

U.S. Department of
Homeland Security

United States
Coast Guard



Commandant
United States Coast Guard

2100 2ND ST, SW Stop 7581
Washington, DC 20593-7581
Staff Symbol: CG-5434
Phone: (202) 372-1207
Fax: (202) 372-1908

16721
CG-543 Policy Letter
No. 11-07 JUN 17 2011

A handwritten signature in blue ink, appearing to read "E. P. Christensen", written over a horizontal line.

From: CAPT E. P. CHRISTENSEN
COMDT (CG-543)

To: National Maritime Center

Subj: QUALIFICATION VIA "THE HAWSEPIPE" FOR STCW ENDORSEMENTS AS
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 200
GRT/500 GT OR MORE

Ref: (a) International Convention on Standards of Training, Certification and Watchkeeping
for Seafarers, 1978, as amended (STCW) and its adopted Code (STCW Code)
(b) 46 CFR 11.903(c)
(c) Navigation and Vessel Inspection Circular (NVIC) 08-02, *Guidelines for Assessing
Merchant Mariners Through Demonstration of Proficiency as Officers in Charge of a
Navigational Watch on Ships of 500 Gross Tonnage or More as Measured Under the
International Tonnage Convention (ITC)*.

1. Purpose. Establish and provide national guidance in the appropriate qualifications for STCW endorsements as officer in charge of a navigational watch on ships of 200 GRT / 500 GT or more (OICNW) under section A-II/1 of reference (a). This guidance applies only to applicants who are qualifying for OICNW through what is referred to as "the hawsepipe" — qualifying for an officer endorsement (license) through in-service experience rather than completing a comprehensive, Coast Guard approved program such as that offered at a maritime academy.

2. Directives Affected. This policy letter cancels National Maritime Center (NMC) policy letters 01-02 and 16-02.

3. Discussion.

a. APPLICABILITY. This guidance applies to candidates for STCW endorsement as OICNW who hold or are also applying for the following officer endorsements and are not participating in a Coast Guard approved training program:

- (1) Second mate ocean/near coastal any gross tons;
- (2) Third mate ocean/near coastal any gross tons;
- (3) Mate ocean/near coastal 500 to 1600 gross register tons (GRT); and
- (4) Mate (OSV).

Subj: QUALIFICATION VIA "THE HAWSEPIPE" FOR STCW ENDORSEMENTS AS OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 200 GRT/500 GT OR MORE

b. ASSESSMENT OF COMPETENCE.

(1) As specified in reference (b), candidates for an OICNW endorsement must meet the standards of competence identified in Section A-II/1 of the STCW Code.

(2) The standards of competency and required knowledge, understanding, and proficiency (KUP) in Table A-II/1 of the STCW Code are either practical or knowledge-based. A practical KUP requires that the candidate demonstrate his/her proficiency, e.g., *ability to determine the ship's position by use of electronic navigational aids*. A knowledge-based KUP requires the candidate to have a prescribed level of knowledge and understanding, e.g., *thorough knowledge of the content, application, and intent of the International Regulations for Preventing Collisions at Sea*.

(3) Knowledge-based competencies and KUPs may be assessed by completing the Coast Guard administered examination for the associated officer endorsement and/or by completion of relevant Coast Guard approved training. Additional information on the Coast Guard examinations is provided in paragraph d, below.

(4) Model guidelines for assessment of the practical KUPs for OICNW are contained in reference (c), NVIC 08-02. Enclosure (1) of this policy letter provides these same model assessments in a format suitable for documenting an individual mariner's completion of the assessments. Enclosure (2) is a summary listing of the assessments that can be used as a checklist to review the candidate's progress to ensure every practical demonstration has been performed.

(5) Except as noted below, the assessments in Enclosures (1) and (2) are substantially unchanged from those specified in NVIC 08-02, and the numbering scheme used in cancelled NMC policy letters 01-02 and 16-02 is unchanged. Mariners may continue to use the "Control Sheets" in the cancelled NMC policy letters to document their completion of assessments.

(6) The assessments in Enclosure (1) and (2) differ from those in NVIC 08-02 as we have made minor editorial changes and omitted the assessment of ability to determine position by use of Loran-C (assessment OICNW-1-4C) as this system is no longer in use. We have also changed the transmission speed for visual signaling (flashing light) in assessment OICNW-4-1A from 6 wpm to 4 wpm.

(7) Completion of the assessments of competency in NVIC 08-02 and this policy letter will be accepted as evidence that the candidate has met the requisite standard of competence for all practical competencies and KUPs. Mariners or organizations wishing to use alternative methods to assess that the standards of competence in Section A-II/1 of the STCW Code have been met may do so but must obtain approval for the alternative methods from the National Maritime Center prior to use.

Subj: QUALIFICATION VIA "THE HAWSEPIPE" FOR STCW ENDORSEMENTS AS OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 200 GRT/500 GT OR MORE

(8) The assessments of competency in NVIC 08-02 and this policy letter may be conducted in-service aboard a seagoing vessel by a mariner who is serving on the vessel upon which the assessments are completed. The STCW Code requires that a person conducting in-service assessments of competence of a seafarer meet the qualification requirements of Section A-I/6.¹ The Coast Guard will consider individuals who meet one of the following criteria as having satisfied Section A-I/6:

- i. Hold an STCW endorsement at the management level (STCW Regulation II/2 – master or chief mate) valid for service on seagoing vessels of at least 200 GRT/500 GT;
- ii. Hold an STCW endorsement as OICNW and have at least one year of experience as OICNW on seagoing vessels of at least 200 GRT/500 GT;
- iii. Is serving on a seagoing military vessel of at least 200 GRT/500 GT and is either the Commanding Officer or Executive Officer or is authorized to conduct similar assessments for the U.S. Navy or U.S. Coast Guard Personnel Qualification Standard (PQS) for underway officer of the deck (OOD).

(9) Prior to conducting assessments, the assessor should read enclosure (3), *Assessor's Manual for Conducting Mariner Assessments*. By signing for a successful performance of an assessment, the assessor attests that he/she has read and applied the guidance contained in this document.

(10) By signing any of the assessments of competence, the assessor attests that he/she has witnessed the candidate perform the described task under the described conditions and in the manner specified.

c. TRAINING.

(1) To qualify for an endorsement as OICNW, completion of certain training is required by regulations in 46 CFR Part 11, as follows:

- Basic Safety Training (BST) [46 CFR 11.202(b)];
- Radar Observer [46 CFR 11.480];
- Advanced Fire Fighting [46 CFR 11.205(d)];
- Bridge Team Work (a.k.a. Bridge Resource Management) [46 CFR 11.202(e)];
- Automatic Radar Plotting Aids (ARPA). If this course is not completed, the STCW endorsement will limit service to vessels that are not equipped with ARPA [46 CFR 11.202(c)];

¹ As incorporated by reference in 46 CFR 11.102(b).

Subj: QUALIFICATION VIA “THE HAWSEPIPE” FOR STCW ENDORSEMENTS AS OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 200 GRT/500 GT OR MORE

- Global Maritime Distress and Safety System (GMDSS). If this course is completed, the STCW endorsement will note that it is valid for service in the GMDSS [46 CFR 11.202(d)].

(2) In addition to these required courses, relevant Coast Guard approved training may be used to satisfy portions of the assessment requirements discussed above. The NMC may approve courses to satisfy specific assessments or specific competencies and/or specific knowledge, understanding and proficiency in Section A-II/1 of the STCW Code. Some examples of NMC approvals include:

Any applicant who has successfully completed your 40-hour Basic Meteorology course will be considered to have completed the equivalent of OICNW-1-7A; OICNW-1-7B; and OICNW-1-7C from the National Assessment Guidelines for Table A-II/1 of the STCW Code. Applicants who have successfully completed your course need not present completed “Assessment Sheets” for these assessments when applying for an STCW endorsement.

or

Any applicant who has successfully completed your 40-hour Basic Shiphandling course will be considered to have successfully demonstrated the competency *Maneuver the Ship* of Table A-II/1 of the STCW Code. Applicants who have successfully completed your course need not present completed “Assessment Sheets” for assessments OICNW-5-1A; OICNW-5-1B; and OICNW-5-1C from the National Assessment Guidelines for Table A-II/1 of the STCW Code when applying for an STCW endorsement.

d. EXAMINATION.

(1) As noted above, mariners may demonstrate that they have achieved the required competence for knowledge-based KUPs by completion of relevant Coast Guard examination modules. Examination modules for specific officer endorsements are identified in the NMC *Guide for Administration of Merchant Marine Examinations*. The general composition of the examinations is:

MODULE	NUMBER OF QUESTIONS		PASSING SCORE
	OCEANS	N/C	
Rules of the Road	50	50	90%
Deck General	70	70	70%
Navigation General	70	70	70%
Deck Safety and Environmental Protection	70	70	70%
Navigation Problems: Chart Plot	15	15	87%
Navigation Problems: Near Coastal	10	10	90%
Navigation Problems: Oceans	15	--	80%

Subj: QUALIFICATION VIA "THE HAWSEPIPE" FOR STCW ENDORSEMENTS AS OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 200 GRT/500 GT OR MORE

(2) Mariners who were not examined for any the endorsements listed in paragraph 3.a., above, or who were examined for mate ocean/near coastal 500 to 1600 gross register tons (GRT) or mate (OSV) prior to February 1, 2002, must complete the examinations described above or complete an approved alternative to demonstrate that they have achieved the required standard of competence for knowledge-based KUPs.

e. INCREASE IN SCOPE OR RAISE OF GRADE.

(1) Increase in Scope. Mariners holding an STCW endorsement limited to near coastal waters corresponding to any of the officer endorsements identified in paragraph 3.a., above, must meet the following examination and assessment requirements for an increase in scope from near coastal waters to oceans per 46 CFR 11.401(d):

- i. Pass the following Coast Guard examination modules or a course approved to substitute for these modules:

MODULE	NUMBER OF QUESTIONS	PASSING SCORE
Navigation General	20	70%
Navigation Problems: Oceans	15	80%

- ii. Complete the following assessments in Enclosure (1) related to celestial navigation:

- OICNW-1-1A
- OICNW-1-1B
- OICNW-1-1C
- OICNW-1-1D
- OICNW-1-1E
- OICNW-1-1F

(2) Raise of Grade.

- i. Mariners who hold or who have previously completed practical assessments of competency for an STCW 95 endorsement as OICNW corresponding to any of the officer endorsements identified in paragraph 3.a. do not require further training, examination, or assessment. Mariners who hold an endorsement as OICNW that is restricted to near coastal domestic voyages and/or to a specific trade (e.g. offshore supply vessels) have not fully demonstrated competence in all areas required by STCW A-II/1 and must demonstrate competence in all areas not completed for their restricted OICNW endorsement per 46 CFR 11.903(c).
- ii. Mariners who have not previously completed practical assessments of competency for an STCW endorsement as OICNW corresponding to any of the

Subj: QUALIFICATION VIA "THE HAWSEPIPE" FOR STCW ENDORSEMENTS AS OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 200 GRT/500 GT OR MORE

officer endorsements identified in paragraph 3.a must meet the following:

- A. Complete the training and assessment requirements specified in paragraphs b and c, above.
- B. Mariners who tested for officer endorsements as Mate ocean/near coastal 500 to 1600 gross register tons (GRT) and/or Mate (OSV) on or after February 1, 2002, do not require further examination.
- C. Mariners who tested for the officer endorsements as Mate ocean/near coastal 500 to 1600 gross register tons (GRT) and/or Mate (OSV) before February 1, 2002, must complete the examinations described in paragraph d. above, or complete an approved alternative to demonstrate that they have achieved the required standard of competence for knowledge-based KUPs.
- D. Mariners who hold an STCW endorsement corresponding to an officer endorsement as Third Mate oceans issued before February 1, 2002, must complete the following to qualify for an STCW endorsement corresponding to an officer endorsement as Second Mate oceans:
 - Assessments OICNW-1-1C and OICNW-1-1F related to celestial navigation using bodies other than the sun; and;
 - Pass the *Navigation Problems: Near Coastal* and *Navigation Problems: Oceans* examination modules described in paragraph d, above.

4. Action.

- a. The NMC shall be guided by the information in this policy letter.
- b. Commanding Officers of units with marine safety responsibilities should bring this policy letter to the attention of the maritime industry and the appropriate state boating law administrators in their area of responsibility.
- c. This policy is posted along with other CG-543 policy letters on the Coast Guard's Homeport internet website at <http://homeport.uscg.mil> by selecting the following links: Library > Policy > Policy Letters > Inspection.

5. Disclaimer.

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

Subj: QUALIFICATION VIA "THE HAWSEPIPE" FOR STCW ENDORSEMENTS AS
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF 200 GRT/500
GT OR MORE

If you want to discuss an alternative approach (you are not required to do so), you may contact Mr. Luke Harden of the Mariner Credentialing Program Policy Division (CG-5434) at (202) 372-1206 who is responsible for implementing this guidance.

