Appendix C to
"A Method for Developing Mariner Assessments"

MARINER ASSESSMENT PROCEDURES FOR PREPARING THE MAIN ENGINE FOR OPERATION

This appendix contains example procedures for assessing a mariner's ability to prepare the main engine for operation. The assessment package consists of the following: assessor instructions, candidate instructions, five assessment worksheets, and an assessment control sheet for documenting the final results of the assessment.

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ASSESSOR INSTRUCTIONS

Introduction

The following procedures are designed for assessing a candidate's ability to prepare the main engine of a ship for operation. This includes starting the main engine and preparing the control system. This package was specifically developed for a propulsion system that has two diesels driving one shaft through a reduction gear. The diesel engines described in the assessment procedures are reversible, medium speed engines. With some modification, this package may be applicable to propulsion plants with single, slow speed diesel engines.

The assessment materials include *Assessor Instructions, Candidate Instructions,* an *Assessment Control Sheet,* and five separate assessment modules (*Assessment Worksheets I-V*). The *Assessor Instructions* describe the assessment objectives, method, performance measures, and performance standards. The *Assessor Instructions* also list the responsibilities of the assessor during each phase of the assessment process. The *Candidate Instructions* explain the assessment process from the candidate's perspective and define the responsibilities of the candidate.

The *Assessment Control Sheet* provides a record of the names of the candidate, assessor, and qualified instructor who certified that the candidate met the training prerequisites for assessment. The control sheet also includes the date and location of the assessment and the STCW reference information for the competency area being assessed. Section 3 of the *Assessment Control Sheet* provides space for the assessor to record the candidate's score on each assessment objective. Finally, section 4 of the control sheet summarizes the assessment objectives and the actions comprising each objective.

As the assessor, you will evaluate the candidate's ability to complete the assessment objectives correctly. Using the scoring procedures described below, you will provide the candidate with a separate score for each assessment objective and compile these scores into a final score for the entire assessment. The scores for each assessment objective and the candidate's overall score for the entire assessment are to be recorded on the *Assessment Control Sheet*.

The rest of this section briefly describes the various components of this assessment. *Assessment Worksheets I* through *V* provide additional information about the assessment objectives, method, conditions, performance measures, performance standards, and scoring procedures.

Assessment Objectives

In a step-by-step procedure, the candidate should safely start the main engine. This includes the following steps:

1. Perform pre-start checks.
2. Roll over the main engine.
3. Start the engine ahead and astern.
4. Transfer control to a remote operating station.
5. Prepare the propulsion plant to answer bells.

Assessment Method

Although starting procedures can be practiced in a simulator and knowledge of procedures for starting the main engine can be evaluated by written examination, the final assessment for this proficiency should be conducted onboard a vessel. This ensures the candidate can perform the tasks in an actual work setting.

Assessment Conditions

This assessment should begin at the local engine control station. The candidate should then work throughout the engine room. As the assessor, you should tell the candidate each subsequent activity to complete, but not the individual actions necessary to complete the activity. The candidate will not receive any assistance from others, except to check pressure and temperature levels as required during the assessment. The conditions you can vary during the assessment are specified in the next section under "Preparing for the Assessment" and on the individual worksheets for each assessment objective.

Performance Measures and Standards

Each assessment objective is comprised of one or more actions. Each action has one or more corresponding performance measures and standards. For example, assessment objective 2 requires six different actions (see section 2 of *Assessment Worksheet II* on p. 15). Note that within one action, such as action 2.6, there may be more than one performance measure. In the case of action 2.6, the candidate has to pass both measures in order to pass the action. If the candidate fails one measure, he or she fails the action.

Use pass/fail scoring for each assessment objective:

- **Pass** – The candidate's total score was at or above the passing level noted at the bottom of each *Assessment Worksheet*. The candidate also correctly performed all "required" actions – that is, those that would result in an automatic failure if performed incorrectly. Required actions are noted in the "standards" column of each *Assessment Worksheet*.
- **Fail** – The candidate either did not have a high enough score or did not properly complete all of the required items.

Note that, if a candidate fails an assessment objective, he or she automatically fails the entire assessment. If this occurs, you should terminate the assessment without proceeding to the next objective.

