United States
Coast Guard 202) 267-

COMDTPUB P16700.4
NVIC 9-94
NOVEMBER 23, 1994

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 9-94
Electronic Version for Distribution on the World Wide Web
SUBJ: GUIDELINES FOR TRAINING AND CERTIFICATION IN THE USE OF MARINE RADAR

1. PURPOSE. This Circular provides policy for Coast Guard approval of radar-observer courses. The requirement for certain commercial vessels to have radar installed is pointless--unless personnel responsible for the safe navigation of these vessels know how to use the radar. Radar-observer training and certification requirements are found in Parts 10 and 15 of Title 46 Code of Federal Regulations (CFR). As a result of recent accidents, the radar-training requirements have been expanded to add new subjects and a separate Rivers course. Figure 1 (see next page) shows the radar-observer course and endorsement system. This Circular also provides information concerning the Radar-Operation course that will be completed by many "existing" towboat operators before February 15, 1995, to meet the intent of new regulations.

2. DEFINITIONS.

   a. Radar-Operation Course - a course designed to indoctrinate operators with regard to basic radar uses and interpretation (see enclosures 1 and 2 for details).

   b. Radar-Observer Course - a course approved by the U.S.C.G. and completed by applicants seeking a radar-observer endorsement on their licenses. The courses and corresponding endorsements are separated by area of operation: Rivers, Inland Waters, and Unlimited (any waters)

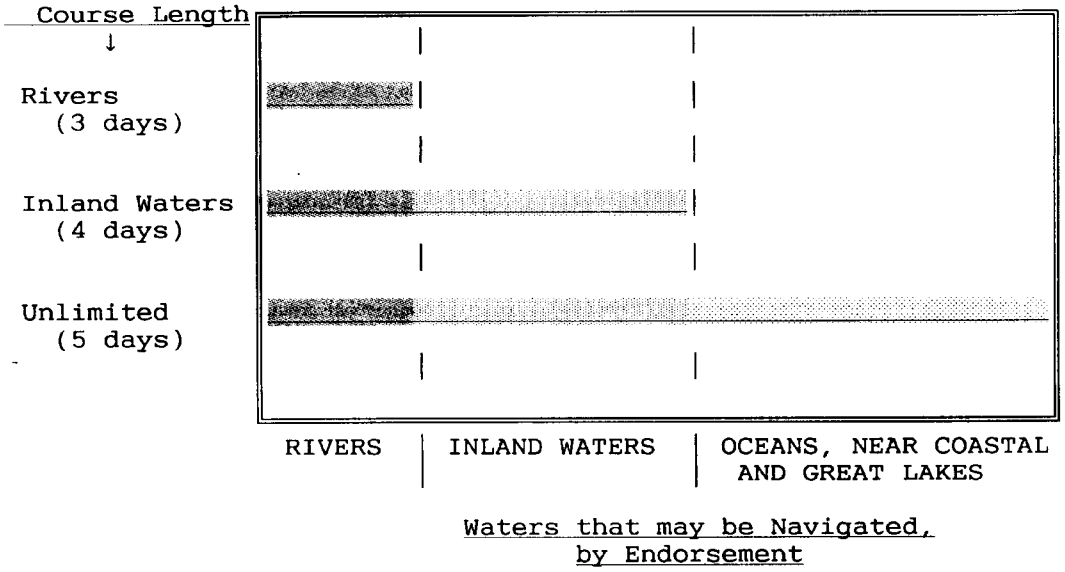
   c. Radar Simulator - a device that mimics an operational radar unit to the degree that the device may be operated, observed, and interpreted with similar methods and results as a unit in use under actual conditions.

3. DISCUSSION.

   a. The Coast Guard's radar-training requirements are listed in 46 CFR 10.305 and 10.480. The training must be successfully completed to satisfy the manning requirements in 46 CFR 15.815. These regulations were recently revised to include personnel serving as the operator of an uninspected towing vessel; to improve existing (Inland Waters and Unlimited) course curricula; and, to add a Rivers course and radar-observer (Rivers) endorsement.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 9-94

FIGURE 1



Rivers means any river, canal, or other similar body of water designated by the Officer in Charge, Marine Inspection (46 CFR 10.103).

Inland Waters means the navigable waters of the United States shoreward of the Boundary Lines as described in 46 CFR part 7, excluding the Great Lakes (46 CFR 10.103).

Near Coastal means ocean waters not more than 200 miles offshore (46 CFR 10.103).