#

Enclosures: (1) OICNW Assessment Sheets
(2) OICNW Assessment Summary
(3) Assessor's Manual for Conducting Mariner Assessments

Copy: All Area/District (p) offices
All Sectors/ Activities and MSU's

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH ON SHIPS OF
200 GRT/500 GT OR MORE**

Assessment Sheets

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-1A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Celestial Navigation* -- Ability to use celestial bodies to determine the ship's position.

TASK: Adjust a sextant

PERFORMANCE CONDITION: On a ship underway, given a standard marine sextant with a perpendicularity error, side error, parallelism error, and collimation error, totaling no more than 2' and a clear horizon or sharply defined cloud.

PERFORMANCE BEHAVIOR: Remove the adjustable sextant errors

PERFORMANCE STANDARD:

1. The errors are removed in the following order:
 - a. Perpendicularity;
 - b. Side error;
 - c. Parallelism; and
 - d. Collimation error.
2. The index error is less than 0.5 minutes of arc as determined by the assessor.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-1B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Celestial Navigation* -- Ability to use celestial bodies to determine the ship's position

TASK: Measure the altitude of the sun

PERFORMANCE CONDITION: Aboard a ship at sea, given a standard marine sextant, a clear horizon, a visible sun, and an accurate time.

PERFORMANCE BEHAVIOR: Measure the altitude of the lower limb of the sun and accurately record the time of the observation.

PERFORMANCE STANDARD:

1. The altitude is within ± 0.5 minutes of arc, after correction for index error, as compared with the altitude measured by the assessor at the same time; and,
2. The time is within ± 2 second of UTC at the time of observation as determined by the assessor.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-1C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Celestial Navigation* -- Ability to use celestial bodies to determine the ship's position

TASK: Measure the altitude of at least 3 stars

PERFORMANCE CONDITION: Aboard a ship at sea, given a standard marine sextant, a clear horizon, a clear or partly cloudy sky, and an accurate time, during a single twilight.

PERFORMANCE BEHAVIOR: Measure the altitude of three stars and accurately record the times of the observation of each star.

PERFORMANCE STANDARD:

1. The altitude is within ± 0.5 minutes of arc, after correction for index error, compared with the assessor's solution; and,
2. The time is within ± 2 seconds of UTC of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-1D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Celestial Navigation* -- Ability to use celestial bodies to determine the ship's position

TASK: Measure the altitude of the sun at meridian passage (local apparent noon)

PERFORMANCE CONDITION: Aboard a ship at sea, given a standard marine sextant, a clear horizon, a clear or partly cloudy sky.

PERFORMANCE BEHAVIOR: Measure the altitude of the sun as it transits the meridian on which the vessel is located.

PERFORMANCE STANDARD:

The altitude is within ± 0.5 minutes of arc, after correction for index error, of the assessor's solution measured at meridian passage.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-1E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Celestial Navigation* -- Ability to use celestial bodies to determine the ship's position

TASK: Celestial running fix

PERFORMANCE CONDITION: Aboard a ship at sea, or in a navigation laboratory, when given the assumed positions, the intercepts, azimuths, times of three observations of the sun, and a standard plotting sheet appropriate for the dead reckoning position.

PERFORMANCE BEHAVIOR: Advance all three lines of position to a common time.

PERFORMANCE STANDARD:

The position of the running fix is within 1 nm of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-1F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Celestial Navigation* -- Ability to use celestial bodies to determine the ship's position

TASK: Star fix

PERFORMANCE CONDITION: Aboard a ship at sea, or in a navigation laboratory, when given the assumed positions, the intercepts, azimuths, and times of three star observations, and on a standard plotting sheet appropriate for the dead reckoning position.

PERFORMANCE BEHAVIOR: Plot the three lines of position and advance them to a common time.

PERFORMANCE STANDARD:

The position of the star fix is within 1 nm of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-2A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* --
Ability to determine the ship's position by use of: landmarks; and, aids to navigation,
including lighthouses, beacons and buoys

TASK: Fix by two bearings

PERFORMANCE CONDITION: On a ship underway, or a full mission ship simulator, with land and aids to navigation in sight, using a standard bearing circle, alidade, or other device for taking bearings, and given a chart with a scale of no more than 1: 150,000.

PERFORMANCE BEHAVIOR: Determine the bearings of at least two charted objects and plot them.

PERFORMANCE STANDARD:

1. The position is within $\pm .1$ nm of the assessor's solution;
2. Crossing angles of bearings should be not less than 30° and not more than 160° between bearings;
3. The bearings of objects abeam or close to the beam are observed first; and
4. The chart in use is the largest scale suitable for the waters being transited.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-2B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* --
Ability to determine the ship's position by use of: Marine Radar

TASK: Fix by two ranges

PERFORMANCE CONDITION: On an operational marine radar or a radar simulator that meets applicable national and international performance standards, with land and buoys displayed, and given a chart with a scale of no more than 1: 150,000.

PERFORMANCE BEHAVIOR: Determine two or more ranges measured from identified charted objects or points of land and plot them.

PERFORMANCE STANDARD:

The position is within $\pm .1$ nm of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-2C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* --
Ability to determine the ship's position by use of: Marine Radar

TASK: Fix by tangents to two identified objects

PERFORMANCE CONDITION: On an operational marine radar or a radar simulator that meets applicable national and international performance standards, with land and buoys displayed, and given a chart with a scale of no more than 1: 150,000.

PERFORMANCE BEHAVIOR: Determine two or more tangents measured from identified-charted objects or points of land and plot them.

PERFORMANCE STANDARD:

The position is within $\pm .1$ nm of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-2D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* --
Ability to determine the ship's position by use of: Dead Reckoning

TASK: Plot the ship's DR position

PERFORMANCE CONDITION: On a ship underway and using a standard plotting sheet or chart, and given the vessels speed made good and course made good for the past four hours.

PERFORMANCE BEHAVIOR: Plot the ship's DR position for every hour (or more frequently if required) for the duration of the watch.

PERFORMANCE STANDARD:

The position is within ± 1 nm of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-2E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Terrestrial and Coastal Navigation* --
Ability to determine the ship's position by use of: Set and drift

TASK: Determine course to steer

PERFORMANCE CONDITION: On a ship underway, or a full mission ship simulator, with the ship's speed of at least 10 knots, and using a plotting sheet or chart, when encountering wind and current which sets the vessel.

PERFORMANCE BEHAVIOR: Plot the vessel's position on at least two successive occasions not less than 30 minutes apart, for a vessel steaming at 20 kts, and calculate set and drift by vector analysis and determine the course to steer to make the intended course.

PERFORMANCE STANDARD:

The course to steer is within $\pm 5^\circ$ of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-3A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Thorough knowledge of and ability to use navigational charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ship's routing information.

TASK: Correction of charts and publications

PERFORMANCE CONDITION: On a ship, or in a navigational laboratory, given notices to mariners and uncorrected charts, and publications.

PERFORMANCE BEHAVIOR: Correct five charts and three publications, including the *Light List* or *List of Lights*.

PERFORMANCE STANDARD:

1. Charts and publications needing correction are identified;
2. Corrections are correctly made to the affected charts and publications;
3. All corrections are recorded on the chart and the chart correction record (or the chart correction spreadsheet); or for publications, on the correction page of the publication, and on the publication correction card or the publication correction spreadsheet.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-3B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Thorough knowledge of and ability to use navigational charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ship's routing information

TASK: Chart selection

PERFORMANCE CONDITION: On a ship, or in a navigational laboratory, given a voyage of at least 1,000 NM between the port of departure and the port of arrival, given the appropriate chart catalog.

PERFORMANCE BEHAVIOR: Identify the charts needed for the voyage.

PERFORMANCE STANDARD:

1. The name and number of the charts are correctly identified and recorded.
2. The charts selected are the largest scales appropriate for the area being transited.
3. There is no gap in chart coverage for any portion of the voyage requiring coastal navigation and departure and arrival at any port.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-3C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Thorough knowledge of and ability to use navigational charts and publications, such as sailing directions, tide tables, notices to mariners, radio navigational warnings and ship's routing information

TASK: Route planning

PERFORMANCE CONDITION: On a ship, a full mission ship simulator, or in a navigation laboratory, when given three way points consisting of a position of departure, a position of arrival, and one other way point, with the total distance of more than 1,000 nm.

PERFORMANCE BEHAVIOR: Determine the appropriate courses and distances between way points and plot the intended courses on the charts selected.

PERFORMANCE STANDARD:

1. Courses and distances between waypoints were correctly calculated;
2. The route was the most direct; and
3. The courses were plotted on the appropriately scaled charts noting the ETA at each way point, including the final way point.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-4A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Electronic systems of position fixing and navigation* -- Ability to determine the ship's position by use of electronic navigational aids: GPS

TASK: Position fix by GPS

PERFORMANCE CONDITION: On a ship underway, or on a full-mission ship simulator, or in a navigation laboratory, using a GPS or DGPS receiver which meets IMO performance standards.

PERFORMANCE BEHAVIOR: Initialize a GPS or DGPS receiver, determine the ship's position and evaluate the accuracy of that position.

PERFORMANCE STANDARD:

1. The system was initialized; and
2. The accuracy of the position was determined.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-4B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Electronic systems of position fixing and navigation* -- Ability to determine the ship's position by use of electronic navigational aids: GPS

TASK: Use of GPS position save function

PERFORMANCE CONDITION: On a ship underway, or on a full-mission ship simulator, or in a navigation laboratory, using a GPS or DGPS receiver which meets IMO performance standards, when hearing "Man Overboard."

PERFORMANCE BEHAVIOR: Activate the man overboard/emergency position save function.

PERFORMANCE STANDARD:

The ship's position is saved or recorded within one minute of hearing "Man Overboard."

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-4D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Echo Sounders* -- Ability to operate the equipment and apply the information correctly

TASK: Use of echo sounder

PERFORMANCE CONDITION: On a ship underway using an echo sounder that meets IMO performance standards or a part task trainer that realistically simulates all the functions and controls of an echo sounder that meets IMO performance standards.

PERFORMANCE BEHAVIOR: Turn on, test, and operate the echo sounder.

PERFORMANCE STANDARD:

1. The system was turned on;
2. The echo sounder was tested in accordance with manufacturer's recommendations;
3. The correct UTC is noted on the echo sounder paper (if fitted);
4. The scale selected was the lowest appropriate for the vessel's draft and the depth of water of the area of transit; and
5. The sensitivity was adjusted to obtain proper depth reading on the display and correct trace on the paper (if fitted).

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-5A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Determine gyro compass error by bearing of range

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, using navigational or natural terrestrial ranges.

PERFORMANCE BEHAVIOR: Take a visual bearing of the range and determine gyro-compass error.

PERFORMANCE STANDARD:

1. The visual bearing is compared to the charted bearing;
2. The compass error is determined and properly labeled; and
3. The solution is $\pm .5^\circ$ of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-5B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Determine magnetic compass error

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, with both a magnetic and gyrocompass.

PERFORMANCE BEHAVIOR: Determine the magnetic compass error.

PERFORMANCE STANDARD:

1. The magnetic heading is compared to the corrected gyro heading (corrected for a known gyro error);
2. The magnetic compass error is determined and properly labeled;
3. The solution is $\pm .5^\circ$ of the assessor's solution; and
4. The error is correctly recorded in the compass record book and the ship's log.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-5C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Determine magnetic compass deviation

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, using navigational or natural terrestrial ranges, using only a magnetic compass, and a chart with variation.

PERFORMANCE BEHAVIOR: Note the vessel's magnetic compass heading while aligned on the range and determine magnetic compass deviation.

PERFORMANCE STANDARD:

1. The magnetic heading is compared to the charted range bearing;
2. The magnetic compass error is determined and properly labeled;
3. Variation is determined from the chart;
4. The deviation solution is $\pm .5^\circ$ of the assessor's solution; and
5. The deviation is correctly recorded in the compass record book and the ship's log.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-5D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Determine course to steer by magnetic compass

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, and given a deviation table.

PERFORMANCE BEHAVIOR: Apply the compass error to the course by magnetic compass to make good the intended true course.

PERFORMANCE STANDARD:

Compass error is correctly applied to the magnetic course and the candidate's solution is $\pm 1^\circ$ of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-5E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Position fix by magnetic compass bearings

PERFORMANCE CONDITION: On a ship underway or on a full-mission ship simulator, or in a navigational laboratory, and given a deviation table, on a chart with a scale of no more than 1:150,000,

PERFORMANCE BEHAVIOR: Correctly apply the compass error to the bearings by magnetic compass of at least two charted objects and plot them on the chart in use..