Individual measures and standards for each assessment objective are specified on *Assessment Worksheets I* through *V*.

Assessment Checklist

The following checklist summarizes the tasks and responsibilities of the assessor at each phase of the assessment process.

Preparing for the Assessment

- Inform the engineering watch officer, bridge watch officer, and candidate(s) of the date and time of the assessment.
- Obtain communication equipment for yourself and the candidate(s).
- Check the condition of each of the possible variables for each assessment objective. Then, set each variable to any level you desire, within a normal range. The intent is to set up the conditions so that a candidate must demonstrate knowledge of the main engine systems – not just memorize a series of steps. This also helps to vary the assessment from candidate to candidate. Here are the conditions you can vary before each assessment:

  Assessment Objective 1

  - Jacket water head tank level.
  - Clutch air control-valve position.
  - Cylinder air cock positions.
  - Starting air supply to the engine.
  - Emergency stop switch position.

  Assessment Objective 2

  - Power to the jacket water pump.
  - Power to the lubricating oil pump.
  - Presence of leak(s) in the jacket water system.
  - Relief valve setting on the lubricating oil pump.

  Assessment Objective 3

  - Fuel oil pressure drop across the suction strainer.
  - Fuel oil supply/return solenoid valve positions.

  Assessment Objective 4

  - Location of engine control (it can be at either a remote engineering station or the bridge station, but the engine should be in a local mode of operation before beginning the assessment of this objective).

  Assessment Objective 5

  - Settings on the automatic control (this is to test the candidates' knowledge of the control system).
- For all assessment objectives, ensure that the reduction gear, thrust bearings, and stern seal systems are set up properly.
- Determine the appropriate operating conditions for the ship's:
  - Lube oil temperature (e.g., normal starting range is 130-150° F).
  - Lube oil pressure.

- Starting air pressure.
- Jacket water temperature.
- Jacket water pump pressure.
- Fuel pump pressure.

- Remember that this assessment should take place under normal conditions. If abnormal conditions arise, suspend the assessment and restart after you have corrected any abnormal conditions.

Briefing the Candidate before the Assessment

- This assessment should be conducted for two candidates at once – each candidate should be responsible for starting one of the main engines.
- Provide each candidate with a copy of the *Candidate Instructions* and *Assessment Control Sheet*.
- Review the staring main engine assessment instructions with the candidates and answer any questions.
- Explain the assessment performance measures and standards.
- Discuss the desired outcome(s) and consequences of failing to perform part of all of the assessment.
- Explain that the assessment will be terminated if:
  - The candidate does not correctly perform all of the required actions.
  - One or more of the initial equipment conditions become abnormal or unsafe.
  - The candidate violates vessel safety procedures.
- Remind the candidates that it is permissible to ask questions during the assessment, especially if they have a safety concern.
- Advise the candidates that they may have assistants to help with activities that take time such as opening the blow down valves. However, the candidates are responsible for directing the assistants' activities and verifying that the assistants' tasks have been carried out correctly.
- Ensure that the candidates have the proper equipment to carry out the assessment:
  - Small notebook and pencil for writing down conditions and readings.
  - Wrenches used for opening valves.
  - Long-sleeved shirt to prevent burning arms when reaching over hot pipes.
  - Pair of work gloves.
- Discuss the candidates' willingness to be assessed under the circumstances presented.

Observing the Candidate's Performance

- If a safety violation occurs, terminate the assessment immediately.
- Continuously observe the candidates during the assessment. Require that standard procedures or company policy be adhered to except when assessment procedures require demonstration of knowledge or skill different from a convention adopted by the company or facility.
- Ensure realistic assessment conditions consistent with a normal working environment for a marine engineer. Ensure the candidates can concentrate on the task at hand.
- Avoid giving the candidates unsolicited assistance, but respond to appropriate questions and provide appropriate equipment when required.
- Remain objective and maintain positive control of the operation at all times.

Determining Assessment Outcome

- Record performance on the appropriate assessment worksheets.
- Strictly adhere to the prescribed scoring procedures.
- Remember that if either candidate incorrectly performs any of the required actions, he or she automatically fails the entire assessment.
- Determine and document the outcome of the assessment, then transfer the final results to the *Assessment Control Sheet*.