Oceans means the waters seaward of the Boundary Lines as described in 46 CFR part 7 (46 CFR 10.103).

b. Because of the large number of personnel required to attend radar-training by February 15, 1995, and the importance of getting basic training as soon possible, an interim Radar-Operation course was developed (see enclosure 1 for details). This course may be conducted by individuals, companies or other organizations without prior Coast Guard approval. Course completion certificates must state that the course conforms to the requirements of this circular.

c. The Radar-Operation course certificate is valid until the holder's license is renewed or upgraded, whichever occurs first. At that time, a holder of a Radar-Operation course certificate must complete an approved Radar-Observer course to obtain the endorsement on his or her license. Recommended contents for approved radar-observer courses are listed in enclosure (1).

d. Any mariner who renews or upgrades his or her license after February 15, 1995, and does not elect to attend a radar-observer course, may not serve as the master, mate, operator, or pilot of vessels identified in 46 CFR 15.815 (includes radar-equipped uninspected towing vessels of at least 8 meters [about 26 feet] in length).

e. The radar-observer endorsement on a license expires after five years. To renew, applicants must present a certificate of completion from an approved radar-observer renewal (or original) course. Like an original course, the renewal course will include a demonstration of skills on a radar simulator and a radar-theory examination. Any applicant successfully completing the appropriate Coast Guard approved radar-observer course and presenting the Certificate of Training to the OCMI, may have his or her endorsement renewed.

4. IMPLEMENTATION

a. Enclosure (1) lists the essential elements of the various radar-observer courses and the temporary Radar-Operation course. Radar-training programs meeting the guidelines and, for radar-observer courses, receiving the appropriate approval, are authorized to state that their courses satisfy the established U.S. Coast Guard standards for training seafarers in radar operation, observation and interpretation.

b. Enclosure (2) provides guidelines for the Radar-Operation course completion certificate and general instructor qualifications; enclosure (3) explains the Coast Guard's course approval process.

c. Officers-In-Charge, Marine Inspection are urged to utilize local safety newsletters, maritime publications and local expositions to give these guidelines the widest possible dissemination.

J. C. CARD
REAR ADMIRAL, U.S. COAST GUARD
CHIEF, OFFICE OF MARINE SAFETY,
SECURITY AND ENVIRONMENTAL
PROTECTION

RADAR-OPERATION COURSE

RECOMMENDED COURSE CONTENTS:

1. Course Objectives,
   - Legal Aspects of Radar
   - Navigation Rules 4, 5, 6, 7, 8,19
   - USCG Regulations, including Review of
     - Radar-Observer Endorsement Requirements

2. Fundamentals of Radar
   - Brief History,

   How it Works-- Functions of Primary Components

3. Operation & Use of Radar
   - Controls
   - Tuning
   - Range and Bearing Measurement Display Modes
   - Limitations
   - Operator's Manual

4. Radar Navigation-- Position Determination
   - Charts and Radar
   - Aids to Navigation-- Buoys, Markers, Electronic Aids

5. Interpretation and Analysis of Radar Information
   - Factors Affecting Performance and Accuracy of Radar (Internal & External)
   - Target Characteristics
     - Vessels
     - Land, Structures, and other features
   - Relative Motion
     - Ascertainment & Monitoring of Target's Relative Motion

6. Actions to Avoid Collisions
   - Vessel-to-Vessel Communications
   - Early & Positive Action-- Apply Navigation Rules
   - Monitor Radar-Displayed Relative Motion after Course/Speed Change(s)

Approximate Course Duration-- 4 hours

RADAR-OBSERVER COURSE (RIVERS)

RECOMMENDED COURSE CONTENTS:

INTRODUCTION:
- Orientation Objectives,
  - Legal Aspects of Radar, & USCG Regulations

1. FUNDAMENTAL THEORY
   - History, Development, Primary Uses

How it Works-- Functions of Primary Components
Factors Affecting Performance and Accuracy of Radar (Internal & External)

2. SETTING UP & MAINTAINING DISPLAYS
   - Controls
   - Tuning
   - Display Modes
   - Range and Bearing Measurement
   - Limitations

3. MARINE RADAR PERFORMANCE SPECIFICATION
   - Operator's Manual

4. COLLISION AVOIDANCE VISUAL TECHNIQUES-- NO PLOTTING REQUIRED)
   - Interpretation and Analysis of Radar Information
   - Target Characteristics
     - Vessels
     - Land, Structures, and other features
   - Relative Motion
     - Ascertainment & Monitoring of Target's Relative Motion
   - Actions to Avoid Collisions:
     - Vessel-to-Vessel Communications
     - Early & Positive Action-- Apply Navigation Rules
     - Monitor Radar-Displayed Relative Motion after Course/Speed Change(s)

5. THE USE OF RADAR IN NAVIGATION
   - Position Determination
     - Charts and Radar
     - Aids to Navigation-- Buoys, Markers, Electronic Aids

6. RADAR AND THE NAVIGATION RULES
   - Navigation Rules 4, 5, 6, 7, 8,19

7. REVIEW AND FINAL ASSESSMENT

Approximate Course Duration -- 3 Days

RADAR-OBSERVER COURSE (INLAND WATERS)

RECOMMENDED COURSE CONTENTS:

INTRODUCTION:
- Orientation Objectives,
  - Legal Aspects of Radar, & USCG Regulations

1. FUNDAMENTAL THEORY
   - History, Development, Primary Uses
   - How it Works-- Functions of Primary Components
   - Factors Affecting Performance and Accuracy of Radar (Internal & External)

2. SETTING UP & MAINTAINING DISPLAYS
   - Controls
   - Tuning
   - Display Modes, on unstabilized units:
     - familiarization with stabilized units
   - Range and Bearing Measurement
   - Limitations

3. MARINE RADAR PERFORMANCE SPECIFICATION
   - Operator's Manual

4. COLLISION AVOIDANCE, on unstabilized units:
   - familiarization with plotting on stabilized units
   - Interpretation and Analysis of Radar Information
   - Target Characteristics
     - Vessels
     - Land, Structures, and other features
   - Relative Motion, including Plotting the First Triangle
     - Ascertainment & Monitoring of Target's Relative Motion
     - Methods used to determine Target's CPA. TCPA. Course & Speed
   - Actions to Avoid Collisions:
     - Vessel-to-Vessel Communications
     - Early & Positive Action-- Apply Navigation Rules
     - Monitor Radar-Displayed Relative Motion after Course/Speed Change(s)

5. THE USE OF RADAR IN NAVIGATION, on unstabilized units:
   - familiarization with navigation on stabilized units
   - Position Determination, including Position Fixing
     - Charts and Radar
     - Aids to Navigation-- Buoys, Markers, Electronic Aids

6. RADAR AND THE NAVIGATION RULES
   - Navigation Rules 4, 5, 6, 7, 8, 19

7. REVIEW AND FINAL ASSESSMENT

Approximate Course Duration -- 4 Days

RADAR-OBSERVER COURSE (UNLIMITED)

RECOMMENDED COURSE CONTENTS:

INTRODUCTION:
- Orientation Objectives,
  - Legal Aspects of Radar, & USCG Regulations

1. FUNDAMENTAL THEORY
   - History, Development, Primary Uses
   - How it Works-- Functions of Primary Components

Factors Affecting Performance and Accuracy of Radar (Internal & External)

2. SETTING UP & MAINTAINING DISPLAYS
   - Controls
   - Tuning
   - Display Modes, on stabilized units. relative and true motion:
     - familiarization with unstabilized units
   - Range and Bearing Measurement
   - Limitation

3. MARINE RADAR PERFORMANCE SPECIFICATION
   - Operator's Manual

4. COLLISION AVOIDANCE, INCLUDING PLOTTING
   - Interpretation and Analysis of Radar Information
   - Target Characteristics
     - Vessels
     - Land, Structures, and other features
   - Relative Motion, including Plotting the First Triangle
     - Ascertainment & Monitoring of Target's Relative Motion
     - Methods used to determine Target's CPA, TCPA, Course & Speed
   - Actions to Avoid Collisions, including Plotting new Course/Speed:
     - Vessel-to-Vessel Communications
     - Early & Positive Action-- Apply Navigation Rules
     - Monitor Radar-Displayed Relative Motion after Course/Speed Change(s)

5. THE USE OF RADAR IN NAVIGATION
   - Position Determination, including Position Fixing
     - Charts and Radar
     - Aids to Navigation-- Buoys, Markers, Electronic Aids

6. RADAR AND THE NAVIGATION RULES
   - Navigation Rules 4, 5, 6, 7, 8,19

7. REVIEW AND FINAL ASSESSMENT

Approximate Course Duration-- 5 Days

FINAL ASSESSMENT

The final examination and practical demonstration of skills on the radar simulator should verify the student's competency to use a radar on the waters designated on the certificate. The paragraphs titled, "Objective" in the attached IMO model course excerpts are useful in developing final exam questions, and practical problems to be encountered and resolved on the radar simulator.

In general, to pass a Radar-Observer Training Course$_1$ the student will demonstrate the ability to do the following:

a. Turn on and tune the radar.

