIDELINE NO. 4-10 | License Type - RENEWAL License Group - UNLICENSED RATINGS | EXAM CODE 90UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | SUBJECT AREAS FOR AN APPROVED TRAINING PROGRAM | SUBJECT MATTER COVERED BY TRAINING |
| 90--, Renewal Exercise ² | Comprehensive QMED Renewal | Appendices VII, VIII, IX, X, and XI |

Remarks:

1. The Renewal Exercise module is to be administered for those QMEDs who have not maintained recency of sea service.
2. After July 31, 1998 Each candidate for the renewal of an engineering merchant mariners document (QMED) may renew by presenting approved course completion certificates for each rating desired as described in the appropriate assessment guidelines.
3. A certificate of course completion must be presented when application is made in lieu of the renewal exercise. A copy of the certificate shall be retained with the application.
4. The completed course, used to renew a merchant mariner document, may only be recognized for obtaining this document and may not be issued for any other license, document, endorsement or recency of sea service.
5. **After January 31, 2002 an engineering merchant mariners document (QMED) may only be renewed by completion of approved course for each rating desired to be renewed as described in the appropriate assessment guidelines. A candidate may renew their document for continuity purposes only if a renewal course is not completed.**

INTRODUCTION TO APPENDICES

This publication has been developed to provide information on the period of transition by which the method of determining the competency of licensed engineers and unlicensed rated personnel serving in the engine department will change. Reference to an approved, performance-based training program in lieu of an examination module, as per the “*Assessment Guide*” sheet, should then be cross-referenced with the appropriate subject appendix and marine engineering course guideline(s) provided on the Internet

www.uscg.mil/hq/g-m/gmhome.htm

The approved course database, also provided on the Internet, can be reviewed to determine if an approved course is available.

The following appendices reflect subject areas identified in 46 CFR Table 10.950 and will continue to be used to develop the Coast Guard engineering written examinations. The included tables are only provided as guidance and, therefore, have been modified to align the competency verification process with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended in 1995 (STCW Convention) and incorporate all aspects of competency requirements covered by the STCW tables A-III/1 to A-III/4. These changes should be fully implemented by February 1, 2002. During this period of transition, examinations will continue to be administered for a specific license and will be based upon the respective subject areas identified in 46 CFR Table 10.950.

Interpretation of the appendices for competency verification shows that for each topic indicated by the letter "E", applicants for an engineering license may be subject to a Coast Guard written examination, independent of an approved course, to demonstrate knowledge. Topics indicated by the letter "C" may be presented through an approved, performance-based training program and can be used as evidence of having obtained the required skill and knowledge. Topics indicated by the letter "D" are to be assessed only by the applicant's demonstration of practical skills. Where examinations remain in effect for licensing, the candidate is responsible for any subject/topic where an “E”, “C” or “D” has been entered in the column under the license title for which they have made application. In addition to written examinations to be presented throughout an approved course, practical skills are to be assessed by an established regime of on-board practical assessment, simulator demonstration, practical assessment during the conduct of an approved course, or through a combination of all. Guidance on developing assessment criteria is provided in appendix XII of this section. Practical assessments are those skills that must be demonstrated to the satisfaction of a qualified instructor or designated examiner as outlined in NVIC 6-97.

Any questions concerning the engineering examinations or approved engineering courses should be referred to the Commanding Officer, National Maritime Center, Examination Administration Branch, Engineering Section, (703) 235-0018.

APPENDIX I General Subjects:

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|-------------------------|-----------|-----|---------|-----|---------|-----|---------|-----|--------------|------|----------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst | | UFIV Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Engineering Theory | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Thermodynamics | | | E/C | E/C | | | E/C | E/C | | | | | | | | |
| Prints and Tables | | | E/C | E/C | | | E/C | E/C | | C | | | C | C | | |
| Machine Shop Practices | | | C/D | C/D | | | C/D | C/D | | C/D | | C | C | C | | C |
| Pipes, Fittings, Valves | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Bilge Systems | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Sanitary/Sewage System | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Fresh Water Systems | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Distilling Systems | | | C/D | C/D | | | C/D | C/D | | | | | | | | |
| Cooling Systems | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Lubricants | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Lubrication Systems | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Bearings | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | | E/C |

APPENDIX I General Subjects (Continued)