Debriefing the Candidate

- Debrief each candidate as soon as possible after the assessment.
- Provide each candidate with a copy of the *Assessment Control Sheet.*
- Restate the assessment objectives.
- Focus on positive accomplishments first.
- Identify areas needing improvement.
- If the candidate failed to demonstrate proficiency, jointly develop an improvement plan to prepare for reassessment.

CANDIDATE INSTRUCTIONS

In this assessment, you will be evaluated on your ability to safely prepare the main engine for operation. Table 1 shows the 1995 *STCW Code* specification for preparation of main and auxiliary machinery.

Table 1. *STCW Code* specification for preparation of main and auxiliary machinery.

STCW Requirement	1995 *STCW Code*, Section A-III/1 (p. 75): Mandatory minimum requirements for certification of ratings for officers in charge of an engineering watch in a manned engine room or designated duty engineers in a periodically unmanned engine room.
STCW Function	Marine engineering at the operational level.
STCW Competence	Operate main and auxiliary machinery and associated control systems.
STCW Proficiency	Preparation of main machinery and preparation of auxiliary machinery for operation.

Assessment Objectives and Methods

A qualified assessor will assess your ability to meet the five assessment objectives in the first column of Table 2. Note that each assessment objective has a corresponding assessment type. Performance assessed by "practical skill demonstration" means your assessor will ask you to demonstrate your ability to perform the actions required in the objective. Your skill demonstration will occur onboard ship. Performance assessed by "oral or written test questions" means your assessor will ask you to respond to one or more questions and then assess your ability to respond correctly to each question.

Table 2. Assessment objectives and methods for main engine preparation.

Assessment Objective	Assessment Method
1. Perform pre-start checks.	Practical skill demonstration aboard ship / Oral or written test questions
2. Roll over the main engine.	Practical skill demonstration aboard ship / Oral or written test questions
3. Start the main engine locally.	Practical skill demonstration aboard ship / Oral or written test questions
4. Transfer main engine controls.	**Practical skill demonstration aboard ship**
5. Prepare plant to answer bells.	Practical skill demonstration aboard ship / Oral or written test questions

Refer to section 4 of the *Assessment Control Sheet* for a list of the specific actions required for each objective (you should receive a copy of this document from the assessor during your pre-

assessment briefing). Below are some general guidelines for what you should expect during the assessment process.

Pre-Assessment Briefing with Assessor

This briefing should occur approximately a week in advance of the scheduled assessment, if possible. This will help you and the assessor to be well prepared for the assessment when it actually occurs. During this briefing, you should:

- Discuss your prior experience, training, and/or company policy with the assessor. On the basis of these qualifications, discuss whether you are qualified to undertake this assessment. If you both agree you are qualified, then continue with the assessment process. If not, arrange for additional on-the-job or simulator training, and set a date for another review of your qualifications.
- Obtain a copy of the *Assessment Control Sheet* from your assessor. Review this document and discuss the scope and depth of knowledge covered by this assessment. Ask questions about any part of the assessment that is unclear.
- Review the assessment performance measures and standards, and ask any questions you have about them.
- Discuss the desired outcome(s) and the consequences of failing to perform any part of the assessment.
- Discuss the general assessment procedures. Your assessor will inform you of how much time is allowed, when the assessment begins, and under what circumstances he or she will terminate the assessment.
- Discuss any non-standard procedures that are expected of you during the assessment.
- Consider whether you are willing to be assessed under the circumstances presented and advise the assessor of your willingness to undertake the assessment.

Participation in the Assessment

Your assessment will begin at the local engineering control station. During the assessment, you will be working throughout the engine room, including a remote engine control station and/or the bridge control station.

The assessor will suspend the assessment if abnormal conditions develop with any equipment or if the safety of personnel or equipment is endangered. He or she will also suspend the assessment if you fail to correctly perform one of the "required" actions for this assessment (these actions are italicized on the *Assessment Worksheets* in the "standard" column).