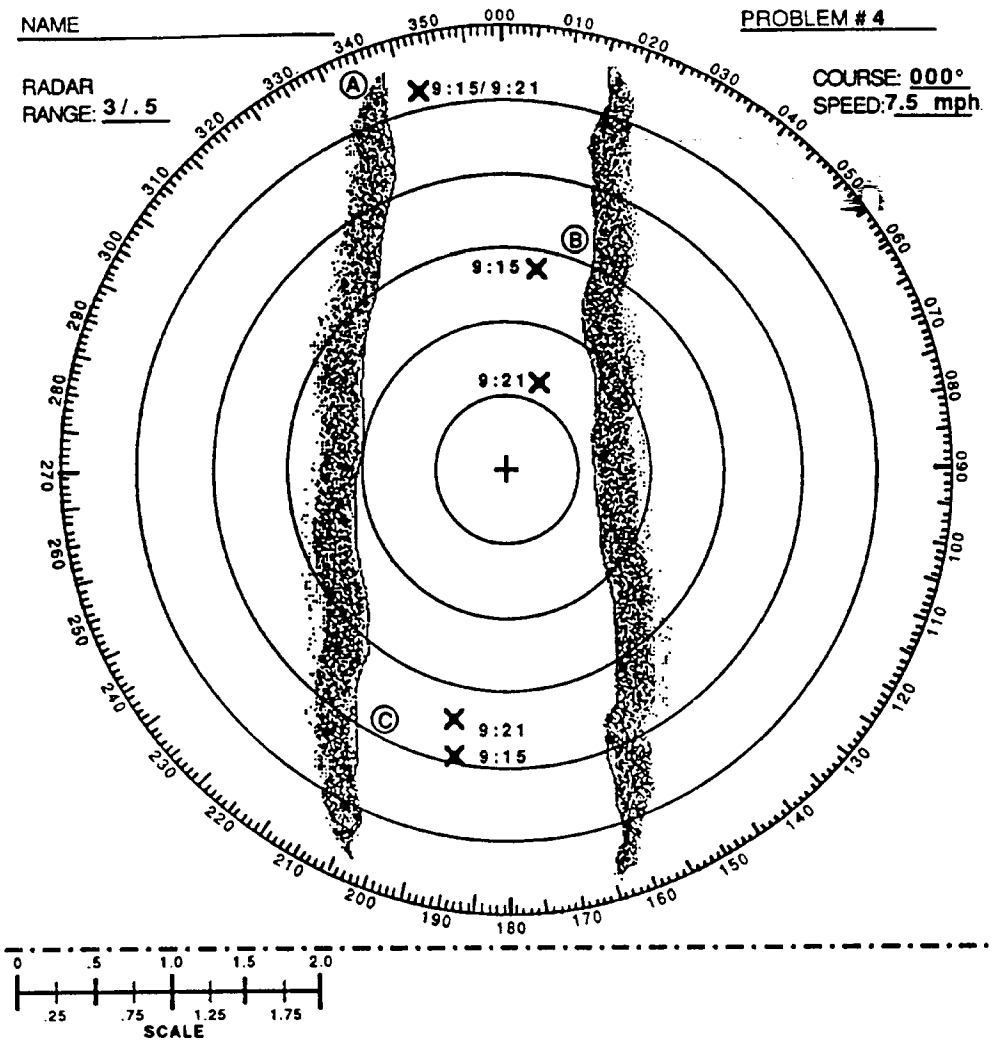
b. Demonstrate use of controls on typical display and explain the limitations of radar.

c. Identify:
   1. Vessels-- various types/sizes,
   2. Stationary structures and objects,
   3. Aids to Navigation,
   4. Land masses, shorelines, and/or riverbanks, and
   5. False Targets.

   d. Determine:
   1. A target's Direction of Relative Motion (DRM),
   2. Course and Speed of another vessel,
   3. Time, distance, bearing and location of Closest Point of Approach* (CPA),
   4. Action to take in accordance with the Navigation Rules, and
   5. Own ship's position* by radar ranges and relative bearings to prominent geographic features/aids to navigation.

* Approximation by visual techniques for Rivers course

The sample problems which follow are provided courtesy of the STAR Center, Toledo, Ohio (next page):



ANSWER THE FOLLOWING QUESTIONS:

1. The CPA of target A is:
   a. 348° @ 5.2 M
   b. 348° @ 2.65 M
   c. 168° @ 2.65 M
   d. 168° @ 5.2 M

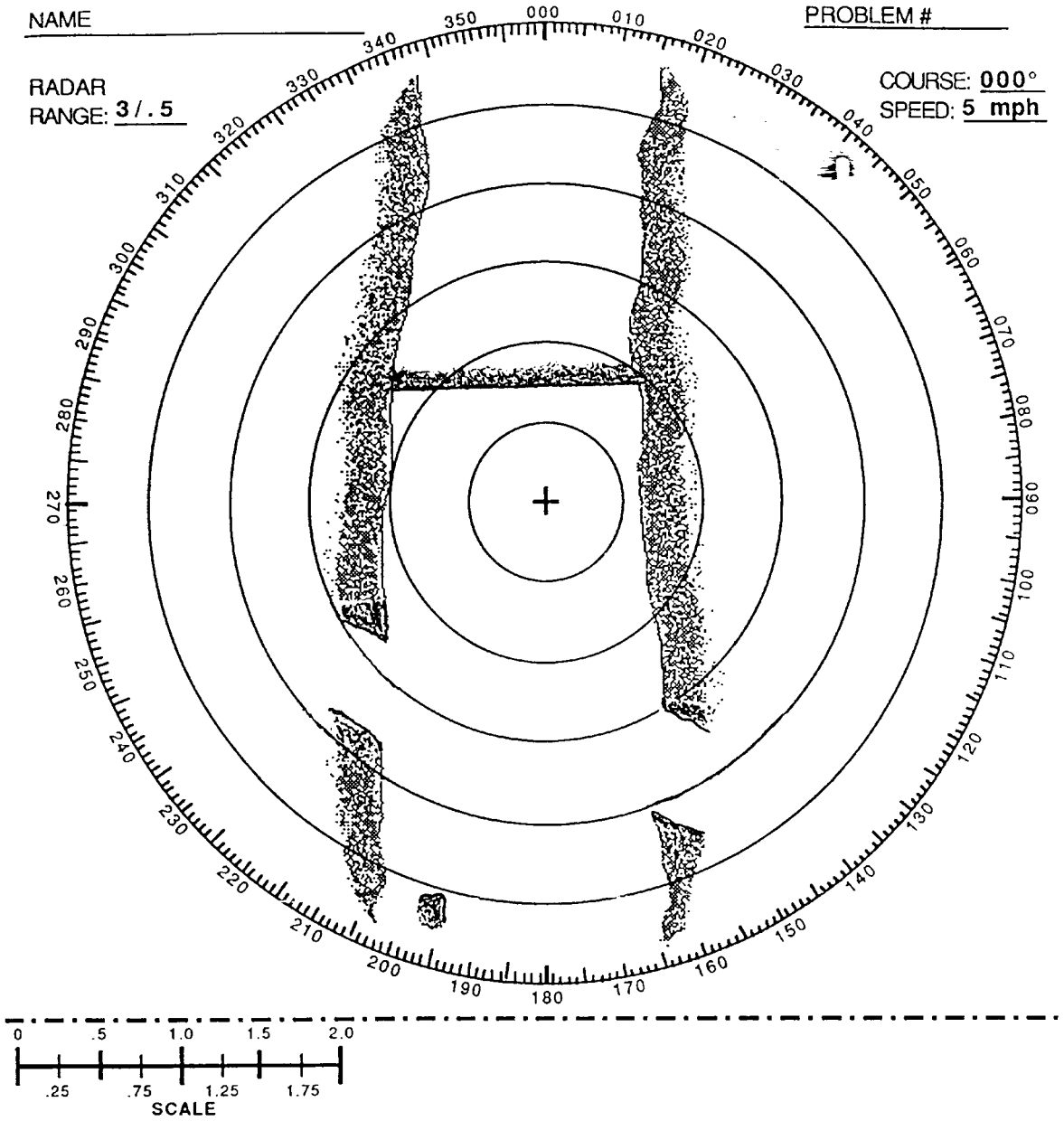
2. The CPA of target B is:
   a. 090° @ .25 M
   b. 014° @ 1.3 M
   c. 270° @ .3 M
   d. 032° @ .6 M

3. The CPA of target C is:
   a. 220° @ .5 M
   b. 090° @ .3 M
   c. 190° @ 3.9 M
   d. 270° @ .3 M

4. True Course & Speed of target A:
   a. Stationary (D.I.W.)
   b. 000° @ 7.5 mph
   c. 180° @ 7.5 mph
   d. 270° @ 10 mph

5. True Course & Speed of target B:
   a. 180° @ 7.5 mph
   b. Stationary (D.I.W.)
   c. 000° @ 7.5 mph
   d. 000° @ 5 mph

6. True Course & Speed of target C:
   a. 000° @ 2.5 mph
   b. 180° @ 2.5 mph
   c. 000° @ 10 mph
   d. 180° @ 10 mph



5. What is your present position:

a. .75 miles south of Stevens bridge **b. mile 315**

c. abeam of Streams Crossing **d. .25 miles north of Rock Cut**

[IMO Model Course Excerpt]

Course 1.07 Radar Observation and Plotting

Part A: Course Framework

Scope

This course provides training in the basic theory and use of radar for those who will be in charge of a navigational watch based on the provisions of IMO Assembly resolution A.483(XII), and fulfils the minimum training requirements of paragraph 4 of the appendix to Regulation 11/2 and of paragraph 3 of the appendix to Regulation 11/4 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 1978).

Aspects covered include the theory necessary for an understanding of how radar information is obtained and displayed, the limitations and accuracy of that information, the formation and recognition of unwanted responses, the correct use of operational controls to obtain an optimal display and checks on performance of the set.

The various modes of display available and the choice of a suitable mode for a particular application will be covered, together with the effect that changes in the course or speed of "own" or target ship will have on the appearance of the display.

The course will also cover the recognition of critical targets, the measurement of bearings and distances, and the use of these for fixing the ship's position and maintaining a plot of the movement of other ships as an aid to collision avoidance. Exercises in the application of the International Regulations for Preventing Collisions at Sea (COLREG 1972) will make use of the resulting plots.