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|-------------------------------|-----------|-----|---------|-----|---------|-----|---------|-----|--------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Pumps | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Compressors | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Hydraulics | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Steering Systems | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Deck Machinery | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Automation Systems | | | C/D | C/D | | | C/D | C/D | | C/D | | | C/D | | | |
| Control Systems | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Instrumentation | | | C/D | C/D | | | C/D | C/D | | C/D | | C/D | C/D | C/D | | C/D |
| Ship Construction & Repairs | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Propellers & Shafting Systems | | | C | C | | | C | C | | C | | C | C | C | | C |
| Administration | | | C | C | | | | | | | | | C | C | | |
| Watchstanding Duties | | | | | | | C/D | C/D | | C/D | | C/D | C | C | | C/D |

APPENDIX I General Subjects (Continued) - Refrigeration, Air Conditioning, Heating, and Ventilation

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|--------------------------|-----------|-----|---------|-----|---------|-----|---------|-----|--------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Theory | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | | | E/C |
| Air Conditioning Systems | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | | | E/C |
| Refrigeration Systems | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | | | E/C |
| Heating Systems | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | C | | E/C |
| Ventilation Systems | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | C | | E/C |
| System Controls | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | C | | E/C |
| Troubleshooting | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | | | E/C |
| Safety | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | C? | | E/C |

APPENDIX II Electricity

| Subjects | Unlimited | | | | | | | | Limited | | | | | | | |
|--------------------------|-----------|-----|---------|-----|---------|-----|---------|-----|--------------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst. | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief ¹ | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Theory | | | E/C | E/C | | | E/C | E/C | E/C | E/C | | E/C | E/C | E/C | E/C | E/C |
| Batteries | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | E/C | E/C |
| Generators & Alternators | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | E/C | E/C |
| Motors - AC/DC | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | E/C | E/C |
| General Maintenance | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | E/C | E/C |
| Motor Controllers | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | E/C | E/C |
| Distribution Systems | | | E/C | E/C | | | E/C | E/C | | E/C | | E/C | E/C | E/C | E/C | E/C |
| Propulsion Systems | | | E/C | E/C | | | E/C | E/C | C | E/C | C | E/C | E/C | E/C | E/C | E/C |
| Communication Systems | | | E/C | E/C | | | E/C | E/C | C | E/C | C | E/C | E/C | E/C | E/C | E/C |
| Electronic Systems | | | E/C | E/C | | | E/C | E/C | C | | | | | | E/C | |
| Safety | | | E/C | E/C | | | E/C | E/C | C | E/C | C | E/C | E/C | E/C | E/C | E/C |
| Troubleshooting | | | E/C | E/C | | | E/C | E/C | C | | C | | | | E/C | |

1. Required only for Limited Chief engineer - Oceans.

APPENDIX III Steam Plants - Steam Generation

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|--------------------|-----------|-----|---------|-----|---------|-----|---------|-----|---------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst. | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Theory | | | C | | | | | E/C | | | | | | | | |
| Main Boilers | | | C | | | | | E/C | | | | | | | | |
| Feedwater Systems | | | C | | | | | E/C | | | | | | | | |
| Condensate Systems | | | C | | | | | E/C | | | | | | | | |
| Control Systems | | | C | | | | | E/C | | | | | | | | |
| Automation Systems | | | C | | | | | E/C | | | | | | | | |
| Fuel Oil | | | C | | | | | E/C | | | | | | | | |
| Fuel Oil Systems | | | C | | | | | E/C | | | | | | | | |
| Boiler Water | | | C | | | | | E/C | | | | | | | | |
| Safety | | | C | | | | | E/C | | | | | | | | |
| Troubleshooting | | | C | | | | | E/C | | | | | | | | |

APPENDIX III Steam Plants (Continued) - Steam Engines

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|-------------------------------|-----------|-----|---------|-----|---------|-----|---------|-----|---------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst. | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Propulsion Turbines | | | C | | | | | E/C | | | | | | | | |
| Auxiliary Turbines | | | C | | | | | E/C | | | | | | | | |
| Governors | | | C | | | | | E/C | | | | | | | | |
| Control Systems | | | C | | | | | E/C | | | | | | | | |
| Control Systems | | | C | | | | | E/C | | | | | | | | |
| Automation Systems | | | C | | | | | E/C | | | | | | | | |
| Bearing & Lubrication Systems | | | C | | | | | E/C | | | | | | | | |
| Auxiliary Diesel Engines | | | C | | | | | E/C | | | | | | | | |
| Safety | | | C | | | | | E/C | | | | | | | | |
| Troubleshooting | | | C | | | | | E/C | | | | | | | | |