You may have assistants to help with activities that take time such as opening the blow down valves. You are responsible for directing your assistants' activities and verifying that their tasks have been carried out correctly.

Your assessor will continuously observe you during the assessment. You are expected to adhere to standard procedures or company policy unless the assessor briefs you on a requirement to

perform a non-standard procedure. During the assessment, remember to:

- Use appropriate marine terminology and nomenclature at all times.
- Listen to an entire question before responding or acting. Remember that you may not use reference material of any kind during the assessment examination.
- Ask questions if you have a safety concern. The assessor will provide you with appropriate responses to your questions. If a safety violation occurs, the assessor will terminate the assessment immediately.

Your assessor will ensure realistic assessment conditions consistent with the normal working environment for an engineer.

The Outcome of Your Assessment

The assessor will record your performance on a series of *Assessment Worksheets.* He or she will score each assessment objective on a "Pass/Fail" basis. Acceptable performance (a "Pass" score) will be based on your ability to correctly respond to examination questions. It will also be based on your ability to perform assigned tasks safely in a manner that demonstrates:

- The required level of skill, knowledge, and ability.
- Sound and professional judgment.

Unacceptable performance (a "Fail" score) will be based on your failure to perform a critical phase of the assessment exercise proficiently. When this occurs, your assessment will be suspended and postponed until you receive further instruction and training.

Note that the following events will terminate an assessment immediately:

- An action, or lack of action, by you which required corrective action or intervention by the assessor to prevent injury, damage, or the development of a hazardous condition.
- Failing to use proper procedures, including appropriate communication procedures, during the assessment.
- Failing to take prompt corrective action when required.

The assessor will strictly adhere to pre-determined scoring procedures, and will document the outcome of the assessment. He or she will transfer the final results of your assessment to the *Assessment Control Sheet*.

Assessment Debriefing

You and the assessor should discuss the assessment results as soon as possible after the assessment. During the debriefing:

- The assessor should provide you with a copy of the *Assessment Control Sheet* describing the results of your main engine preparation assessment.
- The assessor should restate the assessment objective(s) and identify those that you successfully demonstrated.
- If appropriate, you and the assessor should discuss the areas in which you need improvement, and then develop an improvement plan based on the assessment outcome.

ASSESSMENT CONTROL SHEET

Section 1. Assessment Reference Information

1. Name of Candidate	2. Name of Designated Assessor	3. Signature of Qualified Instructor[1]
4. Date of Assessment	5. Assessment Location[2]	

Section 2. STCW Reference Information

Assessment Area	*Preparing the main diesel engine for operation*.
Assessment Method	Shipboard assessment.
STCW Requirement	*STCW Code*, Section A-III/1, p. 75 – Mandatory minimum requirements for certification of ratings for officers in charge of an engineering watch in a manned engine room or designated duty engineers in a periodically unmanned engine room.
STCW Function	Marine engineering at the operational level.
STCW Competence	Operate main and auxiliary machinery and associated control systems.
STCW Proficiency	Preparation of main machinery for operation.

Section 3. Assessment Objectives, Methods, and Scores

Assessment Objective	Assessment Method	Score
1. Perform pre-start checks.	Practical skill demonstration aboard ship / Oral test questions	❑ Pass ❑ Fail
2. Roll over the main engine.	Practical skill demonstration aboard ship / Oral test questions	❑ Pass ❑ Fail
3. Start the main engine locally.	Practical skill demonstration aboard ship / Oral test questions	❑ Pass ❑ Fail
4. Transfer main engine controls.	Practical skill demonstration aboard ship	❑ Pass ❑ Fail
5. Prepare plant to answer bells.	Practical skill demonstration aboard ship / Oral test questions	❑ Pass ❑ Fail
COMMENTS	**FINAL SCORE**	❑ Pass ❑ Fail

[1] The qualified instructor certifies that the candidate has met the training prerequisites.

[2] Write the name of the simulator or vessel and her location during the assessment (e.g., Massachusetts Maritime Academy training simulator, *S/R Long Beach* – Day 1 of Puget Sound to Valdez run, etc.).