PERFORMANCE STANDARD:

1. Compass error is correctly applied to the magnetic bearings; and
2. The object's position is determined within $\pm .5$ nm of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-5F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Magnetic & Gyro Compass* -- Ability to determine errors of the magnetic and gyro-compasses, using terrestrial means, and to allow for such errors

TASK: Azimuth of the sun

PERFORMANCE CONDITION: On a ship underway, and using a standard azimuth circle.

PERFORMANCE BEHAVIOR: Read the gyrocompass bearing of the sun and determine gyro compass error.

PERFORMANCE STANDARD:

1. The azimuth of the sun is read when the repeater is level;
2. The time of the reading noted;
3. The true azimuth of the sun for the time of the reading is determined
4. The gyrocompass azimuth is compared to the true azimuth and the gyro error is determined;
and
5. The solution is $\pm .5^\circ$ of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-6A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Steering Control Systems* -- Adjustment of controls for optimum performance

TASK: Steering gear test

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator.

PERFORMANCE BEHAVIOR: Conduct the pre-departure test of the vessel's steering gear.

PERFORMANCE STANDARD:

1. The steering control system is turned on;
2. The steering gyro repeater is aligned with the master gyro-compass;
3. The controls for switching pumps and motors between the port and starboard steering systems are tested after the required warm up period; and
4. Both port and starboard steering systems are tested as follows:
 - a. When the control is switched to hand steering, the rudder is tested throughout its full range of motion; and
 - b. When the control is switched to non follow-up, the rudder is tested throughout its full range of motion.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-6B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Steering Control Systems* -- Adjustment of controls for optimum performance

TASK: Set weather controls

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator, while in auto-pilot.

PERFORMANCE BEHAVIOR: Set the rudder and weather controls that are most suitable for the weather and sea conditions.

PERFORMANCE STANDARD:

1. The weather control is set in accordance with the manufacturer's recommendations for the prevailing sea conditions;
2. The rudder control is set in accordance with the manufacturer's recommendations for the prevailing sea conditions for the area transited or simulated; and
3. The rate of turn control (if fitted) is set in accordance with the standing orders.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-7A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Meteorology* -- Ability to use and interpret information obtained from on-board meteorological instruments

TASK: Read barometric pressure

PERFORMANCE CONDITION: On a ship underway or in a laboratory.

PERFORMANCE BEHAVIOR: Determine the barometric pressure in millibars, inches or millimeters of mercury.

PERFORMANCE STANDARD:

1. The barometer is read and the appropriate corrections are applied; and
2. The barometric pressure determined by the candidate is within .5 millibars; .02 inches or .4 millimeters of the assessor's corrected reading.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-7B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Meteorology* -- Ability to use and interpret information obtained from on-board meteorological instruments

TASK: Determine true wind speed and direction

PERFORMANCE CONDITION: On a ship underway or in a laboratory, and using an anemometer.

PERFORMANCE BEHAVIOR: Determine true wind speed and direction.

PERFORMANCE STANDARD:

The apparent wind speed and direction is converted to true wind speed and direction and the candidate's solution is within one point for direction and five knots for speed of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-1-7C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Plan and conduct a passage and determine position

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Meteorology* -- Ability to use and interpret information obtained from on-board meteorological instruments

TASK: Determine expected weather conditions

PERFORMANCE CONDITION: On a ship underway or in a laboratory, and using the surface, upper air and sea state analysis weather maps

PERFORMANCE BEHAVIOR: Determine the weather to be encountered during the next 24-hour period.

PERFORMANCE STANDARD:

The candidate determines expected wind, sea, and weather conditions (types and amount of cloud cover, rain, and fog) based on standard meteorological principles and they agree with the assessor's determinations, based on the movement of the systems and fronts.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-1A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea

TASK: Identify light configurations

PERFORMANCE CONDITION: At night, on a ship underway, a full mission ship simulator, or using approved laboratory equipment.

PERFORMANCE BEHAVIOR: Identify vessels through observation of their light configurations.

PERFORMANCE STANDARD:

The candidate correctly identifies the situation or occupation of 18 of 20 vessels that have different light configurations.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-1B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea

TASK: Identify day shapes

PERFORMANCE CONDITION: In daylight, on a ship underway, a full mission ship simulator, or using approved laboratory equipment.

PERFORMANCE BEHAVIOR: Identify vessels through observation of their required shapes.

PERFORMANCE STANDARD:

The candidate correctly identifies the situation or occupation of 18 of 20 vessels that are displaying different required shapes.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-1C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea

TASK: Identify sound signals

PERFORMANCE CONDITION: In restricted visibility, on a ship underway, a full mission ship simulator, or using approved laboratory equipment.

PERFORMANCE BEHAVIOR: Identify vessels by hearing their required sound signals.

PERFORMANCE STANDARD:

The candidate correctly identifies the situation or occupation of 9 of 10 vessels sounding different required sound signals.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-1D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea

TASK: Determine risk of collision

PERFORMANCE CONDITION: On a ship underway, a full mission ship simulator, or using approved laboratory equipment, and using a gyro-compass repeater and an azimuth circle, bearing circle, alidade, or other device for taking bearings, and a marine radar or ARPA meeting IMO performance standards set on the 12 mile scale and the targets more than 8 miles away.

PERFORMANCE BEHAVIOR: Determine if risk of collision exists with approaching meeting, crossing and overtaking vessels.

PERFORMANCE STANDARD:

1. Two visual bearings of an approaching vessel are taken using an azimuth circle, bearing circle or alidade to determine if the bearing to the approaching vessels is appreciably changing, and each observation is within $\pm 2^\circ$ of the assessor's solution; and
2. Two electronic bearings of an approaching vessel are taken on a radar or an ARPA to determine if the bearing to the approaching vessels are appreciably changing, and each observation is within $\pm 2^\circ$ of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-1E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea

TASK: Maneuver to avoid risk of collision -- meeting

PERFORMANCE CONDITION: On a ship underway, a full mission ship simulator, or using approved laboratory equipment, when risk of collision with an approaching meeting vessel exists in good visibility in the open ocean.

PERFORMANCE BEHAVIOR: Apply the rules of the road correctly and maneuver the vessel to avoid the collision, if required.

PERFORMANCE STANDARD:

1. The aspect of the approaching vessel was determined;
2. The situation was identified as a meeting situation;
3. Positive action was taken in ample time in accordance with the steering and sailing rules to achieve a CPA of at least 3 nm; and
4. Speed or course changes were made that were large enough to be readily apparent to another vessel observing visually or by radar.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-1F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea

TASK: Maneuver to avoid risk of collision -- overtaking

PERFORMANCE CONDITION: On a ship underway, a full mission ship simulator, or using approved laboratory equipment, when risk of collision with an approaching overtaking vessel exists in good visibility in the open ocean.

PERFORMANCE BEHAVIOR: Apply the rules of the road correctly and maneuver the vessel to avoid the collision, if required.

PERFORMANCE STANDARD:

1. The aspect of the approaching vessel was determined;
2. The situation was identified as an overtaking situation;
3. The candidate attempted to call the overtaking vessel on the VHF;
4. The danger signal was sounded, if required by the rules;
5. Positive action in ample time was taken in accordance with Rule 17 of the steering and sailing rules to achieve a CPA of at least 1 nm; and
6. Speed or course changes were made that were large enough to be readily apparent to another vessel observing visually or by radar.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-1G

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea

TASK: Maneuver to avoid risk of collision -- crossing

PERFORMANCE CONDITION: On a ship underway, a full mission ship simulator, or using approved laboratory equipment, when risk of collision with an approaching crossing vessel (from the candidate's starboard side at a relative bearing of between 30 degrees and 112.5 degrees) exists in good visibility in the open ocean.

PERFORMANCE BEHAVIOR: Apply the rules of the road correctly and maneuver the vessel to avoid the collision, if required.

PERFORMANCE STANDARD:

1. The aspect of the approaching vessel was determined;
2. The situation was identified as a crossing situation;
3. Positive action in ample time was taken in accordance with the steering and sailing rules to achieve a CPA of at least 3 nm; and
4. Speed or course changes were made that were large enough to be readily apparent to another vessel observing visually or by radar.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-2A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the principles to be observed in keeping a safe watch

TASK: Watch relief

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator during an exercise at sea.

PERFORMANCE BEHAVIOR: Properly relieve the watch in accordance with STCW Code Section A-VIII/2, Part 3-1, Paragraphs 21 and 22.

PERFORMANCE STANDARD:

1. The standing orders and night orders were read;
2. The vessel's position, course and speed are read from the GPS receiver and compared to the DR position and track;
3. The position of the next charted waypoint is compared to the GPS waypoint and the route print out;
4. The identity of critical aids to navigation in sight is verified;
5. Tides and currents are determined as necessary;
6. Visibility and weather are determined;
7. The radar or ARPA is checked and is properly tuned;
8. Any targets displayed on the radar or ARPA are checked;
9. Headings by magnetic and gyrocompass are checked;
10. The navigational hazards likely to be encountered during the watch are determined;
11. The possible effects of list, trim, water density and squat on under keel clearance are determined;
12. Courses, traffic, weather and any special instructions were related by the officer being relieved; and
13. The relieving officer told the officer being relieved he or she was relieved.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-2B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the principles to be observed in keeping a safe watch

TASK: Keep a safe navigation watch

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator during an exercise at sea.

PERFORMANCE BEHAVIOR: Properly keep a safe navigational watch in accordance with STCW Code Section A-VIII/2, Part 3-1, Paragraph 23 to 50.

PERFORMANCE STANDARD:

1. The voyage plan was closely and continuously monitored;
2. A proper look out was maintained by all available means;
3. A safe speed was maintained throughout the watch period;
4. Position, course and speed were checked at frequent intervals;
5. The steering mode selected was appropriate to the area being transited;
6. Ensures that under keel clearance was suitable for the draft of the vessel at all times;
7. Course changes were made in accordance with the voyage plan;
8. The vessel's position was fixed and plotted on an appropriate chart at intervals suitable to the vessel's speed and the area being transited;
9. The identity of critical aids to navigation in sight is determined;
10. More than one method, including electronic and other navigational equipment, external fixed aids, geographic reference points, and hydrographic contours, is used to fix the vessel's position and check the accuracy of fixes;
11. Radio equipment was frequently checked to verify it is functioning properly;
12. The risk or danger of collision with each approaching vessel is determined and early and substantial action is taken in accordance with the COLREGS to avoid collisions;
13. Rudder and engine orders were executed as ordered;
14. The validity of the gyro input to all navigation equipment is verified;
15. Gyrocompass error was determined by any available means and the error was logged;
16. Magnetic variation and compass deviation were correctly applied to courses and bearings;
17. The candidate determined the person steering the vessel was competent to do so;
18. Tide and current conditions for the watch period were determined in coastal or tidal waters;
19. Set and drift were determined and applied to allow for set and drift;
20. The weather conditions at the ship were correctly and timely recorded and reported as required;
21. Running lights were checked throughout the watch period;
22. The master was notified as directed by all master's or standing orders;
23. All required log entries were made; and
24. All relevant navigation information was used to identify protected marine habitats, areas, and sanctuaries

Candidate	Candidate's Mariner Reference No.
Assessor	Position
Vessel or School	Assessor's Mariner Reference No. Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-2C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the principles to be observed in keeping a safe watch

TASK: Notify Master when appropriate

PERFORMANCE CONDITION: On a ship underway or a full mission ship simulator during an exercise at sea.

PERFORMANCE BEHAVIOR: Notify the master as instructed, and when in doubt of other vessels' intentions, or in any circumstances that affect the routine navigation of the vessel in accordance with STCW Code Section A-VIII/2, Part 3-1, Paragraph 40.

PERFORMANCE STANDARD:

The master was notified immediately when one of the following occurred.

1. Restricted visibility was encountered or expected;
2. Vessel traffic density or the movements of other ships caused concern;
3. Difficulty was experienced in maintaining course;
4. Failed to sight land or a navigational mark, or to obtain soundings when expected;
5. Aids to navigation were not in position or were displaying incorrect characteristics;
6. Land or a navigational mark was unexpectedly sighted, or soundings obtained or changed unexpectedly;
7. The engines or its control systems, steering, or any essential navigational equipment failed, or alarms or indicators for these systems sounded;
8. Failure of any radio equipment;
9. Concerns arose in heavy weather about damage to the vessel or its cargo;
10. Any hazard to navigation that posed a threat to the vessel was noticed;
11. Any doubt about the ship's safety or other emergency arose; or
12. Any changes are made to the voyage plan.

<hr/>	<hr/>
Candidate	Candidate's Mariner Reference No.
<hr/>	<hr/>
Assessor	Position
<hr/>	<hr/>
Vessel or School	Assessor's Mariner Reference No. Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-2D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the principles to be observed in keeping a safe watch

TASK: Keep a safe anchor watch

PERFORMANCE CONDITION: On a ship at anchor or a full mission ship simulator during an exercise at anchor with wind and seas building.