APPENDIX IV Motor Plants

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|---|-----------|-----|---------|-----|---------|-----|---------|-----|---------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst. | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Propulsion Engines Large Low Speed | | | | E/C | | | | E/C | | | | | | | | |
| Propulsion Engines Medium and High Speed. | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Auxiliary Engines | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Starting Systems | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Bearings | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Lubrication Systems | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Cooling Systems | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Fuel Oil | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Fuel Oil Systems | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Combustion | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Intake Systems | | | | E/C | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |

APPENDIX IV Motor Plants (Continued)

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|-------------------------------|-----------|-----|---------|-----|---------|-----|---------|-----|---------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst. | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Exhaust Systems | | | E/C | | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Turbocharging and Scavenging | | | E/C | | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Auxiliary/Waste Heat Boilers | | | E/C | | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Governors and Control Systems | | | E/C | | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Drive Systems | | | E/C | | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Regulations | | | E/C | | | | | E/C | | | | | C | C | | |
| Watch Duties- Diesel Engines | | | E/C | | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |
| Casualty Control | | | E/C | | | | | E/C | | E/C | | E/C | E/C | E/C | | E/C |

APPENDIX V Engineering Safety

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|--|-----------|-----|---------|-----|---------|-----|---------|-----|---------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst. | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Fire Theory ¹ | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Fire Prevention ¹ | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Fire Fighting ¹ | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Stability and Trim ¹ | | | C | C | | | C | C | C | C | C | | C | C | C | |
| Flooding ¹ | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Dewatering ¹ | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Damage Control ¹ | | | C | C | | | C | C | C | C | C | | C | C | C | |
| Emergency Equipment ² | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Lifesaving Appliances ² | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| General Safety | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| First Aid | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Dangerous Materials ² | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| Pollution Prevention ² | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| U.S. Rules & Regulations ² | | | C | C | | | C | C | C | C | C | C | C | C | C | C |
| International Rules & Regulations ² | | | C | C | | | C | C | C | C | C | C | C | C | C | C |

Remarks:

1. Fire and emergency team organization is to cover the subject areas listed as 1 in appendix V.
2. Vessel Inspection Program is to cover all aspects of preparation for a Coast Guard Inspection in the subject areas listed as 2 in appendix V.

APPENDIX VI Leadership and Management

| Subject | Unlimited | | | | | | | | Limited | | | | | | | |
|---|-----------|-----|---------|-----|---------|-----|---------|-----|---------------|------|---------|------|-----|-----|-------|------|
| | Chief Eng | | 1/A Eng | | 2/A Eng | | 3/A Eng | | Chief & Asst. | | F/V Eng | | DDE | | MODU | |
| | Stm | Mtr | Stm | Mtr | Stm | Mtr | Stm | Mtr | Chief | Asst | Chief | Asst | Unl | Ltd | Chief | Asst |
| Leadership Principles | | | C | C | | | | | C | | C | | | | C | |
| Management Practices | | | C | C | | | | | C | | C | | | | C | |
| Competency Assessment | | | C | C | | | | | C | | C | | | | C | |
| Vessel Inspection Program | | | C | C | | | | | C | | C | | C | C | C | |
| Planning and Scheduling Operations | | | C | C | | | | | C | | C | | | | C | |
| Organize and Manage Crew | | | C | C | | | | | C | | C | | | | C | |
| Fire Party Team Organization ¹ | | | C | C | | | | | C | | C | | | | C | |

Remarks:

1. Fire and emergency team organization is to cover the subject areas listed as 1 in appendix V.
2. Vessel Inspection Program is to cover all aspects of preparation for a Coast Guard Inspection in the subject areas listed as 2 in appendix V.

APPENDIX VII - General Subjects Unlicensed Engineering Ratings:

| Subject | Fireman/Watertender Oiler | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|--------------------------|----------------------------------|------------------------|--------------------|----------------|--------------------------|
| Engineering Theory | C | C | | | C |
| Thermodynamics | | | | | |
| Prints and Tables | | C | C | C | C |
| Machine Shop/ Hand tools | C | C | C | C | C |
| Pipes, Fittings, Valves | C | C | | C | C |
| Bilge Systems | C | | | | C |
| Sanitary/Sewage System | C | | | | C |
| Fresh Water Systems | C | | | | C |
| Distilling Systems | C | C | C | | |
| Cooling Systems | C | | | | C |
| Lubricants | C | C | C | C | C |
| Lubrication Systems | C | C | | | C |
| Bearings | C | C | C | C | C |