Objective

A trainee successfully completing this course will recognize when radar should be in use; will select a suitable mode and range setting for the circumstances; will be able to set the controls for optimal performance; and will be aware of the limitations of the equipment in detecting targets and in terms of accuracy.

When within range of the coast, he will be able to compare the radar display with the chart, select suitable conspicuous land targets and use these targets to fix his position.

He will also be aware of the need to maintain a continuing plot of ship targets which may pose a potential threat of collision; and he will be able to derive from the plot the necessary information about other ships' courses, speeds and nearest approaches to enable action to be taken in ample time, in accordance with COLREG 1972, to prevent a close-quarters situation arising.

Entry standards

This course is principally intended for candidates for certification as officers in charge of a navigational watch. Before entering the course, trainees should have completed a minimum period of one year at sea and preferably have gained some experience of bridge watchkeeping.

The course would also be of value to others using radar, e.g. those working in such craft as harbour and customs patrol launches, in which case the entry standards may be adjusted to suit the particular circumstances. However, the trainee intake for each course should normally have similar backgrounds.

Course 1.09 Radar Simulator

Part A: Course Framework

Scope

The course is essentially practical and consists of a series of exercises performed on a radar simulator with two or more "own ships" and a number of others controlled by the instructor. Each exercise will involve observing the movement of ships seen on the radar, recognizing those presenting a threat of collision and taking action to avoid collisions. Trainees will act either as master or as an observing officer for the exercises, and will change roles to allow each a turn in command of an "own ship".

As the course progresses, exercises of increasing complexity will be set to provide realistic practice in the use of radar for navigation and collision avoidance in confined waters with heavy traffic.

Each exercise will be followed by class discussion, giving participants the opportunity to analyze the actions taken and discuss possible alternatives.

Objective

Those successfully completing this course will be able to make efficient and effective use of radar as a navigational aid in congested, confined waters, recognize potential threats and make valid navigational and collision-avoidance decisions based on sound radar observation and plotting in compliance with the International Regulations for Preventing Collisions at Sea (COLREG) 1972. They will be aware of the time needed to appreciate that a dangerous situation is developing, to decide upon and take appropriate action, and to ascertain that such action is adequate and does not give rise to further conflicts with other vessels. They will also realize that excessive speed in poor visibility reduces the time available to assess a threat and to take appropriate action.

SAMPLE REFERENCE-TEXTS:

Radar Navigation Manual, Pub. 1310, Fifth Edition 1990, published by the Defense Mapping Agency Hydrographic/Topographic Center, DMA Stock No. NVPUB1 310

Radar and ARPA Manual, AG Bole and WO. Dineley 1990, published by Heinemann Newnes, Halley Court, Jordan Hill, Oxford 0X2 8EJ; ISBN 0 434 90118 0

The Radar Book, S.M. Van Wyck and M.H. Carpenter 1984, published by Cornell Maritime Press, Inc., Centreville, MD 21617; ISBN 0 870333267

Navigation Rules, International-Inland, COMDTINST M1 6672.2B, 17 AUG 1990, published by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402

RADAR-OPERATION TRAINING CERTIFICATION

Instructors/companies conducting Radar-Operation courses must ensure all course certificates issued include the following information:

- Course title

- Student's name

- Instructor's name

- Date course completed

- A statement that the course conforms with the guidance in regulation and this circular

The INSTRUCTOR QUALIFICATIONS guidance on the next page applies to all training courses required/approved by the Coast Guard. Since the Coast Guard will not evaluate or approve Radar-Operation courses, the last paragraph does not apply to those courses.

INSTRUCTOR QUALIFICATIONS

The instructors in any type of educational program are an important part of the training package; therefore, the Coast Guard must ensure they have the proper and appropriate qualifications. When reviewing an instructor's credentials, the following criteria must be applied:

An instructor must have a high level of understanding of the knowledge and skills taught in the course, and experience in their practical application. The individual should have a license and valid radar-observer endorsement appropriate to the content of the course. The license serves as a prima facie indicator of the individual's professional qualifications.

A person without a license or a person who holds a license below the level of the course may have appropriate experience, knowledge and skills to teach the course, but this must be verified. In these situations, evidence must be presented to establish an equivalent level of experience, skill and knowledge.

The next area to be examined is teaching experience. A highly knowledgeable person may not be a suitable instructor if he or she is unable to communicate that knowledge to the students. An instructor should have a background or experience in teaching or instructional techniques.

Whenever possible, a prospective instructor's teaching ability will be determined by observing the individual teach a class. If this is not possible, the individual will be interviewed to review his or her background in teaching and closely evaluate his or her communication skills. While not essential to the entry-level instructor, a knowledge of teaching techniques is helpful; however, if an individual has good communication skills, teaching techniques can be learned.