PERFORMANCE BEHAVIOR: Properly keep a safe anchor watch in accordance with STCW Code Section A-VIII/2, Part 3-1, Paragraph 51.

PERFORMANCE STANDARD:

1. Determined and plotted the ship's position;
2. Frequently checked the ship's position by visual and radar bearings and radar ranges from the same charted objects;
3. Established the GPS or DGPS anchor alarm;
4. Maintained a proper lookout;
5. Ensured periodic inspections were made;
6. Posted a rating at the anchor to carry out orders with respect to the anchor;
7. Monitored weather, tides and sea state;
8. Notified the master immediately when the weather changed, visibility became restricted, or the anchor started to drag;
9. Placed engines on standby and ensured that they are ready for immediate use where appropriate; and
10. Properly displayed all required lights and shapes and sounded proper sound signals.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-2E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the principles to be observed in keeping a safe watch

TASK: Navigate in restricted visibility

PERFORMANCE CONDITION: On a ship at sea or a full mission ship simulator during an exercise at sea, when visibility becomes restricted while underway.

PERFORMANCE BEHAVIOR: Recognize the restricted visibility take the appropriate action to navigate in restricted visibility in accordance with the COLREGS in accordance with Section STCW Code A-VIII/2, Part 3-1, Paragraph 45.

PERFORMANCE STANDARD:

1. The restricted visibility was determined;
2. The master was notified;
3. Steering was switched to hand steering;
4. A proper lookout was posted and the running lights turned on;
5. The vessel's speed was set in accordance with Rule 6;
6. Sounding of required signals was commenced;
7. The radar or ARPA was set on the appropriate scale to scan at long range for the presence of other vessels; and
8. Approaching targets were plotted or the ARPA or radar was used to obtain early warning of risk of collision and determine the speed and direction of relative motion.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-2F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of the principles to be observed in keeping a safe watch

TASK: Turn over a watch

PERFORMANCE CONDITION: On a ship at sea or a full mission ship simulator during an exercise at sea.

PERFORMANCE BEHAVIOR: Turn the watch over.

PERFORMANCE STANDARD:

1. A DR position was plotted on the chart in use for the end of the watch;
2. The ship's position was determined and plotted all by means appropriate to the area transited;
3. Required weather data was read and recorded in the deck log;
4. The heading of the gyro and magnetic compasses were compared and recorded;
5. The movement of all vessel traffic was checked by both visual and electronic means immediately before being relieved;
6. The vessel's course and speed, posting of special lookouts, the steering mode in use, and weather and visibility were relayed to the relieving officer;
7. Any special instructions regarding occurrences during the past watch or which are expected during the next watch were relayed;
8. All relevant information concerning vessels in sight or on the radar or ARPA was reported to the relieving officer;
9. The master is notified of any doubt that the relieving officer is competent to perform his or her duties;
10. The watch was not turned over during a maneuver or other action to avoid a hazard to navigation; and
11. The officer being relieved did not leave the bridge until informed by the relieving officer that he or she is ready to take the watch.

<hr/>	<hr/>
Candidate	Candidate's Mariner Reference No.
<hr/>	<hr/>
Assessor	Position
<hr/>	<hr/>
Vessel or School	Assessor's Mariner Reference No. Date

TABLE A-II/1 Specification of Minimum Standard of Competence OFFICER IN CHARGE OF A NAVIGATIONAL WATCH

ASSESSMENT NO. OICNW-2-3A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: Voyage planning

PERFORMANCE CONDITION: On a ship, a full mission ship simulator, or in a navigation laboratory, when given a port of departure and a port of arrival more than 1,000 apart.

PERFORMANCE BEHAVIOR: Plan a voyage and review the voyage plan with the master and deck officers.

PERFORMANCE STANDARD:

Appraisal -- Take into account paragraph 2 of the annex to IMO Assembly Resolution A 893(21):

1. The condition of the vessel, its stability, equipment, operational limitations, draft and maneuvering characteristics;
2. Any special characteristics of the cargo and its stowage;
3. Crew members competency and rest status;
4. The status of all ship's certificates and documents were up to date;
5. Up to date charts of proper scale, and the latest notices to mariners and radio navigational warnings;
6. Up to date coast pilots, sailing directions, and other information sources appropriate for the voyage;
7. Relevant routing guides;
8. Up to date tide and current tables and atlases;
9. Weather information;
10. Weather routing services;
11. Ship reporting systems, VTS and environmental protection measures;
12. Vessel traffic density for the route;
13. Pilotage requirements and information exchange; and,
14. Port information, including emergency response capability.

Planning -- Plan contains the following per para. 3 of the annex to IMO Assembly Resolution A 893(21):

15. Courses plotted on the appropriately scaled charts noting the ETA at each way point, including the final way point;
16. Courses and distances between way points were correctly calculated and indicated on the charts;
17. The most direct route that avoided all hazards to navigation by the margin of safety of 3 nm;
18. The areas of all required speed changes;
19. The minimum under keel clearances in critical areas; positions requiring a change of machinery status;
20. Positions requiring a change of machinery status;
21. Waypoint of all course changes;
22. The methods and frequency of position fixing, including areas requiring the highest accuracy;
23. The positions and radio hailing frequencies or channels where port authorities, pilots and VTS services must be notified were noted on the relevant chart;
24. The state of the tide and currents at the port of departure for the times of departure and transit were determined;
25. Contingency plan for alternative actions in cases of emergency;
26. The review of the voyage plan with the Master and deck officers.
27. All relevant navigation information used to identify protected marine habitats, areas and sanctuaries.

Candidate	Candidate's Mariner Reference No.
Assessor	Position
Vessel or School	Assessor's Mariner Reference No. Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: Execute a voyage plan

PERFORMANCE CONDITION: On a ship, or a full mission ship simulator, when given a voyage plan.

PERFORMANCE BEHAVIOR: Execute the voyage plan.

PERFORMANCE STANDARD:

The candidate, in accordance with paragraph 4 and 5 of the annex to IMO Assembly Resolution A 893(21):

1. Checks the reliability and condition of the navigational equipment at frequent intervals;
2. Applies basic information obtained from the tide tables and other navigational publications to determine under keel clearance;
3. Fixes the vessels position at appropriate intervals;
4. Checks magnetic and gyro-compasses;
5. Assesses meteorological information;
6. Determined compass error;
7. Calculates sailings for up to 24 hours;
8. Correctly operates and applied information from electronic navigation systems;
9. Correctly operates the radar and ARPA and applied the information for navigation and collision avoidance;
10. Correctly operates propulsion and steering systems to control heading and speed;
11. Initiates action in event of a real or simulated equipment malfunction or failure of major items of equipment;
12. Correctly conducts radio-communications;
13. Monitored and correctly operates safety and alarm systems.
14. Closely and continuously monitors the voyage plan.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: BRM – Recognition of watch condition

PERFORMANCE CONDITION: On a ship at sea or a full mission ship simulator during an exercise at sea, when help is needed because of restricted visibility, vessel traffic or safety of navigation.

PERFORMANCE BEHAVIOR: Recognize the need for additional personnel on the bridge and notify the master.

PERFORMANCE STANDARD:

The candidate notifies the master immediately if:

1. The vessel encounters or expects to encounter restricted visibility;
2. There is cause for concern because of vessel traffic density or the movements of other ships;
3. the vessel will transit restricted waters with vessel traffic; or
4. he or she was fatigued to the point that decision making is affected.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: BRM Condition III – collision avoidance.

PERFORMANCE CONDITION: the ship is navigating near land, shoals or with increased traffic density and/or restricted visibility. This condition requires concentrated navigation and observation of traffic for collision avoidance (entering or leaving port).

On a ship at sea or a full mission ship simulator during an exercise at sea, and with a bridge team in place for navigating in congested near coastal waters with or without reduced visibility, and assigned to monitor vessel traffic using an IMO compliant ARPA. The ship is navigating near land, shoals, or with increased traffic density and/or restricted visibility.

PERFORMANCE BEHAVIOR: Identify all vessels (targets) posing a risk or danger of collision, and provide appropriate information and recommendations on vessel traffic and any other situation or condition that may effect the safe navigation of the vessel to the conning officer.

PERFORMANCE STANDARD:

1. The risk and danger of collision of all approaching vessels is determined within 6 minutes;
2. The conning officer was immediately notified of the relative position of the threatening vessel, its CPA and TCPA;
3. Course changes in accordance with the COLREGS to remove the risks of collision and avoid the close quarters situations from developing were recommended;
4. All recommended course or speed changes resulted in increasing the CPA to approaching vessels identified as posing a risk or danger of collision;
5. All recommended course changes provided sufficient sea room and bottom clearance for the area transited;
6. Communication was clear, immediate, reliable and relevant; and
7. Non-essential activities were avoided.

<hr/>	<hr/>	
Candidate	Candidate's Mariner Reference No.	
<hr/>	<hr/>	
Assessor	Position	
<hr/>	<hr/>	
Vessel or School	Assessor's Mariner Reference No.	Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: BRM Condition III – navigation

PERFORMANCE CONDITION: On a ship at sea or a full mission ship simulator during an exercise at sea, and with a bridge team in place for navigating in congested near coastal waters with or without reduced visibility, and assigned to monitor the vessel's position, communicate on the VHF, and all other bridge duties, using an IMO compliant ARPA, a GPS or DGPS receiver and all other bridge navigational equipment identified in the performance standard.

PERFORMANCE BEHAVIOR: Determine and plot the vessel's position by electronic and visual means, communicate as required on the VHF, and carry out all engine commands, ensure that all rudder commands are properly carried out, and make all appropriate log book entries.

PERFORMANCE STANDARD:

1. Visual and electronic means were used to determine the ship's position, including GPS or DGPS, radar, ARPA, ECDIS (if fitted), and Echo Sounder;
2. The vessel's position was plotted in accordance with tolerances stated previously at regular intervals appropriate to the vessel's speed and the area transited;
3. The correct courses to steer to maintain the ship on the intended track were determined and recommended to the conning officer;
4. All VHF calls to own ship were answered and calls to other ships in the area and port authorities were made as required;
5. The helmsman was monitored to ensure all rudder commands were carried out;
6. Communication was clear, immediate, reliable and relevant;
7. Non-essential activities were avoided; and
8. All required entries in the appropriate vessel's logs were made.

Candidate	Candidate's Mariner Reference No.	
Assessor	Position	
Vessel or School	Assessor's Mariner Reference No.	Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: BRM Condition II or III – error trapping

PERFORMANCE CONDITION: The ship is underway offshore in restricted visibility, with increased traffic, land or shoals affecting navigation (coastwise navigation).

On a ship at sea or a full mission ship simulator during an exercise at sea, and with a bridge team in place for navigating in congested near coastal waters with or without reduced visibility, and assigned duties as an officer in a Bridge Team, when one of the following occur:

1. an incorrect rudder order is given;
2. a rudder or engine command is not given at the proper time;
3. a navigational aid is misidentified;
4. the vessel's position is improperly fixed; or
5. a target vessel's movements are improperly stated.

PERFORMANCE BEHAVIOR: Monitor vessel's movement, recognize erroneously stated information about the vessel's position or a target vessels movement, and notify the conning officer of specific questions regarding the vessel's situation.

PERFORMANCE STANDARD:

1. The misinformation or command error was detected.
2. The conning officer was notified within 30 seconds of the occurrence of the error (for helm orders, the candidate will detect the error and issue a corrective order within 5 seconds).

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3G

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: BRM Condition II – navigation & collision avoidance

PERFORMANCE CONDITION: On a ship at sea or a full mission ship simulator during an exercise at sea, when acting as part of the bridge team with assigned duties to monitor the vessel's navigation and determine the risk or danger of collision with all vessels underway in open sea, using an ARPA meeting all national and international performance requirements, a GPS or DGPS receiver and all the bridge equipment identified in the performance standard.

PERFORMANCE BEHAVIOR: Determine and plot the vessel's position at suitable intervals, and plot or systematically observe all approaching vessels and inform the bride team of dangers to navigation, intended course changes, and vessels which pose a risk or danger of collision.

PERFORMANCE STANDARD:

1. The vessel's position was determined and plotted at suitable intervals;
2. All aids to navigation were identified;
3. The bridge team was notified immediately of the following:
 - a) when planned course changes must be made;
 - b) effects of tides or currents setting the vessel off its intended course: or,
 - c) any doubt about the vessel's position.
4. The risk and danger of collision with approaching vessels in the vicinity were determined by visual and radar/ARPA bearings.
5. The bridge team was notified of the following:
 - a) danger or risk of collision with any approaching vessel;
 - b) recommended course change to avoid the risk or danger of collision; and,
 - c) recommended speed change to avoid the risk or danger of collision if the engines are available for immediate use.