Section 4. Assessment Worksheet Summary

Assessment Worksheet	Assessment Objective	Action
I	1. Perform pre-start checks.	1.1 Check power to jacket water pump. 1.2 Check power to lube oil pump. 1.3 Check power to fuel booster pump. 1.4 Check shaft turning gear. 1.5 Check engine barring gear. 1.6 Check for local control of engine. 1.7 Ensure air cocks are open. 1.8 Knowledge of proper lube oil temperature. 1.9 Check lubricating oil sump temperature. 1.10 Knowledge of proper air pressure. 1.11 Check starting air pressure. 1.12 Check fuel oil day tank level. 1.13 Knowledge of proper fuel oil level. 1.14 Check level of jacket water head tank. 1.15 Knowledge of how to fill jacket water head tank. 1.16 Check emergency stop switch position. 1.17 Check position of the air supply to clutch.
II	2. Roll over the main engine.	2.1 Start / check jacket water pump pressure. 2.2 Knowledge of proper jacket water pump pressure. 2.3 Start / check lubricating oil pressure. 2.4 Knowledge of proper lubricating oil pressure. 2.5 Initiate roll over. 2.6 Check condition of cylinders during engine rollover.
III	3. Start the main engines locally in an idling condition in both the ahead and astern directions.	3.1 Check fuel oil supply / return solenoids. 3.2 Start / check fuel oil booster pump pressure. 3.3 Knowledge of proper fuel oil booster pump pressure. 3.4 Check fuel oil booster pump strainer differential pressure. 3.5 Knowledge of proper fuel oil booster pump strainer differential pressure. 3.6 Check emergency stop valve. Place in the run position. 3.7 Start engine in ahead direction. 3.8 Check lubricating pressure upon starting engine. 3.9 Inspect engine while running. 3.10 Stop engine. 3.11 Start engine in astern direction. 3.12 Stop engine.
IV	4. Transfer control of the main engine to a remote operating station.	4.1 Switch control of engine from local console to engineer's operating station. 4.2 Start engine in ahead direction. 4.3 Start engine in astern direction.
V	5. Prepare plant to answer bells.	5.1 Open clutch control valve. 5.2 Ensure proper set up of automatic controls. 5.3 Advise bridge that the propulsion plant is ready.

ASSESSMENT WORKSHEET I

Section 1. Assessment Conditions

Assessment Objective	*1. Perform pre-start checks*.
Assessment Method	Shipboard assessment and oral test questions.
Candidate Orientation	There should be two candidates for assessment, each in charge of starting one engine. The assessor briefs the candidates on assessment methods, conditions, and standards. Each candidate may have assistants to help with some tasks, such as opening and closing blow down valves. Each candidate must demonstrate that he or she is in charge of the assistants and knows the tasks and when they are completed. The assessor should tell the candidates when to begin the tasks and he or she should check that each task is properly completed.
Required Equipment, Apparatus, and/or Tools	The candidates should begin the assessment at the engineer's local operating console. Main engine and supporting equipment should be secured but operational and available for use. Reduction gear and shaft system should be lined up and operational.
Initial Conditions	The assessor should have received clearance from both the bridge and engineering watch officer to begin the assessment. The area should be clear so the assessor can observe activities. This assessment is an evaluation of the candidate's ability to start the main engine under normal conditions. Abnormal conditions will not be introduced. If abnormal conditions arise, the assessment will be suspended until the condition is corrected. The assessor should vary the following conditions within a normal range: • Jacket water head tank level. • Clutch air control-valve position. • Cylinder air cock positions. • Starting air supply to the engine. • Emergency stop switch position.

