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1. Abstract (MAXIMUM 200 WORDS) This report presents a systematic method for developing reliable and valid performance-based assessments (PBA) of mariner proficiencies. The method is compliant with: the requirements of the International Maritime Organization's (IMO) <i>Seafarers' Training, Certification and Watchkeeping Code (STCW Code)</i> , as amended in 1995; with all relevant U.S. Coast Guard Navigation and Vessel Inspection Circulars (NVIC); with Instructional Systems Development (ISD); and with the best practices of the maritime industry. The method guides the developer through five steps: 1) specify assessment objectives, 2) determine assessment methods, 3) specify assessment conditions, 4) develop proficiency criteria, and 5) prepare the assessment materials. The report provides materials for a developer's workshop, a stand-alone assessment development manual, and four sample assessments that have been developed by project participants. Guiding materials for the actual conduct of such assessments are provided in a separate report (R&DC-204).					
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EXECUTIVE SUMMARY

Introduction to the research and development project

The assessment of mariner proficiencies by practical demonstration is mandated by the International Maritime Organization (IMO) in its 1995 amendments to the *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention)* and the accompanying *Seafarer's Training, Certification and Watchkeeping Code (STCW Code)*. This requirement is a substantial departure from earlier practice, and methods for developing, conducting, and documenting such assessments must be established. The United States Coast Guard's (USCG) National Maritime Center (NMC) is sponsoring a research project through the USCG Research and Development Center (R&DC) to examine the implications of the mandate and to ensure that the best practices are available to the industry. One major objective of the project is to provide a systematic, step-by-step process for developing reliable and valid assessments and investigate its feasibility for implementation.

Project efforts reported here

The performance-based assessment (PBA) method, as described in this report, is compliant with the requirements of the STCW Code, relevant USCG Navigation and Vessel Inspection Circulars (NVICs), Instructional Systems Development (ISD), and the best practices of industry. An objective of this phase of the project was to refine the PBA method and to prepare materials to assist the industry in applying it. The approach to achieving this objective was to introduce the method to a varied sample of industry representatives through workshops and to invite some of them to participate in trial applications of the method. As a result of these efforts, the materials provided in this report have benefited from multiple reviews, multiple trial applications, and substantial comment. Materials to guide the *development* of assessment procedures that are provided here include a workshop (Chapter 2), a manual (Chapter 3), and four sample assessments (Appendices A through D). The industry representatives who participated in the project and came to understand the method were quite positive about the value of the general method in enhancing the rigor of assessment procedures. They are applying it in their own settings – sometimes with their own adaptations to their particular circumstances. Comparable guidance and materials to support the *conduct* of assessments, are provided in a separate report (R&DC-204).

Recommendations

For the most effective implementation of the project's findings and products, the following actions are recommended to the USCG and the maritime industry.

- The USCG should encourage the maritime industry in the use of the PBA method, as described in the project reports and materials. As a first step, the materials should be made widely available, on the USCG STCW website (<http://www.uscg.mil/stcw>) and through the

National Technical Information Service (NTIS). When the industry becomes more familiar with the PBA method, it can serve as the basis for a new NVIC. The USCG should submit the PBA supporting materials to the IMO subcommittee on Standards for Training and Watchkeeping.

- The USCG should encourage further familiarity with the PBA approach by USCG staff, as a tool for discussions of assessment with the industry and for the review of procedures submitted for approval.
- The USCG should encourage the review and use of the PBA method and materials by those groups that are dealing with the important technical issues of assessment, such as the Maritime Academy Simulator Committee (MASC), the Merchant Marine Personnel Advisory Committee (MERPAC), and academy committees appointed by the Maritime Administration (MARAD) to address STCW issues. The materials can provide a common approach and a common basis for discussion.
- Those in the industry who are responsible for training and assessment of mariner proficiency in academies, training schools, and shipping companies should make use of the PBA method and the materials presented here as a guide for their own development of assessment procedures. The materials are especially appropriate for inclusion in train-the-trainer courses.