Candidate	Candidate's Mariner Reference No.	
Assessor	Position	
Vessel or School	Assessor's Mariner Reference No.	Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3H

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: BRM Condition III – establish a bridge team

PERFORMANCE CONDITION: On a ship at sea or a full mission ship simulator during an exercise at sea, to establish a bridge team to monitor the vessel's navigation and determine the risk or danger of collision with all vessels.

PERFORMANCE BEHAVIOR: Determine the number of officers required safely navigating the vessel and assign individual officers and crewmembers specific duties and functions as part of the bridge team.

PERFORMANCE STANDARD:

Officers were assigned to the following tasks:

1. Conning;
2. Lookout
3. Collision avoidance; and
4. Navigation;
5. Communication; and,
6. Administration.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-2-3I

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maintain a safe navigational watch

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Watchkeeping* -- Thorough knowledge of effective bridge teamwork procedures

TASK: BRM Condition II or III – Prioritization

PERFORMANCE CONDITION: On a full-mission ship simulator during an exercise at sea, and with a bridge team in place, while navigating in congested near- coastal waters in good visibility, and assigned duties as an officer in a bridge team, and given the following:

1. a vessel on own ship's starboard bow changes course and creates a risk of collision;
2. there is insufficient water depth for own ship to turn to starboard;
3. the diesel engines are using heavy fuel;
4. a vessel ahead is on a reciprocal course 1.5 nm away with a CPA of 0.5 nm on the port side; and
5. the GMDSS distress alarm sounds.

PERFORMANCE BEHAVIOR: Determine the appropriate action to take..

PERFORMANCE STANDARD:

The candidate:

1. assesses the situation;
2. determines in which priority action must be taken for the safety of the vessel;
3. recommends that the engines be slowed or stopped in sufficient time to avoid the collision with the vessel on the starboard bow; and
4. after the danger of collision is over, acknowledges the distress call.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Performance -- setting up and maintaining displays

TASK: Set up and maintain radar display

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards.

PERFORMANCE BEHAVIOR: Set up and maintain the radar display.

PERFORMANCE STANDARD:

Within three minutes, after the power is turned on:

1. The set is switched from standby to transmit;
2. The appropriate scale is selected;
3. The gain control was adjusted so that targets and sea return appear;
4. The tune control is adjusted (if the unit is not self tuning);
5. The brilliance control is adjusted;
6. The sea clutter and rain clutter controls are adjusted to suppress the rain and sea clutter without losing targets;
7. The north-up stabilized relative motion is selected.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Performance -- setting up and maintaining displays

TASK: Switch display modes

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards.

PERFORMANCE BEHAVIOR: Switch the display from north-up stabilized relative motion to true motion to head-up, and state how to recognize the mode displayed.

PERFORMANCE STANDARD:

Within 15 seconds:

1. The display is switched from north-up stabilized relative motion to true motion;
2. The display is switched from true motion to head-up; and
3. The candidate pointed to the location on the display of the information that indicates the mode displayed.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Performance -- detection of misrepresentation of information, false echoes, sea return, etc., racons and SARTs

TASK: Identify false echoes, sea return, racon and SART

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards.

PERFORMANCE BEHAVIOR: Identify false echoes, sea return, a racon and SART.

PERFORMANCE STANDARD:

The following were recognized and correctly identified:

1. False echoes:
 - a. indirect or false echoes;
 - b. side lobe effects;
 - c. multiple echoes;
 - d. second trace echoes;
 - e. electronic interference; and,
 - f. spoking;
2. Sea return;
3. Racons; and,
4. SARTs.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Ability to operate and to interpret and analyze information obtained from radar, including: Use -- range and bearing, course and speed of other ships; time and distance of crossing, meeting, and overtaking ships

TASK: Determine range and bearing

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, with land and aids to navigation in range.

PERFORMANCE BEHAVIOR: Determine the range and bearing to an object.

PERFORMANCE STANDARD:

1. The candidate determined the range and bearing to an object selected by the assessor within 30 seconds.
2. The candidate's:
 - a) range was within ± 0.1 nm of the assessor's solution or $\pm 1\%$ of the range scale in use.
 - b) bearing is within $\pm 1^\circ$ of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed

TASK: Determine risk of collision

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale, with at least 5 vessels on the display.

PERFORMANCE BEHAVIOR: Determine if risk of collision or danger of collision exists with all approaching vessels.

PERFORMANCE STANDARD:

The candidate identified:

1. All approaching vessels whose bearing did not change appreciably; and
2. All vessels that had a CPA of less than 3 miles; and
3. All determinations were made within 8 minutes of determining the initial range and bearing of each vessel.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed

TASK: Determine DRM, SRM, CPA, and TCPA

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale.

PERFORMANCE BEHAVIOR: Determine:

1. The range and bearing to 3 other ships (meeting, crossing, and overtaking);
2. The DRM and SRM of all other ships; and
3. The CPA and TCPA of all vessels.

PERFORMANCE STANDARD:

1. The range and bearing solution are completed within 30 seconds and are within the previously stated tolerances;
2. The DRM solution is completed within 6 minutes and is within $\pm 5^\circ$ of the assessor's solution;
3. The SRM solution is completed within 7 minutes of initial range and bearing and is within ± 2 knot of the assessor's solution;
4. The CPA solution is completed within 7 minutes and is within ± 0.5 miles of the assessor's solution; and
5. The TCPA solution is completed within 8 minutes and is within ± 3 minutes.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1G

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed

TASK: Detect speed and course changes of other ships

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale, in the stabilized relative motion north-up mode, and with meeting or crossing targets.

PERFORMANCE BEHAVIOR: Detect speed and course changes of other ships which result in a change in the direction or speed of relative motion.

PERFORMANCE STANDARD:

Other ships' speed changes of at least 5 knots and/or course changes of at least 10° were detected within 10 rotations of the sweep (30 seconds) from the time the candidate began his or her systematic observation of the display.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1H

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed; and, application of International Regulations for Preventing Collisions at Sea

TASK: Change course to control target DRM

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in north-up stabilized relative motion mode, with a ship on the starboard bow with a CPA of 0.5.

PERFORMANCE BEHAVIOR: Control the target vessels DRM by changing own ship's course in accordance with the COLREGS.

PERFORMANCE STANDARD:

1. Determined the new course to steer to achieve a 2 mile CPA;
2. Executed a turn to starboard; and
3. Achieved a CPA of not less than 1.8 nm or more than 2.2 nm.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-11

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- Identification of critical echoes; detecting course and speed changes of to other ships; effective changes of own ship's course and speed; and, application of International Regulations for Preventing Collisions at Sea

TASK: Change speed to control target DRM

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in the north-up stabilized relative motion mode, with a vessel on the beam with a CPA of less than 0.5 NM ahead.

PERFORMANCE BEHAVIOR: Control the target vessels DRM by changing own ship's speed in accordance with the COLREGS.

PERFORMANCE STANDARD:

1. Determined the new speed to achieve a 2 mile CPA;
2. Executed a speed reduction; and
3. Achieved a CPA of not less than 1.8nm or more than 2.2 nm.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1J

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- plotting techniques and relative and true motion concepts

TASK: Determine true course and speed of target vessels

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in the relative motion north-up mode, using any graphically correct method.

PERFORMANCE BEHAVIOR: Determine the true course and speed of three target vessels.

PERFORMANCE STANDARD:

1. Constructed a relative motion triangle on either a reflection plotter, a maneuvering board, or a transfer plotting sheet; and
2. Solved for the target vessel's true course and speed within 8 minutes; and
3. The candidate's true course solution is within $\pm 5^\circ$ and the true speed solution is within ± 5 knots of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1K

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- parallel indexing

TASK: Parallel indexing

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12 mile scale in relative motion north-up mode, with aids to navigation and a coastline displayed on the display.

PERFORMANCE BEHAVIOR: Use a parallel index line to monitor and maintain the vessel on track.

PERFORMANCE STANDARD:

1. Constructed a parallel index line through the edge of the known hazard to navigation or land mass; and
2. Monitored the vessel's movement in relation by referring to the relative motion of the parallel index in relation to the land mass;
3. The vessel must not drift more than 10 % of the set distance toward the known hazard or landmass.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-1L

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Radar Navigation* -- parallel indexing

TASK: Determine DRM, SRM, CPA and TCPA

PERFORMANCE CONDITION: On an operational radar or radar simulator that meets the standards of 33 CFR 164.38 and other applicable national and international performance standards, set on the 12-mile scale, in the true motion mode, using any graphically correct method.

PERFORMANCE BEHAVIOR: Determine the DRM, SRM, CPA and TCPA of three target vessels.

PERFORMANCE STANDARD:

The candidate:

1. constructs a relative motion triangle on either a reflection plotter, a maneuvering board or a transfer plotting sheet;
2. obtains a DRM solution within 8 minutes and within $\pm 5^\circ$ of the assessor's solution;
3. obtains a SRM solution within 8 minutes of initial range and within ± 2 knots of the assessor's solution;
4. obtains a CPA solution within 7 minutes and within ± 0.5 nm of the assessor's solution; and
5. obtains a TCPA solution within 8 minutes and within ± 3 minutes of the assessor's solution

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA
Ability to operate and to interpret and analyze information obtained from ARPA, including: system performance and accuracy, tracking capabilities and limitations, and processing delays; and use of operational warnings and system tests

TASK: Set up and maintain an ARPA display

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA).

PERFORMANCE BEHAVIOR: Set up and maintain the ARPA display.

PERFORMANCE STANDARD:

Within three minutes, the candidate:

1. Turns the power on;
2. Initializes performance monitor;
3. Notes error messages;
4. Switches from standby to on;
5. Selected the appropriate scale;
6. Adjusts the gain control so that targets and sea return appeared;
7. Adjusts the tune control (if the unit is not self tuning);
8. Adjusts the brilliance control;
9. Adjusts the sea clutter and rain clutter controls to suppress the rain and sea clutter without losing targets.
10. Selects display north-up stabilized, relative motion.
11. Selects proper gyro course and speed input.
12. Selects sea-stabilized mode.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: methods of target acquisition and their limitations

TASK: Manual target acquisition

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with at least 10 targets on the selected range.

PERFORMANCE BEHAVIOR: Manually acquire ten targets.

PERFORMANCE STANDARD:

Manually acquire 10 targets within 2 minutes.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: methods of target acquisition and their limitations

TASK: Establish an exclusion area

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale, and in automatic acquisition.

PERFORMANCE BEHAVIOR: Establish an exclusion area that suppresses the automatic acquisition of targets in that area.

PERFORMANCE STANDARD:

The candidate establishes an exclusion area within 2 minutes on the port or starboard side of the vessel that is either:

1. described by an arc of 90° on the appropriate side of the vessel; or
2. described by a line parallel to the vessel's track four nm from the vessel.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2D

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Set vector characteristics

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Switch between true and relative vectors and change the length of the vectors from 6 minutes to 30 minutes.

PERFORMANCE STANDARD:

Switches between true and relative vectors and changes the length of the vectors within 10 seconds.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2E

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Designate targets

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Designate two acquired targets.

PERFORMANCE STANDARD:

Designate two of the acquired targets for an alphanumeric display of the target information within 10 seconds for each target.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2F

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Cancel targets

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Cancel a single target.

PERFORMANCE STANDARD:

A single target is cancelled within 5 seconds.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2G

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Target history

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Demonstrate the ability to display a target's history.

PERFORMANCE STANDARD:

1. Correctly operate the controls that display a target's history; and
2. The target's history is displayed within 10 seconds.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2H

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Establish CPA and TCPA

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Establish the CPA and TCPA for dangerous targets.

PERFORMANCE STANDARD:

1. The candidate determines the parameters for dangerous targets by entering:
 - a. minimum CPA; and
 - b. minimum TCPA.
2. Data entry must be completed within 1 minute.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2I

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: true and relative vectors, graphic representation of target information and danger areas

TASK: Establish alarm area

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Establish an alarm area with outer and inner guard rings.

PERFORMANCE STANDARD:

Establish an alarm area with an outer guard ring of 8 nm and an inner guard ring of 4 nm within 2 minutes.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2J

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA
Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Trial Maneuver

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale, with at least ten targets within 12 miles of the own ship.

PERFORMANCE BEHAVIOR: Demonstrate the trial maneuver function.

PERFORMANCE STANDARD:

1. Access the trial maneuver mode;
2. Enter course changes;
3. Determine the course to steer to avoid all targets by at least 2 NM, within 30 seconds;.
4. Enter speed changes;
5. Determine the speed necessary to avoid all targets by at least 2 NM, within 30 seconds; and
6. Return the display to real time.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2K

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA
Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Switch stabilization modes

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Switch the display from a north-up relative motion sea stabilized display to a true motion ground stabilized display.