Section 2. Actions, Performance Measures, Standards, and Scores

Action	Performance Measure	Performance Standard	Score
1.1 Check power to jacket water pump.	Report of availability of power	Correct report of power to jacket water pump	❑ Pass ❑ Fail
1.2 Check power to lube oil pump.	Report of availability of power	Correct report of power to lube oil pump	❑ Pass ❑ Fail
1.3 Check power to fuel booster pump.	Report of availability of power	Correct report of power to fuel booster pump	❑ Pass ❑ Fail
1.4 Check shaft turning gear.	Ensure turning gear is disengaged	Turning gear correctly disengaged and status correctly reported *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail
1.5 Check engine barring gear.	Ensure barring gear is disengaged	Barring gear correctly disengaged and status correctly reported *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail

Section 2. Actions, Performance Measures, Standards, and Scores (continued)

1.6 Check for local control of engine.	Ensure engines are in local control	Engines placed in local control and status correctly reported	❑ Pass ❑ Fail
1.7 Ensure air cocks are open.	Report that air cocks are open	Correct report of air cock position	❑ Pass ❑ Fail
1.8 Knowledge of proper lube oil temperature.	Response to question: *What should the engine oil temperature be before initiating engine start up?*	Correct response is that a normal starting range for the engine oil temperature is 120° F to 150° F	❑ Pass ❑ Fail
1.9 Check lubricating oil sump temperature.	Response to question: *What is the current lubricating oil sump temperature?*	Correct report of actual temperature	❑ Pass ❑ Fail
1.10 Knowledge of proper starting air pressure.	Response to question: *What should the starting air pressure be before initiating engine start up?*	Correct response is that starting air pressure should be at least 250 psi	❑ Pass ❑ Fail
1.11 Check starting air pressure.	Response to question: *What is the current pressure?*	Correct report of actual pressure	❑ Pass ❑ Fail
1.12 Check fuel oil day tank level.	Response to question: *What is the current level of fuel in the day tank?*	Correct report of fuel in the day tank	❑ Pass ❑ Fail
1.13 Knowledge of proper fuel oil level.	Response to question: *What is the minimum level of fuel allowable in the day tank?*	Correct response is that the day tank should be at least ½ full	❑ Pass ❑ Fail
1.14 Check level of jacket water head tank.	Response to question: *What is the current level of jacket water in the head tank?*	Correct report of level in the jacket water head tank	❑ Pass ❑ Fail
1.15 Knowledge of how to fill jacket water head tank.	Response to question: *How do you fill it if it is too low?*	Knowledge of how to fill the tank	❑ Pass ❑ Fail
1.16 Check emergency stop switch position.	Response to question: *In what position is the emergency stop switch?*	Correct report of position of emergency stop switch. *Incorrect report results in automatic failure of assessment.*	❑ Pass ❑ Fail
1.17 Check position of the air supply to clutch.	Response to question: *What is the status of the air supply to clutch?*	Correct report on status of the air to the clutch	❑ Pass ❑ Fail
SCORING PROCEDURE		**FINAL SCORE**	❑ Pass ❑ Fail
Total the number of "Pass" scores you indicated above. **Pass:** Score of 12-17 **Fail:** Score of 0-11 Transfer the final score at right to the *Assessment Control Sheet*.			

ASSESSMENT WORKSHEET II

Section 1. Assessment Conditions

Assessment Objectives	*2. Roll over the main engine.*
Assessment Method	Shipboard assessment and oral test questions.
Candidate Orientation	There should be two candidates for assessment, each in charge of starting one engine. Assessor briefs the candidates on assessment methods, conditions, and standards. Each candidate must demonstrate his or her ability to "roll-over" the main engine for a pre-start inspection for leaky cylinder liners.
Required Equipment, Apparatus, and/or Tools	The candidate should begin the assessment at the engineer's local operating console. The main engine and supporting equipment should be secured but operational and available for use.
Initial Condition	Please note the comments regarding abnormal conditions on *Assessment Worksheet I*. Before this assessment begins, the assessor should be able to vary: • Power to the jacket water pump. • Power to the lubricating oil pump. • Presence of leak(s) in the jacket water system. • Relief valve setting on the lubricating oil pump.