APPENDIX VII - General Subjects Unlicensed Engineering Ratings (Continued):

| Subject | Fireman/Watertender Oiler | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|-------------------------------|--------------------------------------|------------------------|--------------------|----------------|--------------------------|
| Pumps | C | | | C | C |
| Compressors | C | | | C | C |
| Hydraulics | | C | | C | C |
| Steering Systems | C | C | C | | C |
| Deck Machinery | | C | C | | C |
| Automation Systems | | C | C | | |
| Control Systems | | C | C | | C |
| Instrumentation - Basic | | C | C | C | C |
| Ship Construction & Repairs | | C | | | C |
| Propellers & Shafting Systems | | C | | | C |
| Administration | | C | | | |
| Watchstanding Duties | C | | | | C |

APPENDIX VII - General Subjects Unlicensed Engineering Ratings (Continued) - REFRIGERATION, AIR CONDITIONING, HEATING, AND VENTILATION:

| Subject | Fireman/Watertender Oiler¹ | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|--------------------------|--|------------------------|--------------------|----------------|--------------------------|
| Theory | | C | C | | |
| Air Conditioning Systems | C | C | C | | |
| Refrigeration Systems | C | C | C | | |
| Heating Systems | C | C | | | |
| Ventilation Systems | C | | | | |
| System Controls | | C | C | | |
| Troubleshooting | | C | C | | |
| Refrigeration Safety | C | C | C | | C |

1. Fireman/Watertender - Oiler require only basic system components and familiarization.

APPENDIX VIII - Electricity Unlicensed Engineering Ratings

| Subjects | Fireman/Watertender Oiler | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|--------------------------|--------------------------------------|------------------------|--------------------|----------------|--------------------------|
| Theory | | C | C | | |
| Batteries | | C | C | | |
| Generators & Alternators | | C | C | | |
| Motors - AC/DC | | C | C | | |
| General Maintenance | | C | C | | |
| Motor Controllers | | C | C | | |
| Distribution Systems | | C | C | | |
| Propulsion Systems | | C | C | | |
| Communication Systems | | | C | | |
| Electronic Systems | | | C | | |
| Electrical Safety | | C | C | | |
| Troubleshooting | | C | C | | |

APPENDIX IX - Steam Plants - Unlicensed Ratings Steam Generation:

| Subject | Fireman/Watertender Oiler | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|------------------------------|----------------------------------|------------------------|--------------------|----------------|--------------------------|
| Theory | | C | | | |
| Main Boilers | C | C | | | |
| Feedwater Systems | C | | | | |
| Condensate Systems | C | | | | |
| Control Systems - Boilers | C | C | | | |
| Automation Systems - Boilers | C | C | | | |
| Fuel Oil | | C | | | |
| Fuel Oil Systems | C | | | | |
| Boiler Water | C ¹ | C | | | |
| Steam Propulsion Safety | C | C | | | |
| Troubleshooting | | C | | | |

1. Basics of boiler water technology.

APPENDIX IX - Steam Plants Unlicensed Engineering Ratings(Continued) - Steam Engines

| Subject | Fireman/Watertender Oiler | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|-------------------------------|----------------------------------|------------------------|--------------------|----------------|--------------------------|
| Propulsion Turbines | C | C | | | |
| Auxiliary Turbines | C | C | | C | |
| Governors | | C | | C | |
| Control Systems | | C | | C | |
| Automation Systems | | C | | | |
| Bearing & Lubrication Systems | C | C | | C | |
| Auxiliary Diesel Engines | C | C | | | |
| Safety | C | C | | | |
| Troubleshooting | | C | | | |

APPENDIX X - Motor Plants Unlicensed Engineering Ratings

| Subject | Fireman/Watertender Oiler | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|---|----------------------------------|------------------------|--------------------|----------------|--------------------------|
| Propulsion Engines Large Low Speed | C | C | | | |
| Propulsion Engines Medium and High Speed. | C | C | | | C |
| Auxiliary Engines | C | C | | | C |
| Starting Systems | C | C | | | C |
| Bearings | | C | | | C |
| Lubrication Systems | C | C | | | C |
| Cooling Systems | C | | | | C |
| Fuel Oil | | C | | | C |
| Fuel Oil Systems | C | C | | | C |
| Combustion | | C | | | C |
| Intake Systems | | C | | | C |