PERFORMANCE STANDARD:

Complete the change within 10 seconds.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2L

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA
Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Navigation lines

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale, using 2 nav marks and one nav line.

PERFORMANCE BEHAVIOR: Establish a nav line to monitor and maintain the vessel on track.

PERFORMANCE STANDARD:

The candidate:

1. constructs a nav line between the 2 nav marks and through the seaward edge of the known hazard to navigation or land mass;
2. positions the VRM at a distance named by the assessor from the edge of the nav line;
3. monitors the vessel's movement to (cont'd) determine if the edge of the VRM moves inside the nav line; and
4. ensures that the VRM does not drift more than 10 % of the VRM distance inside the nav line.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2M

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Determine set and drift

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Determine the set and drift of the vessel.

PERFORMANCE STANDARD:

1. The display was sea stabilized.
2. A stationery target was identified, acquired and designated.
3. The target's course and speed was read as the set and drift within 3 minutes.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-3-2N

FUNCTION: Navigation at the Operational Level

COMPETENCE: Use of radar and ARPA to maintain the safety of navigation

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: Principal types of ARPA, their display characteristics, performance standards and the dangers of over-reliance on ARPA

Ability to operate and to interpret and analyze information obtained from ARPA, including: deriving and analyzing information, critical echoes, exclusion areas and trail maneuvers

TASK: Determine range and bearing

PERFORMANCE CONDITION: On an operational ARPA that meet the standards of 33 CFR 164.38 (or an ARPA simulator that meets applicable national and international performance standards for ARPA), with the ARPA on the 12 mile scale.

PERFORMANCE BEHAVIOR: Determine the range and bearing to an object.

PERFORMANCE STANDARD:

The candidate:

1. determines the range and bearing to an object selected by the assessor within 30 seconds by positioning the VRM on the edge of the object which is closest to the vessel and positioning the EBL through the object;
2. obtains a range within ± 0.1 nm of the assessor's solution or $\pm 1\%$ of the range scale in use; and
3. obtains a bearing within $\pm 1^\circ$ of the assessor's solution.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-4-1A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Transmit and receive information by visual signaling

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Visual Signaling* -- Ability to transmit and receive signals by Morse code

TASK: Flashing Light

PERFORMANCE CONDITION: On a ship or in a laboratory using a device by which sends flashing light messages at a speed of 4 wpm; when sent two messages, the first consisting of the following:

1. DE followed by a four- (4) letter identity signal, sent once;
2. YU: Indicating that a Code Group follows, sent once;
3. Text: Five random five letter groups, each of which is repeated twice; and,
4. Ending: AR;

and the second consisting of:

1. DE followed by a four letter identity signal, sent once;
2. YU: Indicating that a Code Group follows; sent once;
3. Text: Five three character code groups, each of which is sent twice;
4. Ending: AR.

PERFORMANCE BEHAVIOR: Read the Morse code flashing light signals, record the letters and numbers of the entire message, and interpret the code groups in accordance with H.O. 102.

PERFORMANCE STANDARD:

1. Record the letters of the message; and,
2. Achieve a minimum passing score of 80% scored as follows:
 - a. three points are given for each correct character of the five random five letter groups for a possible total of 75 points; and
 - b. five points are given for each correct plain language interpretation (candidate must look up the meaning of the code groups in H.O. 102) of each of the five code groups for a possible total of 25 points.

Candidate	Candidate's Mariner Reference No.	
Assessor	Position	
Vessel or School	Assessor's Mariner Reference No.	Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-5-1A

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maneuver the ship

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Ship maneuvering and handling --*
Maneuvering and procedures for the rescue of person overboard

TASK: Maneuver for man overboard

PERFORMANCE CONDITION: On a ship at sea or in a full mission simulator, upon receiving notification of a Man-Overboard (MOB).

PERFORMANCE BEHAVIOR: Immediately initiate either a Williamson Turn or Anderson Turn (as appropriate for conditions), return the vessel to the MOB, and give the command to launch the rescue boat.

PERFORMANCE STANDARD:

1. Order full rudder to the side of MOB and place engines on stand by (do not RPMs);
2. Simulate releasing the lighted buoy;
3. Sound MOB signal if other vessels are in sight;
4. Mark (if equipped) the ship's position on ARPA/GPS or DGPS;
5. Simulate a "Mayday" call on the VHF notifying any vessels in vicinity of the MOB;
6. Complete the recovery turn;
7. State that the rescue boat would be prepared for launch; or scrambling nets rigged on correct side of the vessel;
8. State that when on the reciprocal of the original course, the vessel will be slowed and stopped within .1 nm of the MOB to begin the recovery/search.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-5-1B

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maneuver the ship

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Ship maneuvering and handling --
Basic Maneuvering*

TASK: Course change of more than 45°

PERFORMANCE CONDITION: On a ship at sea or in a full mission simulator.

PERFORMANCE BEHAVIOR: Order turning the vessel left or right more than 45° from the original heading.

PERFORMANCE STANDARD:

1. The candidate orders the turn left or right more than 45° from the original heading by applying a minimum of 10° and a maximum of 20° of rudder;
2. Reduce rudder as the ship approaches the new course; and,
3. Steady on the new course without over shooting the course by more than 10°

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

**TABLE A-II/1 Specification of Minimum Standard of Competence
OFFICER IN CHARGE OF A NAVIGATIONAL WATCH**

ASSESSMENT NO. OICNW-5-1C

FUNCTION: Navigation at the Operational Level

COMPETENCE: Maneuver the ship

KNOWLEDGE, UNDERSTANDING & PROFICIENCY: *Ship maneuvering and handling --
Basic Maneuvering*

TASK: Emergency stop

PERFORMANCE CONDITION: On a ship at sea or in a full mission simulator, proceeding at a speed of at least half ahead.

PERFORMANCE BEHAVIOR: Execute an emergency stop.

PERFORMANCE STANDARD:

The candidate, within the safe operating limits of the vessel's propulsion system, stops the vessel using maximum astern thrust and rudder cycling without deviating from the original course by more than 20°.

Candidate

Candidate's Mariner Reference No.

Assessor

Position

Vessel or School

Assessor's Mariner
Reference No.

Date

Following is a summary of the assessments for Table A-II/1 of the STCW Code, *Specification of Minimum Standard of Competence For Officers in Charge of a Navigational Watch on Ships of 500 Gross Tonnage or More*. You may use this summary as a checklist to indicate which assessments have been completed.

Assessment Number	Task	✓
OICNW-1-1A	Adjust a sextant	
OICNW-1-1B	Measure the altitude of the sun	
OICNW-1-1C	Measure the altitude of at least 3 stars	
OICNW-1-1D	Measure the altitude of the sun at meridian passage (local apparent noon)	
OICNW-1-1E	Celestial running fix	
OICNW-1-1F	Star fix	
OICNW-1-2A	Fix by two bearings	
OICNW-1-2B	Fix by two ranges	
OICNW-1-2C	Fix by tangents to two identified objects	
OICNW-1-2D	Plot the ship's DR position	
OICNW-1-2E	Determine the course to steer	
OICNW-1-3A	Correction of charts and publications	
OICNW-1-3B	Chart selection	
OICNW-1-3C	Route planning	
OICNW-1-4A	Position fix by GPS	
OICNW-1-4B	Use of GPS position save function	
OICNW-1-4C	DELETED	N/A
OICNW-1-4D	Use of echo sounder	
OICNW-1-5A	Determine gyro compass error by bearing of range	
OICNW-1-5B	Determine magnetic compass error	
OICNW-1-5C	Determine magnetic compass deviation	
OICNW-1-5D	Determine course to steer by magnetic compass	
OICNW-1-5E	Position fix by magnetic compass bearings	
OICNW-1-5F	Azimuth of the sun	
OICNW-1-6A	Steering gear test	
OICNW-1-6B	Set weather controls	
OICNW-1-7A	Read barometric pressure	
OICNW-1-7B	Determine true wind speed & direction	
OICNW-1-7C	Determine expected weather conditions	
OICNW-2-1A	Identify light configurations	

**TABLE A-II/1 - OFFICER IN CHARGE OF A NAVIGATIONAL WATCH
Assessment Summary**

Assessment Number	Task	✓
OICNW-2-1B	Identify day shapes	
OICNW-2-1C	Identify sound signals	
OICNW-2-1D	Determine risk of collision	
OICNW-2-1E	Maneuver to avoid risk of collision -- meeting	
OICNW-2-1F	Maneuver to avoid risk of collision -- overtaking	
OICNW-2-1G	Maneuver to avoid risk of collision -- crossing	
OICNW-2-2A	Watch Relief	
OICNW-2-2B	Keep a safe navigation watch	
OICNW-2-2C	Notify Master when appropriate	
OICNW-2-2D	Keep a safe anchor watch	
OICNW-2-2E	Navigate in restricted visibility	
OICNW-2-2F	Turn over a watch	
OICNW-2-3A	Voyage planning	
OICNW-2-3B	Execute a voyage plan	
OICNW-2-3C	BRM – Recognition of watch condition / Watch augmentation	
OICNW-2-3D	BRM Condition III – collision avoidance	
OICNW-2-3E	BRM Condition III – navigation	
OICNW-2-3F	BRM Condition II or III – error trapping	
OICNW-2-3G	BRM Condition II – navigation and collision avoidance	
OICNW-2-3H	BRM Condition III – establish a bridge team	
OICNW-2-3I	BRM Condition II or III – prioritization	
OICNW-3-1A	Set up and maintain radar display	
OICNW-3-1B	Switch display modes	
OICNW-3-1C	Identify false echoes, sea return, racon and SART	
OICNW-3-1D	Determine range and bearing	
OICNW-3-1E	Determine risk of collision	
OICNW-3-1F	Determine DRM, SRM, CPA, and TCPA	
OICNW-3-1G	Detect speed and course changes of other ships	
OICNW-3-1H	Change course to control target DRM	
OICNW-3-1I	Change speed to control target DRM	
OICNW-3-1J	Determine true course and speed of target vessels	

**TABLE A-II/1 - OFFICER IN CHARGE OF A NAVIGATIONAL WATCH
Assessment Summary**

Assessment Number	Task	✓
OICNW-3-1K	Parallel indexing	
OICNW-3-1L	Determine DRM, SRM, CPA and TCPA of target vessels	
OICNW-3-2A	Set up and maintain an ARPA display	
OICNW-3-2B	Manual target acquisition	
OICNW-3-2C	Establish an exclusion area	
OICNW-3-2D	Set vector characteristics	
OICNW-3-2E	Designate targets	
OICNW-3-2F	Cancel targets	
OICNW-3-2G	Target History	
OICNW-3-2H	Establish CPA and TCPA	
OICNW-3-2I	Establish alarm area	
OICNW-3-2J	Trial Maneuver	
OICNW-3-2K	Switch stabilization modes	
OICNW-3-2L	Navigation lines	
OICNW-3-2M	Determine set and drift	
OICNW-3-2N	Determine range and bearing to an object	
OICNW-4-1A	Flashing light	
OICNW-5-1A	Maneuver for man overboard	
OICNW-5-1B	Course change of more than 45 ⁰	
OICNW-5-1C	Emergency stop	

ASSESSOR'S MANUAL FOR CONDUCTING MARINER ASSESSMENTS

**U.S. Coast Guard
Research & Development Center
1082 Shennecossett Road
Groton, CT 06340-6096**



JUNE 2000

Prepared for:

**U.S. Department of Homeland Security
United States Coast Guard
National Maritime Center
Martinsburg, WV 25404**

Enclosure (3) to CG-543
Policy Letter 11-07

Table of Contents

Conducting Mariner Assessments: A Practical Manual For Assessors	1
Introduction.....	1
The STCW Challenge	1
The Role of the Assessor.....	1
Purpose of Manual.....	1
Components of an Assessment Procedure.....	2
Overview of the Assessment Process.....	3
Guidelines for Conducting Mariner Assessments.....	4
Step 1: Prepare for the Assessment	5
Step 2: Brief the Candidate before the Assessment	6
Step 3: Observe the Candidate’s Performance	7
Step 4: Record Results and Determine Assessment Outcome	8
Step 5: Debrief the Candidate	9
Glossary	10
References.....	12

CONDUCTING MARINER ASSESSMENTS: A PRACTICAL MANUAL FOR ASSESSORS

Introduction

The STCW Challenge

Recent enactment of the *Seafarers' Training, Certification and Watchkeeping (STCW) Code* by the *International Maritime Organization (IMO)* has led to new requirements in conducting assessments of mariner proficiency. The STCW Code identifies a broad set of proficiency areas comprised of skills, knowledge, and abilities. It further directs maritime industries in its member nations to assess mariner proficiency in selected areas on the basis of practical demonstration. Assessors will be responsible for administering assessments to mariners and ensuring that valid and reliable results are obtained.