Section 2. Actions, Performance Measures, Standards, and Scores

Action	Performance Measure	Performance Standard	Score
2.1 Start / check jacket water temperature.	Answer question: *What is the current jacket water temperature?*	Correct report of current jacket water temperature	❑ Pass ❑ Fail
2.2 Knowledge of proper jacket water temperature.	Answer question: *What is the proper jacket water temperature?*	Correct response is that jacket water temperature should be a minimum of 130° F. An acceptable range for starting is 140-160° F.	❑ Pass ❑ Fail
2.3 Start / check lubricating oil pressure.	Answer question: *What is the current lubricating oil pressure?*	Correct report of current lubricating oil pressure	❑ Pass ❑ Fail
2.4 Knowledge of proper lubricating oil pressure.	Answer question: *What is the proper lube oil pressure?*	Correct response is the lube oil pressure should be a minimum of 25 psi	❑ Pass ❑ Fail
2.5 Initiate rollover.	Report on successful rollover	Correct procedure used	❑ Pass ❑ Fail

Section 2. Actions, Performance Measures, Standards, and Scores

2.6 Check condition of cylinders during engine rollover.	Report on condition of cylinders as engine is "rolled over." Answer questions: *What is the significance of water coming out of the blow down valves?* *What is the significance of lube oil coming out of the blow down valves?*	Correct report of condition of cylinders during engine rollover Correct responses to question: ❑ A water leak means there is a jacket water leak into the cylinder. This is a problem because water is not compressible, so when the engine is started, the water will damage the valves and piston. Also, a major water leak will result in improper engine cooling. ❑ The significance of lube oil coming out of the blow down valves depends on the amount of oil. A small amount is normal. If oil continues to come out as you roll the engine over, there is an oil seal failure in the turbo charger or air blower. This is dangerous as it can cause the engine to overspeed.	❑ Pass ❑ Fail
SCORING PROCEDURE Total the number of "Pass" scores you indicated above. **Pass:** Score of 5-6 **Fail:** Score of 0-4 Transfer the final score at right to the *Assessment Control Sheet*.		**FINAL SCORE**	❑ Pass ❑ Fail

ASSESSMENT WORKSHEET III

Section 1. Assessment Conditions

Assessment Objective	*3. Start the main engines locally in an idling condition in both the ahead and astern directions.*
Assessment Method	Shipboard assessment and oral test questions.
Candidate Orientation	There should be two candidates, one in charge of starting each engine. The assessor briefs the candidates on assessment methods, conditions, and standards.
Required Equipment, Apparatus, and/or Tools	The candidate should begin the assessment at the engineer's local control station.
Initial Condition	The main engine should have been successfully "rolled over." All operating requirements at this point are satisfactory, including levels, temperatures, and pressures associated with support systems including jacket water, lubricating oil, and air systems. If abnormal conditions arise, the assessment should be suspended. The assessor should be able to vary: • Fuel oil pressures drop across the suction strainer. • Fuel oil supply/return solenoid valve positions.

Section 2. Actions, Performance Measures, Standards, and Scores

Action	Performance Measure	Performance Standard	Score
3.1 Check fuel oil supply / return solenoids.	Answer question: *What is the status of solenoid valves?*	Correct report of status of solenoid valves. *Incorrect report of fuel oil solenoid positions results in automatic failure of assessment.*	❑ Pass ❑ Fail
3.2 Start / check fuel oil booster pump pressure.	Answer question: *What is the current fuel oil pressure?*	Correct report of current pressure	❑ Pass ❑ Fail
3.3 Knowledge of proper fuel oil pump pressure.	Answer question: *What is the minimum fuel oil pump pressure?*	Correct response is that the minimum fuel oil pump pressure is 30 psi	❑ Pass ❑ Fail
3.4 Check fuel oil booster pump strainer differential pressure.	Answer question: *What is the current fuel oil pump strainer differential pressure?*	Correct report of current differential pressure	❑ Pass ❑ Fail
3.5 Knowledge of proper fuel oil booster pump strainer differential pressure.	Answer question: *What is the significance of too high a differential pressure?*	Correct response is that too high a differential pressure would mean that the system is not set up properly; a valve is probably shut.	❑ Pass ❑ Fail
3.6 heck emergency stop valve. Place in the run position.	Puts stop valve in run position	Correctly places stop valve in run position. *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail

Section 2. Actions, Performance Measures, Standards, and Scores (continued)