APPENDIX X - Motor Plants Unlicensed Engineering Ratings (Continued)

| Subject | QMED | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|------------------------------------|-------------|------------------------|--------------------|----------------|--------------------------|
| Exhaust Systems | C | C | | | C |
| Scavenging & Supercharging Systems | C | C | | | C |
| Automation Systems | | C | C | | |
| Control Systems | | C | | | C |
| Governors | | C | | | |
| Auxiliary Boilers | C | C | | | |
| Safety | C | C | | | C |
| Troubleshooting | | C | | | C |

APPENDIX XI - Engineering Safety Unlicensed Engineering Ratings

| Subject | QMED | Junior Engineer | Electrician | Pumpman | Engineman Utility |
|-----------------------------------|-------------|------------------------|--------------------|----------------|--------------------------|
| Fire Theory | C | | C | C | C |
| Fire Prevention | C | | C | C | C |
| Fire Fighting | C | | C | C | C |
| Stability and Trim | | C | | | |
| Flooding | C | C | | | C |
| Dewatering | C | C | | | C |
| Damage Control | | C | | | C |
| Emergency Equipment | C | C | C | C | C |
| Lifesaving Appliances | C | C | C | C | C |
| General Safety | C | C | C | C | C |
| First Aid | C | C | C | C | C |
| Dangerous Materials | C | C | C | C | C |
| Pollution Prevention | C | C | C | C | C |
| U.S. Rules & Regulations | C | C | C | C | C |
| International Rules & Regulations | C | C | C | C | |

Appendix XII

Guidance on Developing Performance-Based Assessments

This guidance is in three parts. The first part provides an outline of the six steps that comprise the development of performance-based assessment processes. The second part provides definitions and examples central to the discussion of the development of performance-based assessment process. The final part outlines the issues and factors that should be taken into account for the conduct of each of the six steps.

Part one: The Performance-based assessment Process

The performance-based assessment process can be viewed as a series of six sequential steps. The first four steps involve the development of assessment procedures and the assessment package. A qualified individual must conduct the assessment and should prepare the performance improvement plan. The six steps are listed below.

- 1. Identify test objectives**
- 2. Select test objectives for performance-based assessment**
- 3. Determine performance measures and standards**
- 4. Prepare assessment package**
- 5. Conduct assessment**
- 6. Develop a performance improvement plan**

Part two: Definitions and Example

Performance-based assessment is a process by which performance is observed, measured, and compared to standards of performance in order to determine a mariner's competence or proficiency. A ***performance objective*** is performance representing an aspect of a mariner's skill or knowledge that is necessary for successful completion of a shipboard task.

A ***performance measure*** is an observable action, or indication of an action, that is recordable.

A ***performance standard*** is an established minimum level or boundary of performance based on relevant assessment criteria.

The following guidance is provided as an example of the methodology in developing assessment criteria of a specific competency with test objectives, performance measures, and performance standards, followed by the check list which is used during the assessing process. The example is for a hypothetical performance-based assessment of a task associated with “the start-up and placement of a steam turbine generator on line,” an area of knowledge, understanding and proficiency identified as a standard of competence for engineers. A candidate for certification will normally be trained and assessed in their ability during the period of required seagoing service when watchkeeping duties are being performed. In the table below, the example of the area of competence is taken from the *Competence* column of STCW Table A-III/1. However, the area of competency need not be limited to that of the STCW Convention or its amendments.

The performance objectives are derived from a consideration of the *Knowledge, Understanding and Proficiency* column of Table A-III/1. The performance measures and performance standards are derived from an analysis and elaboration of the *Criteria for Evaluating Competence* column of Table A-III/1. Again, the reader should note that the example has been cited from STCW, but has been provided for illustrative purposes only.

Example of Performance-based assessment STCW Competence, Performance Objectives, Performance Measures, and Performance Standards.

This example assumes that verification is first made, by examination, or by use of a workbook, that the candidate understands:

.1 the general procedure for starting-up and placing a steam turbine generator on-line;

.2 standard inspections, safety precautions, principles of knowledge and procedures are provided in English;

.3 priority of steps that need to be conducted;

.4 the significance of knowledge in the appropriate methods for paralleling generators and alternators;