The Role of the Assessor

As an assessor, you will be responsible for assessing the ability of candidates to perform a task, duty, or responsibility properly. You will use established criteria and your professional judgment to determine whether the candidate has demonstrated an acceptable level of proficiency. You will use assessment procedures that have been carefully developed, reviewed, and approved prior to the assessment. You should personally observe the mariner's performance and determine the outcome of the assessment.

An assessor should hold the level of license, endorsement, or professional credential required for the proficiency being assessed. In addition, the assessor should review the assessment materials and receive a basic introduction to techniques and issues associated with assessing mariner proficiency through practical demonstration.

Purpose of Manual

The purpose of this manual is to provide assessors with guidelines for conducting valid and reliable mariner assessments based on practical demonstration. This manual is not intended to provide comprehensive instruction in the full range of assessment issues. Rather, it is intended as a focused introduction and reference to selected factors that affect validity (job criticality) and reliability (consistency) while conducting such assessments.

The process and guidance presented in this manual conform to international standards and domestic regulations, especially the IMO's STCW Code and the U.S. Coast Guard's Navigation and Vessel Inspection Circulars (NVICs) that address implementation of the STCW Code within the United States. The reference section of this manual lists specific STCW documents, applicable NVICs, and other source documents that can be referred to for more detailed guidance in developing and conducting mariner assessments based on practical demonstration.

Components of an Assessment Procedure

Any assessment procedure that is designed to meet IMO and U.S. Coast Guard requirements for practical demonstration of mariner proficiency will typically be comprised of several common components: *assessment objectives*, *assessment conditions*, *performance measures*, *performance standards*, and *scoring procedures*. As an assessor, you should familiarize yourself with these components, referring to the specific assessment procedures you will be using.

When conducting an assessment, you will evaluate a candidate's ability to meet pre-defined *assessment objectives*. These objectives can be derived from the STCW Code and U.S. regulations, as well as technical manuals, job instructions, textbooks, and task analyses. Each assessment objective consists of one or more separate actions. An example assessment objective from a Lookout assessment is "describe lookout duties and responsibilities." As part of this objective, the candidate must demonstrate knowledge of the procedures for reporting sightings, including identifying and describing the procedure and reporting all relevant information. An example objective from a Prepare Main Engine for Operation assessment is "perform engine auxiliaries pre-start checks." To meet this objective, one action the candidate must perform is to determine the status of the main engine controls and ensure that they are appropriate for starting the main engine.

The candidate's performance on the stated assessment objectives will be evaluated under various *assessment conditions*. Conditions for the Lookout assessment, for example, include the presence of appropriate targets to be sighted, clear visibility during daylight and at night, and restricted visibility. The assessment conditions will be explicitly defined in the assessment procedures.

Each assessment objective will have one or more corresponding sets of performance measures and performance standards. *Performance measures* include observation and recording of specific mariner actions, or the outcome of those actions. Table 1 below provides a sample of mariner actions, performance measures, performance standards, and a scoring checklist from a Helmsman assessment procedure. It shows three of the five actions for the assessment objective "Demonstrates use of magnetic and gyro compasses in open waters." The first performance measure in this table is "Report of compass comparison," which is measured when assessing the action "Compare and report course by gyro and magnetic compass after a course change." Here, the assessor is required to record the mariner's report of the compass comparison, then apply the corresponding performance standard.

Performance standards specify the level of performance that is considered an acceptable or target level. Continuing with the example in the first row of Table 1, there are two performance standards that are to be applied in scoring the corresponding performance measure. In this case, the mariner is required to both (1) make a report after the course change and (2) provide a reported magnetic reading that is ± 2 degrees of actual.

Scoring procedures are used in scoring individual actions, as well as sets of scores to determine the outcome of performance assessments. Both of these types of scoring procedures should be explicitly defined in the assessment procedures. Pass/fail is the most common scoring procedure for individual actions. In this case, a candidate obtains a passing score for an action by passing all performance standards corresponding to that action. Scoring procedures applied to sets of multiple scores will most commonly be based on some range of acceptable scores. However, assessments often involve critical objectives that must be passed or the candidate fails the entire assessment. For example, a candidate undertaking an assessment of his ability to start the main engine must be able to correctly place the emergency stop valve in the run position. This action

is essential to safe job performance, so a candidate must be able to perform it to pass the assessment.

Table 1. Example of Actions, Performance Measures, and Performance Standards from the Helmsman Assessment

Action	Performance Measure	Performance Standard	Score
Compare and report course by gyro and magnetic compass after a course change.	Report of compass comparison.	Performance meets all standards: <ul style="list-style-type: none"> <input type="checkbox"/> Report after course change. <input type="checkbox"/> Reported magnetic reading to be +/- 2 degrees of actual. 	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> N/A
Compare and report course by gyro and magnetic compass periodically.	Report of compass comparison.	Performance meets all standards: <ul style="list-style-type: none"> <input type="checkbox"/> Report at the time interval specified in the standing orders or company policy. <input type="checkbox"/> Comparison of gyro and magnetic compass to be unprompted by assessor/watch officer if consistent with company procedures. <input type="checkbox"/> Reported magnetic reading to be +/- 2 degrees of actual. 	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> N/A
Steer by magnetic compass in moderate weather.	Maintain a steady course.	<ul style="list-style-type: none"> <input type="checkbox"/> Course to be maintained at +/- 5 degrees of ordered course for 30 minutes, relying solely upon the magnetic compass. <p>In adverse winds or current, allowance can be made for a less stringent standard.</p>	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> N/A

Overview of the Assessment Process

You should follow the same basic series of five steps in conducting an assessment, even if you are conducting assessments of a number of mariner proficiencies. The first step is to prepare for the assessment by reviewing and ensuring the required assessment conditions and scheduling the assessment at an appropriate time (e.g., at night for certain Lookout objectives). The second step is to brief the candidate before the assessment. This involves verifying the candidate's readiness to undertake the assessment and then briefing the candidate on the assessment objectives, measures, standards, and scoring. The third step involves observing the candidate's performance during the assessment and recording the results. For the fourth step, the assessment outcome is determined by scoring each performance measure and tallying the scores across objectives. The fifth and final step is to debrief the candidate following the assessment. Figure 1 depicts the steps involved in conducting an assessment.

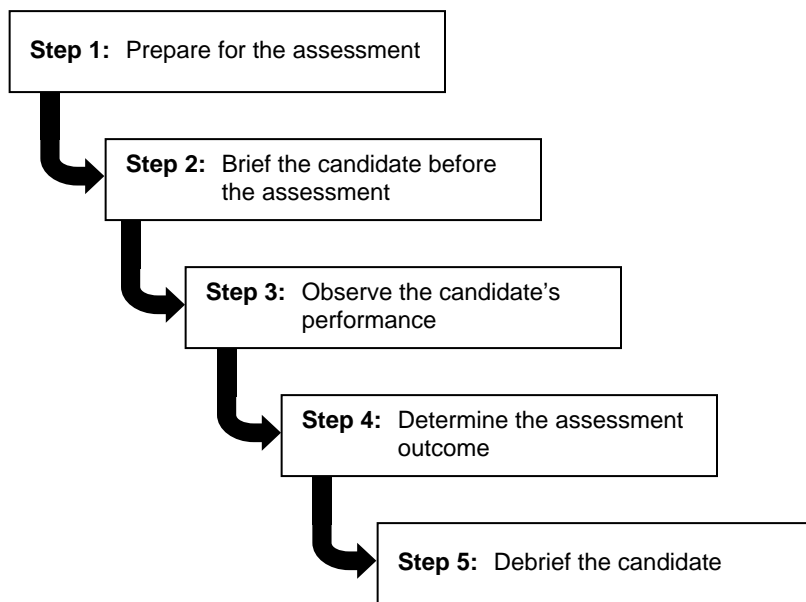


Figure 1. Steps involved in conducting mariner assessments based on practical demonstration.

The remainder of this manual consists of guidelines for conducting mariner assessments. The guidelines are organized around the five steps involved in conducting mariner assessments. At each step, guidance is provided regarding factors to consider in preparing for and conducting assessments, followed by a general checklist of issues to consider.

Guidelines for Conducting Mariner Assessments

As an assessor, you should always strive to conduct valid and reliable assessments. An assessment is *valid* when it accurately measures the job-critical knowledge, skills, and abilities required for proficient job performance. An assessment is *reliable* when it consistently obtains the same results across mariners with comparable skills.

How do you know if you are prepared to conduct a valid assessment that will accurately measure the job-critical knowledge, skills, and abilities required for proficient job performance?

Your assessment will be valid if the conditions of assessment reasonably reflect a representative range of working conditions and requirements. Some questions you should consider in determining whether you are prepared to conduct a valid assessment are listed below.

- Will the assessment be conducted under realistic working conditions that adequately assess the mariner's abilities to perform his or her duties on the job?
- Will the mariner be required to demonstrate the skills and knowledge that are identified in the assessment as critical to proficiency?
- Will the mariner be required to rely on his or her own skills and knowledge?

How do you know if you are prepared to conduct a reliable assessment that will consistently obtain the same results across mariners with comparable skills?

Your assessment will be reliable if you carefully follow prescribed assessment procedures that are designed to ensure consistent results from one assessment to the next. Some questions you should consider in determining whether you are prepared to conduct a reliable assessment are listed below.

- Have you reviewed the instructions in the assessment package to ensure that you are prepared to carefully follow prescribed assessment procedures?
- Will you provide the candidate with a complete set of instructions and answer any appropriate questions that he or she may have?
- Are you prepared to accurately observe and record all mariner performance, as instructed in the assessment package?

Step 1: Prepare for the Assessment

Ideally, you should begin preparing for an assessment several days before it is scheduled. The first activity is to coordinate the assessment with the candidate(s) to ensure that they are properly prepared and qualified to take part in the assessment. Each assessment procedure should specify candidate prerequisites for assessment, in terms of prior training, experience, licenses, and successful completion of other related assessments. If these are absent, they should be discussed and established by those responsible for assessment in your organization. You should verify that a candidate meets all prerequisites for an assessment. In addition, you should determine that a candidate is scheduled to be onboard for an adequate period of time to complete the assessment, which will range from an hour to days or weeks, depending upon the specific assessment procedures.

The second activity involved in preparing for the assessment is to consider and plan for the required conditions. Carefully read the assessment conditions listed in the assessment procedures. Prior to conducting an onboard assessment, check your passage plan to determine when the required conditions might be present. Plan to schedule your assessment to match the availability of these conditions, if possible. Common conditions that can often be planned for in advance are being underway at sea, maneuvering in restricted waters, or being moored. Other conditions, such as restricted visibility or heavy seas, cannot be planned for in advance and can only be taken advantage of when the conditions arise. When you have prepared a schedule, inform the candidate(s), the relevant watch officer(s), and other personnel of the date and time(s) of the assessment so that they can plan their activities accordingly.

The third preparatory activity is to check all equipment required for the assessment and ensure that it is operational and available. The assessment procedures should specify the equipment required to assess a particular proficiency. If an engineering assessment involves checking equipment status, make sure you know the normal range for each variable and record this information so that you can refer to it during the assessment. As part of your check of equipment, you should also review all applicable safety precautions and procedures to ensure full adherence to them.

General Checklist for Assessment Preparation

- ❑ Gather and review all assessment materials.
- ❑ Verify that the candidate meets the assessment prerequisites.
- ❑ Check the candidate's duty schedule.
- ❑ Ensure that the appropriate conditions will be present for the assessment.
- ❑ Schedule the assessment and inform all affected personnel.
- ❑ Prepare the assessment area(s).
- ❑ Prepare and arrange the necessary equipment, and ensure that it is operational.
- ❑ Determine the necessary safety precautions.

Step 2: Brief the Candidate before the Assessment

The pre-assessment briefing should take place at least one day prior to the assessment (earlier if at all possible). This will help both you and the candidate to be well prepared for the assessment. During this briefing, you should provide the candidate with a copy of the Candidate Instructions and Assessment Control Sheet. The *Candidate Instructions* are instructions prepared especially for the candidate, focusing on the issues that will be of concern to that individual. The *Assessment Control Sheet* summarizes the assessment objectives and all of the actions required for each objective. It is also the document on which you will record the candidate's final scores for each objective.

Begin the briefing with a discussion of the candidate's prior experience, training, and qualifications. At this time, you should verify that this candidate is both qualified and willing to undertake the assessment. If you both agree the candidate is ready for the assessment, 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 the candidate's qualifications.

Review the conditions of the assessment with the candidate. Specifically, discuss the different operational conditions under which assessment will occur. You should also discuss the period of assessment. Some assessments can be completed in a single, relatively brief period of time. Other assessments require repeated observation, taking advantage of available conditions, such as restricted visibility, as they occur.