None of these areas can be sacrificed. An instructor must have the experience, knowledge and skills, and the ability to communicate them. knowledge that cannot be communicated is worthless, and a good communicator lacking the experience, knowledge or skill, has little to communicate.

Training facilities seeking Coast Guard approval of a course must include a list of the experience, knowledge and skills the course instructors must possess to effectively teach the course. When recommending a person for acceptance as a qualified instructor, the training facility must compare the person's background to the list of necessary experience, knowledge and skills, and explain why the person is qualified. This process must be followed in establishing a new course or replacing instructors in current courses.

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Expiration Date: 30 Jun 96

COAST GUARD COURSE APPROVAL

I. Background

The Coast Guard's policy with regard to maritime training has evolved as a result of several key forces: technology, International Maritime Organization (IMO) recommendations and the economic realities of the shipping industry. Technological advances have led to vessel automation, which reduces the number of crew required to safely operate a ship. For a mariner to remain competent, he or she must keep abreast of new maritime practices. As manning of vessels has in many cases been cut to the bare minimum, mariners do not have the time to pursue training while underway. Furthermore, shipowners cannot afford to operate as training vessels; they must operate as efficiently as possible to survive in marine trade.

The Coast Guard believes that shore-based training can provide experience equal to or greater than experience gained during a normal sea tour. Today's training methods utilizing simulator technology can provide a mariner a quality training experience safely and quickly without actually going to sea. Reinforcing our current thinking are international agreements and conventions. The IMO's International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, specifically recommends various training courses and allows the substitution of training for underway time.

Prior to 1980, Coast Guard approvals were granted mostly for courses specifically suggested by law or regulation and held at union schools or on school ships. This situation changed with the development of the radar observer regulations and proposed licensing regulations and their provisions for training. Existing schools began expanding their course offerings beyond those implied by law or regulation, and organizations whose main business was to provide maritime training began to appear.

The Coast Guard's increased emphasis on training has developed a broader definition of what Coast Guard approval of a course means. Coast Guard approval of a course indicates:

a. the course is required by regulation;
b. a mariner can take the course instead of an examination; or
c. the Coast Guard recognizes the importance of the course and will allow graduates to substitute training time for required service time toward licenses and certificates.

The third reason listed above for approving courses has become the primary justification in recent years and allows courses which were previously "just good training" to be designated, "Coast Guard approved."

Of course, actual sea time is essential to ensure that mariners get the experience they need to be competent professionals, but the Coast Guard emphasizes the importance of training-- as stated earlier, there is not enough time for quality training on board ship. By providing an incentive for mariners (sea time credit) and by ensuring that schools which receive Coast Guard approval are quality training institutions, the Coast Guard hopes to encourage mariners to attend courses and industry to lend its support. It is in the best interest of seamen and the industry if their training is relevant to the real world. All training relating to operational shipboard activities is encouraged, and the Coast Guard will consider approval of any course that provides quality marine training (Note: An institution must specifically request approval). "Exam-prep school" courses, whose only purpose is to coach students to pass the Coast Guard examination, are not considered. The Coast Guard will assist, where possible, with the development and approval of effective training courses for seafarers proposed by employers, maritime labor organizations, private training facilities, and the Federal and state governments.

II. Approval Application Procedures

The course approval process is explained in subpart C of Title 46 of the Code of Federal Regulations (CFR), Part 10. A school wishing to have a course approved by the Coast Guard must submit a written request to the Merchant Vessel Personnel Division at Coast Guard Headquarters (G-MVP-3) via the Officer in Charge, Marine Inspection, of the nearest Regional Examination Center (REC) listed on page 5. The request should include:

a. List of instructors and summaries of their qualifications and experience;
b. Description of the curriculum, including (if applicable) the number of actual classroom hours dedicated to each subject, the number of hours in a normal school day, the number of vessel underway hours, the number and type of examinations required, what audio-visual aids or simulators are to be used and the class size and student/instructor ratio;
c. Description of the facility equipment; and
d. Recommendation as to what the course should be approved for, e.g., to substitute training for a sea service requirement, to replace an examination, or to accomplish training required by the regulations.

The Officer in Charge, Marine Inspection or his designated representative will review the approval request and visit the training site. He or she will evaluate the school facilities, looking at such things as classroom environment, simulator installations, audio-visual aids, lifeboat installations, any vessel and other associated gear. Except in cases where the facility, faculty, or curriculum is unsatisfactory, the local office will forward the request to Coast Guard Headquarters along with its evaluation and recommendations.