PERFORMANCE ANALYSIS PROCESS

Function: Electrical, electronic and control engineering at the operational level -
Ship's Service, Steam Turbine Generator

| Area of Competence | Performance Objectives | Performance Measures | Performance Standards |
|---|---|---|---|
| Operate electric generating plant and control systems | Demonstrate Knowledge, understanding and proficiency of operating electric generating plant | Prepare, start, parallel and change over electric generators. | <p>Operation is planned and carried out in accordance with established rules and procedures to ensure proper and safe operation.</p> <hr/> <ol style="list-style-type: none"> 1. Conducts pre-start inspection of steam turbine and alternator. 1. Inspects alternator for loose cable connections, brush rigging and loose items that may damage unit during start up. 2. Inspects couplings between turbine/reduction gear and alternator for readiness. 3. Inspects governor unit, reduction gear casing, and bearing housings for indications of lubrication leaks. 4. Inspects manual overspeed trip for excessive wear. 5. Determines level of lube in sump and adds lube oil as necessary 6. Manually trips and resets overspeed trip to determine if mechanism operates without binding. |

Function: Electrical, electronic and control engineering at the operational level -
Ship's Service, Steam Turbine Generator

| Area of Competence | Performance Objectives | Performance Measures | Performance Standards |
|---|---|--|--|
| Operate electric generating plant and control systems | Demonstrate Knowledge, understanding and proficiency of operating electric generating plant | Prepare, start, parallel and change over electric generators. | Operation is planned and carried out in accordance with established rules and procedures to ensure proper and safe operation. |
| | | 2. Conducts pre-start inspection of auxiliary condenser and ancillary equipment: | <ol style="list-style-type: none"> 1. Inspects auxiliary circulator pump and its piping for leaks and cracks. 2. Inspects that all required valves are open to auxiliary circulator as required. 3. Inspects auxiliary condensate pump and its piping for leaks and cracks. 4. Inspects for visible level of condensate in hot well. 5. Inspects that all required valves are open to auxiliary condensate pump as required. 6. Inspects auxiliary circulator and condensate pump motor controllers for readiness and determines reasons if tagged/locked out has yet to be corrected. |

Function: Electrical, electronic and control engineering at the operational level -
Ship's Service, Steam Turbine Generator

| Area of Competence | Performance Objectives | Performance Measures | Performance Standards |
|---|---|--|---|
| Operate electric generating plant and control systems | Demonstrate Knowledge, understanding and proficiency of operating electric generating plant | Prepare, start, parallel and change over electric generators. | Operation is planned and carried out in accordance with established rules and procedures to ensure proper and safe operation. |
| | | 3. Demonstrates procedure for start-up of steam turbo-generator: | <p>Turbo-generator: Raises vacuum:</p> <ol style="list-style-type: none"> 1. Starts auxiliary circulator. 2. Vents off condenser heads and observes stability of circulated water pressure. 3. Starts auxiliary condensate pump. 4. Adjusts opening of recirculating valve to maintain visible level of condensate in hot well. 5. Returns to operating level and applies gland seal steam to turbine rotor. 6. Admits operating steam to air ejectors, adjusting supply pressure as necessary. 7. Returns below to determine visible level in hot well, adjusting recirculating valve as necessary. |

Function: Electrical, electronic and control engineering at the operational level -
Ship's Service, Steam Turbine Generator

| Area of Competence | Performance Objectives | Performance Measures | Performance Standards |
|---|---|--|---|
| Operate electric generating plant and control systems | Demonstrate Knowledge, understanding and proficiency of operating electric generating plant | Prepare, start, parallel and change over electric generators. | Operation is planned and carried out in accordance with established rules and procedures to ensure proper and safe operation. |
| | | 4. Demonstrates procedure for start-up of steam turbo-generator: | <p>Turbo-generator: Controls slow roll of turbine when vacuum reaches 18-22 inches:</p> <ol style="list-style-type: none"> 1. Starts lube oil supply to unit (obtains assistance if pump is hand driven) 2. Set throttle valve 3. Slowly opens throttle valve to gradually increase speed. 4. Allows unit to idle for even warming 5. Applies lube oil and alternator cooling water as necessary 6. Conducts inspection below and adjusts condensate recirculating valve as necessary. |

Function: Electrical, electronic and control engineering at the operational level -
Ship's Service, Steam Turbine Generator

| Area of Competence | Performance Objectives | Performance Measures | Performance Standards |
|---|---|--|--|
| Operate electric generating plant and control systems | Demonstrate Knowledge, understanding and proficiency of operating electric generating plant | Prepare, start, parallel and change over electric generators. | <p>Operation is planned and carried out in accordance with established rules and procedures to ensure proper and safe operation.</p> <hr/> <ol style="list-style-type: none"> 1. Adjusts voltage 2. Turns on synchroscope and observes direction and speed of rotation. 3. Adjusts speed and direction of rotation. 4. Closes oncoming unit breaker to stop synchroscope at 12 o'clock 5. Divides load evenly between on-line and in-coming units, observing available switch board meters. |
| | | 5. Demonstrates ability to parallel on coming unit with operating unit | |

The preliminary work having been completed, the check lists to be used by individuals conducting the assessments can be developed by using the information set forth in the last two columns. The following pages represent an example of the check lists developed using the foregoing process.