3.7 Start engine in ahead direction.	Report that engine has started, speed and direction	Correct action ahead and correct report of speed and direction *Incorrect action or report results in automatic failure of assessment.*	❑ Pass ❑ Fail
3.8 Check lubricating pressure upon starting engine.	Report lubrication oil pressure	Correctly reports lubrication oil pressure *Incorrect report results in automatic failure of assessment.*	❑ Pass ❑ Fail
3.9 Inspect engine while running.	Proper action to inspect engine	Correctly inspects engine while running	❑ Pass ❑ Fail
3.10 Stop engine.	Proper action to stop engine	Correctly stops engine *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail
3.11 Start engine in astern direction.	Report that engine has started, speed and direction	Correctly action astern and correct report of speed and direction *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail
3.12 Stop engine.	Proper action to stop engine	Correctly stops engine *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail

SCORING PROCEDURE **FINAL SCORE** ❑ Pass ❑ Fail

Total the number of "Pass" scores you indicated above. Note that failure of 3.1, 3.6, 3.7, 3.8, 3.10, 3.11, or 3.12 results in automatic failure of this assessment.

Pass: Score of 9-12 **Fail:** Score of 0-8

Transfer the final score at right to the *Assessment Control Sheet*.

ASSESSMENT WORKSHEET IV

Section 1. Assessment Conditions

Assessment Objective	*4. Transfer control of the main engine to a remote operating station.*
Assessment Method	Shipboard assessment.
Candidate Orientation	Assessor briefs the candidate on assessment methods, conditions, and standards. The assessor should tell the candidate when to stop the engine and restart in an astern direction.
Required Equipment, Apparatus, and/or Tools	The candidate should begin the assessment at the engineer's local control station. During the accomplishment of this task, the candidate and assessor should move to the remote control station.
Initial Condition	The main engine should be in a local mode of operation before beginning this assessment. The assessor may choose to place engine control at either the remote engineering operating station or the bridge station (if applicable).

Section 2. Actions, Performance Measures, Standards, and Scores

Action	Performance Measure	Performance Standard	Score
4.1 Switch control of engine from local console to either remote engineering operating station or bridge.	Verifies engine control transfer	Correctly transfers control to remote station *Incorrect action results in automatic failure of the assessment.*	❑ Pass ❑ Fail
4.2 Start engine in ahead direction.	Reports engine direction and speed	Correctly starts engine and makes correct report *Incorrect action results in automatic failure of the assessment.*	❑ Pass ❑ Fail
4.3 Start engine in astern direction.	Reports engine direction and speed	Correctly starts engine and makes correct report *Incorrect action results in automatic failure of the assessment.*	❑ Pass ❑ Fail

SCORING PROCEDURE **FINAL SCORE** ❑ Pass ❑ Fail

Total the number of "Pass" scores you indicated above.

Pass: Score of 3 **Fail:** Score of 0-2

Transfer the final score at right to the *Assessment Control Sheet*.

ASSESSMENT WORKSHEET V

Section 1. Assessment Conditions

Assessment Objective	*5. Prepare main propulsion plant to answer orders from the bridge.*
Assessment Method	Shipboard assessment.
Candidate Orientation	Assessor briefs the candidate on assessment methods, conditions, and standards
Required Equipment, Apparatus, and/or Tools	The candidate and assessor should begin this assessment at the remote operating station (either engine room or bridge).
Initial Condition	The engine should be in a remote mode of operation before beginning this assessment. To test the candidate's knowledge of the control system, the assessor may choose to change settings on the automatic control.

Section 2. Actions, Performance Measures, Standards, and Scores

Action	Performance Measure	Performance Standard	Score
5.1 Open clutch control valve.	Verifies clutch control valve is open	Correctly opens clutch control valve *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail
5.2 Ensure proper set up of automatic controls.	Verifies proper set up of automatic controls	Correctly sets up automatic controls *Incorrect action results in automatic failure of assessment.*	❑ Pass ❑ Fail
5.3 Advise bridge that the propulsion plant is ready.	Makes proper report to bridge	Correctly makes report to bridge	❑ Pass ❑ Fail

SCORING PROCEDURE **FINAL SCORE** ❑ Pass ❑ Fail

Total the number of "Pass" scores you indicated above.

Pass: Score of 3 **Fail:** Score of 0-2

Transfer the final score at right to the *Assessment Control Sheet*.

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