Ill. Course Elements Evaluated during Approval Review

When evaluating course submission, personnel at Coast Guard Headquarters look for the following:

a. REC recommendation;
b. At least one of the three reasons for approval cited on page 1: to meet a regulatory requirement for training, to substitute for a required examination or to substitute training for the sea service requirement for a particular license or seaman document (if so, how much of the required sea time?);
c. A description of the instructors and their credentials-- instructors should have, at the minimum, experience in teaching or training and either a license, document, certificate, or endorsement appropriate to the course being taught or the equivalent in maritime experience;
d. Course objectives;
e. Overview of the course as well as an instructor's manual and a student workbook or its equivalent;
f. Evidence that students will be tested in all subjects covered;
g. Subjects listed in the CFR or IMO documents regarding training requirements or examinations to be passed by applicants for licenses, certificates, documents, or endorsements;
h. A description of the facility and its equipment-- the facility must be well maintained and sufficient to accommodate the students in a safe, comfortable environment conducive to learning; and
I. A complete description of any simulator capabilities (technical specs and brochures provided by the manufacturer).

For substitution of training for service applications we consider a standard training day as eight hours long, and this standard day can often be substituted for a reasonable number of at-sea days. Some of the factors considered in determining the substitution ratio are: the supervision provided during hands-on training or sessions on a simulator; the quality of the instructor(s); the student's prospects for getting maximum learning and minimum distractions; the pacing of the course (no more than 8 hours'. training per day); the materials to be kept by students after the course has ended; and the nature of the end-of-course test and the school's policy on failing students and providing remedial work. Once an acceptable sea time substitution has been determined, we compare the course with similar courses which have already been approved to ensure consistency of standards.

The course materials and our recommendation may also be reviewed by the Maritime Administration (MARAD). MARAD reviews courses in light of the needs of the maritime community and makes its recommendations to the Chief of the Coast Guard's Merchant Vessel Personnel Division (G-MVP). Commandant (G-MVP) makes the final decision on the course approval.. This decision is then communicated to the applicant and all REC's.

IV. Conduct of School with Approved Course

Any training facility with a Coast Guard approved course must operate within the following requirements as stated in 46 CFR 10.303:

a. For at least one year after each student's enrollment, maintain on file their examinations, a report of practical tests administered, and a record of their classroom attendance; and

b. Allow at any time, the Officer in Charge, Marine Inspection, or a designated representative, to:

(1) inspect the personnel facilities, equipment, and records;

(2) interview and survey students to aid in course evaluation;

(3) assign personnel to observe or participate in the course of instruction; and

(4) supervise or administer the required examinations or practical demonstrations.

Any proposed changes to an approved curriculum must be submitted to Commandant (G-MVP) via the Officer in Charge, Marine Inspection, for evaluation and written approval. Any proposed instructor or facility changes must be reviewed and found acceptable by the Officer in Charge, Marine Inspection.

Initial approvals are effective for a period of two years. Subsequent five year renewal periods may be granted subject to a written request to Commandant (G-MVP), U.S. Coast Guard, via the Officer in Charge, Marine Inspection. Application for renewal must be submitted a least 90 days before the current approval expires.

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
510 L. St., Suite 100
ANCHORAGE, AK 99501-1946
(907) 271-6733/5

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
Customhouse
BALTIMORE, MD 21202-4022
(410) 962-5132

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
455 Commercial Street
BOSTON, MA 02109-1045
(617) 223-3040

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
196 Tradd Street
CHARLESTON, SC 29401-1899
(803) 724-7693

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
433 Ala Moana Blvd. Rm 1
HONOLULU, HI 96813-4909
(808) 522-8258

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
8876 Gulf Freeway
Suite 210
HOUSTON, TX 77017-6595
(713) 947-0044

GUARD REGIONAL EXAMINATION CENTERS - OCT. 1994

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
2760 Sherwood Lane, Suite 2A
JUNEAU, AK 99801-5845
(907) 463-2450

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
165 N. Pico Avenue
LONG BEACH, CA 90802-1096
(310) 980-4483/5

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
200 Jefferson Ave.
Suite 1301
MEMPHIS, TN 38103-2300
(901) 544-3297

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
Claude Pepper Bldg.
6th Floor, 51 S.W. First Ave.
MIAMI, FL 33130-1608
(305) 536-6548

Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
1440 Canal Street, Eighth Floor
NEW ORLEANS, LA 70112-2711
(504) 589-6183

Commanding Officer (REC)
U.S. Coast Guard
Marine Inspection Office
Battery Park Bldg.
NEW YORK, NY 10004-1466
(212) 668-6395

Commanding Officer (REC)
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Marine Safety Office
6767 N. Basin Ave.
PORTLAND, OR 97217-3992
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1222 Spruce Street, Suite 211
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U.S. Coast Guard
Marine Safety Office
Building 14,
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ALAMEDA, CA 94501-5100
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Commanding Officer (REC)
U.S. Coast Guard
Marine Safety Office
1519 Alaskan Way S., Bldg. 1
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Commanding Officer (REC)
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Marine Safety Office
Federal Bldg., Rm. 501
234 Summit St.
TOLEDO, OH 43604-1590
(419) 259-6394/5