ENGINEERING OFFICER IN CHARGE OF AN ENGINE ROOM WATCH

PERFORMANCE CHECK LIST

(NOTE: These items are duplicated from the steps listed and developed under "Performance Standards")

Function: Electrical, electronic and control engineering at the operational level -
Ship's Service Generator - **Steam Plants**

Area of competence: Operate electric generating plant and control systems

PREREQUISITES (as part of an approved training program):

1. Training in Basic Electricity - Alternator and Generator Operation
2. Training in Diesel Engines
3. Training in Auxiliary Piping and Pumping Systems

Minimum Sea Service: Six months

Demonstration performance: Shipboard

Assessment method : Observation by supervisor and standardized check list

Proficiency demonstration outcome: PASS/REPEAT

*(Chief and/or first engineer to observe performance as **Pass/Repeat** assessment as itemized below and to check off each item when successfully completed, noting order of performance as an indication of appropriate planning on the part of the trainee. When a Training Record Book (TRB) is to be signed, the chief Engineer or first Engineer is to sign the TRB for the appropriate task, but only after the trainee has properly demonstrated to the chief engineer or first engineer the proficiency of the entire task and **ONLY AFTER ALL** items on the check list have been satisfactorily completed during a single demonstration)*

1. Conducts pre-start-up inspection of prime mover and alternator.

- 1. Inspects alternator for loose cable connections, brush rigging and loose items that may damage unit during start up.
- 2. Inspects couplings between turbine/reduction gear and alternator for readiness.
- 3. Inspects governor linkage, reduction gear casing, and bearing housings for indications of lubrication leaks.
- 4. Inspects manual overspeed trip for indications of excessive wear.
- 5. Determines level of lube oil in sump and adds lube oil as necessary
- 6. Manually trips and resets overspeed trip to determine if mechanism operates without binding.

2. Conducts pre-start inspection of steam turbine auxiliary equipment:

- 1. Inspects auxiliary circulator pump and its piping for indications of leaks and cracks.
- 2. Inspects and ensures that all required valves are open to auxiliary circulator as required.
- 3. Inspects auxiliary condensate pump and its piping for indications of eaks and cracks.
- 4. Inspects for visible level of condensate in hot well.
- 5. Inspects that all required valves are open to auxiliary condensate pump as required.
- 6. Inspects auxiliary circulator and condensate pump motor controllers for readiness and determines reasons if *tagged/locked out* conditions have been corrected.

3. Demonstrates procedure for start-up of steam turbo-generator:

Turbo-generator: Raises vacuum:

- 1. Starts auxiliary circulator.
- 2. Vents off condenser heads and observes stability of circulated water pressure.
- 3. Starts auxiliary condensate pump.
- 4. Adjusts opening of recirculating valve to maintain visible level of condensate in hot well.
- 5. Returns to operating level and applies gland seal steam to turbine rotor.
- 6. Admits operating steam to air ejectors, adjusting supply pressure as necessary.
- 7. Returns below to determine visible level in hot well, adjusting recirculating valve as necessary.

4. Demonstrates procedure for start-up of steam turbo-generator:

Turbo-generator: Controls slow roll of turbine when vacuum reaches 18-22 inches:

- 1. Starts lube oil supply to unit (obtains assistance if pump is hand driven)
- 2. Sets throttle valve
- 3. Opens drain lines and steam stop valve.
- 4. Closes off steam line drains once steam only is indicated in flow.
- 5. Slowly opens throttle valve to gradually increase speed.
- 6. Allows unit to idle for even warming

- 7. Applies lube oil and alternator cooling water as necessary
- 8. Conducts inspection of turbo-generator auxiliary machinery below and adjusts condensate recirculating valve as necessary

5. **Demonstrates ability to parallel on-coming unit with operating unit**

- 1. Adjusts voltage as necessary
- 2. Turns on synchroscope and observes direction and speed of rotation.
- 3. Adjusts speed and direction of rotation of prime mover.
- 4. Closes oncoming unit breaker to stop synchroscope at 12 o'clock
- 5. Divides load evenly and simultaneously between on-line and in-coming units, observing available switch board meters.