Safety is of paramount concern during the assessment. Because of this, you should remind the candidate that it is permissible to ask questions during the assessment. This can help to reduce the risk of an unsafe act during the course of the assessment. For all assessments, ensure that the candidate has the proper equipment to carry out the assessment. Inform the candidate that an assessment will be stopped at any time if you, the assessor, judge that safety conditions are being violated for any reason.

General Checklist for Briefing the Candidate before the Assessment

- ❑ Provide the candidate with copies of the *Candidate Instructions* and *Assessment Control Sheet*.
- ❑ Discuss the candidate's readiness for the assessment.
- ❑ Review the *Candidate Instructions* with the candidate and answer any questions.
- ❑ Discuss the desired outcome(s) and consequences of failing to perform part or all of the assessment.
- ❑ Advise the candidate of the conditions and schedule of the assessment.
- ❑ Review the circumstances under which the assessment will be terminated, due to safety concerns.

Step 3: Observe the Candidate's Performance

The third step in the assessment process is to observe the candidate's performance during the assessment. Remember that you must continuously observe the candidate. Throughout the assessment, require the candidate to adhere to standard procedures, except when assessment procedures require demonstration of knowledge or skills different from those standard procedures. For example, a company may use points to report sightings, but a candidate may also be asked to demonstrate knowledge of the relative bearing system as part of the Lookout assessment.

Specific assessment objectives, performance measures, performance standards, and scoring procedures will be included in each assessment. Your consistent application of these procedures will ensure that you conduct a valid and reliable assessment. However, adherence to these procedures may require some flexibility on your part. Specifically, in some cases you may be required to remember the performance of the candidate for some time before you are able to record and score his or her performance. In addition, there may be times during the assessment when you will need to ask the candidate what he or she is doing. You should try to limit your questions during the candidate's performance, so that you minimize the amount of coaching the candidate receives from you.

Typically, an assessment will include a number of questions regarding the candidate's knowledge of rules and procedures pertaining to the duties under assessment. In addition, there will commonly be a number of questions regarding the candidate's performance that must be asked for clarification. Generally, a good time to ask all of these questions is following the candidate's demonstration of practical skills. At this point, you can ask specific questions you have about the performance you observed and use these questions as introductions, when appropriate, to more general questions about knowledge and rules included as part of the assessment.

Remember that, in order to maintain assessment validity and reliability, candidates should be assessed on their ability to perform their job tasks and duties and to demonstrate their knowledge of job procedures and rules. Avoid training candidates to successfully complete an assessment rather than proficiently perform their job. Also avoid allowing candidates to observe assessments of other mariners when this will provide them with an unfair advantage during subsequent assessment.

Finally, it is important to remain constantly vigilant regarding operational effectiveness and safety. Assessments should be conducted only where they do not adversely affect the normal

operation of the ship. In addition, assessments must be terminated whenever safety conditions are being violated.

General Checklist for Observing the Candidate's Performance

- ❑ If a safety violation occurs, terminate the assessment immediately.
- ❑ Ensure that the candidate can concentrate on the task at hand.
- ❑ Do not allow other crewmembers to interfere with the assessment.
- ❑ Ensure realistic assessment conditions with a normal working environment.
- ❑ Continuously observe the candidate during the assessment. Record the observed performance and apply the performance standards as soon as practical during the assessment.
- ❑ Require that standard procedures be adhered to, except when assessment procedures require demonstration of knowledge or skill different from these procedures.
- ❑ Avoid asking leading questions. Try to keep your questions fair but general in nature.
- ❑ Avoid giving the candidate 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.

Step 4: Record Results and Determine Assessment Outcome

The fourth step in the assessment process is to determine the assessment outcome. To do this, record the candidate's performance on each *Assessment Worksheet* and then apply the scoring procedures specified in the assessment procedures. Remember that if the candidate incorrectly performs any of the critical, required actions, he or she automatically fails the entire assessment. Finally, determine and document the outcome of the assessment, transferring the final results to the *Assessment Control Sheet*.

You will probably have some additional paperwork requirements that have been specified by your organization. This will likely involve the maintenance of personnel records within your organization. In addition, upon successful completion of an assessment by a candidate, you will need to make the appropriate entries in the *Training Record Book* that has been adopted by your organization as a means of documenting fulfillment of the corresponding STCW requirements by the mariner.

General Checklist for Determining Assessment Outcome

- ❑ Record performance on the appropriate *Assessment Worksheet*.
- ❑ Strictly adhere to the prescribed performance standards and scoring procedure(s).
- ❑ Determine and document the outcome of the assessment, then transfer the final results to the *Assessment Control Sheet*.
- ❑ Attest to successful demonstration of tasks in the *Training Record Book (TRB)* or other record, as appropriate.

Step 5: Debrief the Candidate

The fifth and final step in the assessment process is to debrief the candidate as soon as possible after the assessment. During this debriefing, you should restate the assessment objectives and discuss the candidate's performance on each objective. A good strategy for beginning a debriefing is to review the candidate's positive accomplishments. The candidate will then likely be in a better frame of mind to hear any comments regarding areas needing improvement. If the candidate failed to demonstrate proficiency, you may work together with him or her to develop an improvement plan to prepare for reassessment. Conditions for conducting reassessments should be specified in the assessment procedure. If these are absent, they should be discussed and established by those responsible for assessment in your organization. Specific issues to consider are: (1) the period between initial assessment and reassessment, and (2) any changes in the performance standards and scoring procedures that are adopted for reassessment.

General Checklist for Debriefing the Candidate

- ❑ Debrief the candidate as soon as possible after the assessment.
- ❑ Restate the assessment objective(s).
- ❑ 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.

Glossary

Assessor. Anyone who conducts an assessment or evaluation of an individual's proficiency. The term *assessor* is used in many discussions of STCW requirements, including the STCW Code and NVIC 4-97 on company roles and responsibilities. The term *designated examiner* is used for *examiner* in the United States implementing regulations.

Assessment. The process of evaluating whether an individual's performance meets established *proficiency criteria*. The terminology used for this process in the United States implementing regulations includes *examination* for knowledge, and an *assessment* based on *practical demonstration*, as witnessed by a *designated examiner*.

Assessment Conditions. The *assessment conditions* define the setting, tools, references, aids, and safety precautions that are required for an assessment of a candidate's proficiency.

Assessment Objectives. The goals for the performance-based assessment of proficiency based on the knowledge, skills, and abilities required by the job. A complete *assessment objective* description includes the required mariner performance, the conditions of assessment, and the standards of performance for successful accomplishment of the objective.

Assessment Procedures. The activities that are conducted in administering the assessment of a candidate's proficiency. The term *assessment procedure* can describe either the actions taken or the written instructions and activity descriptions that are used in conducting an assessment.

Designated Examiner. A person who has been trained or instructed in techniques of training or *assessment* and is otherwise qualified to administer performance assessment procedures. In practice, the *designated examiner* evaluates whether the candidate's performance meets established *proficiency criteria* to earn credit toward the license, document, or endorsement. Further details on the qualifications of *designated examiner* can be found in NVIC 6-97.

Duty. An ongoing responsibility within a job that usually requires the performance of multiple tasks (e.g., *Officer in Charge of the Engineering Watch, Lookout, and Helmsman*).

Evaluation Criteria. The *evaluation criteria* comprise the general *standards of competence*. In practice, the *evaluation criteria* are further defined on the basis of *performance measures*, *performance standards*, and *proficiency criteria*.

Job. An employment post consisting of a cluster of related work responsibilities and duties (e.g., *Chief Engineer, Third Mate, Able-bodied Seaman*). In the STCW Code, a job is further defined on the basis of licensure level (e.g., Officer in charge of a navigational watch on ships of 500 gross tonnage or more).

Knowledge. The learned concepts, cues, facts, rules, and procedures that are necessary for proficient performance of a task (e.g., *knowledge of algebra, knowledge of the Navigation Rules, knowledge of procedures for starting the main engine*).

Objective Measure. A measure that relies primarily upon measurement apparatus that can be calibrated to yield highly consistent and accurate measurement results.

Performance Measure. The procedures used for observing and recording mariner actions, or the outcome of those actions. *Performance measures* record either the process of performance or the product of performance.

Performance Standard. The standard established for individual *performance measures*. *Performance measures* and *performance standards* are combined on the basis of *scoring procedures* to establish *proficiency criteria* for an assessment objective.

Proficiency. An individual's demonstrated ability to meet job performance requirements, as established on the basis of *performance measures*, *performance standards*, and *proficiency criteria*.

Proficiency Criteria. The scoring procedures and standards applied in determining the proficiency level of a candidate on the basis of *performance measures* and *performance standards*.

Qualified Instructor. According to the United States implementing regulations: “the person who has been trained or instructed in instructional techniques and is otherwise qualified to provide required training to candidates for licenses, documents, or endorsements.” Further details on the qualifications of *qualified instructors* can be found in NVIC 6-97.

Reliability. The *consistency* of a measurement procedure. In the context of assessment, *reliability* can be generally defined as the consistency of the assessment outcome when applied under comparable conditions. Reliable assessments have well-defined assessment conditions, administration procedures, performance measures, performance standards, scoring procedures, and proficiency criteria. The reliability of an assessment establishes the maximum level of assessment *validity* possible. That is, an assessment can not be any more valid than it is reliable.

Scoring Procedures. The defined procedures for combining individual *performance measures* and *performance standards* that are conducted in the application of *proficiency criteria*.

Skills and Abilities. The behaviors that must be applied in successful performance (e.g., *typing skills, equipment fault-finding skills, navigation skills, shiphandling skills*). Measurable and observable skills are those of interest in proficiency assessment.

Subjective Measure. A measure that relies primarily upon an assessor’s direct observation and interpretation of mariner performance to determine the assessment outcome.

Task. A single, observable work assignment that is independent of other actions and supports successful job performance. A task must be observable, be a complete work assignment, have a specific beginning and end, and be measurable by its intended product or outcome.

Validity. The extent to which a measure represents what was intended to be measured. In the context of assessment, *validity* can be defined as the degree to which successful completion of an assessment accurately predicts successful performance on the job. The maximum validity of an assessment is established on the basis of its *reliability*. That is, an assessment cannot be any more valid than it is reliable.

References

Blanchard, R. T., Hempstead, S. C., Murphy, J., & McCallum, M. C. (2000). Mariner assessment procedures for the performance of helmsman duties. Groton, CT: U.S. Coast Guard Research & Development Center.

Blanchard, R. T., Hempstead, S. C., Murphy, J., & McCallum, M. C. (2000). Mariner assessment procedures for the performance of lookout duties. Groton, CT: U.S. Coast Guard Research & Development Center.

Gagné, R., Briggs, L., & Wagner, W. (1992). Principles of instructional design (4th ed.). Fort Worth, Texas: Harcourt Brace College Publishers.

International Maritime Organization. (1995). International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended in 1995 (STCW Convention). London: Author.

International Maritime Organization. (1996). Seafarer's Training, Certification, and Watchkeeping (STCW) Code. London: Author.

International Maritime Organization. (1998). Guidance on shipboard assessments of proficiency. Marine Safety Council Circular 853, 22 May, 1998. London: Author.

McCallum, M. C., Forsythe, A. M., Barnes, A. E., Smith, M. W., Macaulay, J., Sandberg, G., Murphy, J., & Jackson, P. (2000). Developing performance-based assessments of mariner proficiency. Groton, CT: U.S. Coast Guard Research & Development Center.

McCallum, M. C., Barnes, A. E., Forsythe, A. M., & Smith, M. W. (2000). Conducting mariner assessments: A trial application of assessment procedures, training, and manuals. Groton, CT: U.S. Coast Guard Research & Development Center.

Maynard, G. E., Martinez, N., Jackson, P., & McCallum, M. C. (2000). Mariner assessment procedures for preparing the main engine for operation. Groton, CT: U.S. Coast Guard Research & Development Center.

Maynard, G. E., Martinez, N., & McCallum, M. C. (2000). Mariner assessment procedures for testing the steering gear from the steering gear room. Groton, CT: U.S. Coast Guard Research & Development Center.

United States Coast Guard, Department of Transportation, 46 C.F.R. §97.275 (1997).

United States Coast Guard. Navigation and Vessel Inspection Circular No. 4-97, Guidance on Company Roles and Responsibilities under the 1995 Amendments to the International Convention on Standards of Training, Certification and Watchkeeping (STCW).

United States Coast Guard. Navigation and Vessel Inspection Circular No.6-97, Guidance on Qualified Instructors and Designated Examiners.

United States Coast Guard. Navigation and Vessel Inspection Circular No.7-97, Guidance on STCW Quality Standards Systems (QSS) for Merchant Mariner Courses or Training Programs.

United States Coast Guard. Navigation and Vessel Inspection Circular No.[5-95][X-98], Guidelines for Organizations Offering Coast Guard Approved Courses.