Part three: Outline of Guidance

For each of the six steps comprising performance-based assessment development, certain issues, factors and implications should be taken into account, as outlined below.

1. **Identify performance objectives** - Identification of performance objectives involve the following three sub-steps:

- 1.1 Identify the critical performance objectives by considering the consequences of performance failure with respect to:**

- personal injury and loss of life,
- environmental damage and pollution, and
- economic costs.

- 1.2 Review available resources to identify performance objectives, including**

- STCW competencies,
- IMO Model Training Record Books,
- ship's operating procedures,
- federal, state, and local regulations,
- company regulations and procedures,
- technical equipment manuals,
 - task analysis, and
- subject matter expert advice.

- 1.3 Ensure that performance objectives are tied to STCW competencies.**

2. **Select performance objectives for performance-based assessment**

Performance objectives appropriate for performance-based assessment should be selected by reviewing the following four general factors.

- 2.1 Safety implications of conducting the assessment**

- 2.2 Current shipboard operating conditions, including**

- environmental conditions,
- location
- equipment status
- workload, and
- personnel scheduling.

- 2.3 The ability to establish adequate controls over shipboard operations.**

- 2.4 The candidates current skill level, taking into account**

- prior training and
- experience

3. **Determine performance measures and standards** - The determination of performance measures and standards involve the following three sub-steps:
 - 3.1 **Determine the methods of measuring the steps or components of the practical test, which may include**
 - observation of whether or not a step was completed,
 - monitoring performance with respect to an established metric (such time to complete a step).
 - 3.2 **Identify the standard corresponding to each step or component.**
 - 3.3 **Determine how the overall performance objective is met.**

4. **Prepare assessment package** - Several potential components of an assessment package should be considered in developing such a package. There are two necessary components of such a package. First, student workbook should be prepared, including reference material for use by the student in preparing for the assessment. Second, an assessor guide should be prepared that includes detailed instructions for conducting the assessment. Additional components of an assessment package include various aids for recording observed performance (checklists, worksheets, and workforms) and a means of documenting the final results (an assessment form).
 - 4.1 **Prepare an assessment package, which may include:**
 - student workbook,
 - assessor guide,
 - instructions for the assessor and candidate,
 - checklists.
 - worksheets,
 - work forms, and
 - assessment forms,

5. **Conduct assessment** - The conduct of the assessment should involve the following five sub-steps.
 - 5.1 **Prepare for the assessment by**
 - gathering materials,
 - preparing the staging area,
 - preparing and arranging equipment,
 - conducting any necessary safety checks, and
 - informing affected personnel.
 - 5.2 **Conduct a pre-assessment briefing with the candidate, addressing**
 - the scope (what and how much),
 - procedures (rules),
 - standards (goal to be met), and
 - the outcome and consequences of the assessment.

5.3 Observe the mariner's performance and record the results, while

- avoiding coaching,
- remaining objective (avoid body language, facial expressions, and hinting),
- maintaining positive control of the situation,
- ensuring realistic assessment conditions and providing appropriate information,
- avoiding unnecessary interference, and
- maintaining records (an audit trail) in accordance with the assessment instructions and company regulations.

5.4 After observing performance, evaluate the process and determine the assessment outcome, by

- recording performance for the individual performance steps,
- applying the scoring instructions, and
- determining and documenting the assessment outcome.

5.5 Conduct an assessment debrief, adhering to the following guidance

- Conduct the debrief as soon as possible.
- Focus on positive outcomes first.
- Identify areas needing improvement.
- Specify the assessment results (pass or fail).
- Close with a positive recommendation.

6. Develop a performance improvement Plan - The first step in developing an assessment summary and performance improvement plan is to determine the need for such a plan. If the assessment (1) was conducted according to plan, (2) appeared to result in a fair and valid assessment, and (3) the mariner passed without any areas for improvement being identified, then there will be no need for this step. If, however, any of the three conditions were not met, some form of a performance improvement plan should be developed. This step in the performance-based assessment process is comprised of five sub-steps, as summarized below.

6.1 Take time to review and analyze the assessment process and outcome, considering

- the individual's results,
- how these results compare with prior assessment results, and
- whether the assessment accurately reflected realistic shipboard operations.

6.2 Prepare a preliminary improvement plan, which may address

- areas of additional mariner training,
- changes in shipboard procedures and tasks,
- changes to ship equipment, and
- changes in the assessment process.

6.3 Communicate (face to face) the contents of the plan.

6.4 Revise and finalize

6.5 Document written and signed recommendations, ensuring that requirements are being met.