

October 14, 2024

Rear Admiral Wayne R. Arquin
Assistant Commandant for Prevention Policy
U. S. Coast Guard
2703 Martin Luther King Jr. Ave SE, Stop 7509
Washington, DC 20593-7509

Subj: National Towing Safety Advisory Committee Final Report – Task 22-02 –
*Recommendations for Training and Instruction of Crewmembers working aboard
Subchapter M Inspected Towing Vessels.*

Dear Admiral Arquin,

I am writing today to forward the final report and recommendations of the National Towing Safety Advisory Committee (NTSAC) for Task 22-02 - *Recommendations for Training and Instruction of Crewmembers work aboard Subchapter M Inspected Towing Vessels*. At the Spring meeting held in Annapolis, Maryland on May 1, 2024, the Committee unanimously approved the enclosed report and recommendations.

The Subcommittee Chair, Mr. John Arenstam and Co-Chair Mr. Robert Keister worked with the subcommittee members to provide thoughtful recommendations to guide the Coast Guard and Towing Vessel industry for Subchapter M crewmember training.

The members of the National Towing Safety Advisory Committee greatly appreciate the support and cooperation of the U. S. Coast Guard participating and assisting the subcommittee with the Task. We are grateful for the opportunity to provide to the Coast Guard the advice and recommendations from the Towing Industry and Public as the Coast Guard conducts its regulatory oversight. Should you have any questions regarding the final report or recommendations, please don't hesitate to call or email.

Sincerely,



Steve Huttman

Chairman, National Towing Safety Advisory Committee

Encl: (1) Final Report – Towing Safety Advisory Committee Task 22-02 – May 1, 2024

cc: Mr. John Arenstam – Chair, Task 22-02
Mr. Robert Keister – Co-Chair, Task 22-02
Mr. Matthew Layman – DFO, National Towing Safety Advisory Committee
Ms. Laura Wilcox – Vice Chair, National Towing Safety Advisory Committee



NATIONAL TOWING SAFETY ADVISORY COMMITTEE

TASK 22-02

Recommendations for Training and Instruction for Crewmembers Working Aboard Subchapter M Inspected Towing Vessels

(Short Title – Crewmember Training)

Final Report and Recommendations



NATIONAL TOWING SAFETY ADVISORY COMMITTEE

May 1, 2024

To: National Towing Safety Advisory Committee

From: John Arenstam, Chair
Robert Keister, Co-Chair

RE: Task 22-02 - Recommendations for Training and Instruction for Crewmembers Working Aboard Subchapter M Inspected Towing Vessels

At the September 12, 2022 National Towing Safety Advisory Intersessional Committee meeting a Subcommittee was tasked with providing review of and “Recommendations for Training and Instruction for Crewmembers Working Aboard Subchapter M Inspected Towing Vessels”.

John Arenstam was nominated as Chair and Robert Keister was nominated as Co-Chair of this Subcommittee. Both nominations were approved by NTSAC members without dissent. A Subcommittee was formed, and work progressed through the end of 2023.

Subcommittee participants include members of NTSAC, industry, and government agencies. A complete list of participants is attached as Enclosure (1) to this report.

Respectfully submitted,

John J Arenstam
Task 22-02 Subcommittee Chair

Enclosures: (1) NTSAC Representatives and Subcommittee Participants
(2) NTSAC Task Statement 22-02

BACKGROUND AND APPROACH

Towing vessels are distinguished by their ability to execute multifaceted marine operations in a variety of unique environments. Correspondingly, the hazards that towing vessels face on a daily basis are just as exceptional and diverse. Hence, working aboard a towing vessel requires a unique set of skills that can only be developed by receiving specialized instruction and training that is then complemented by operational proficiency developed through practical on-the-job applications.

PLAN OF ACTION (POA)

1. The team will begin working on identifying if the baseline training and instructions included in the Task Statement are sufficient or if any gaps exist.
2. Identify strategies common to successful training programs that may be used by towing companies to accomplish the required training.
3. Present findings and recommendations to NTSAC Members and solicit feedback.
4. Submit Final Report at the NTSAC Spring 2024 meeting.

ACTION

1. Task 22-02 Chair, John Arenstam, was nominated by NTSAC.
2. Robert Keister was appointed Co-Chair.
3. The Subcommittee consists of broad industry representatives from towing, offshore supply, regulatory bodies, Classification Societies, and others.
4. Teleconference meetings were held on 21 October 2022, 16 December 2022, 15 February 2023, and 18 October 2023.
5. In person discussions were held during the NTSAC Meeting working sessions, 11 April 2023 and 26 September 2023.
6. Final Report and Recommendations to be presented for consideration by the National Towing Safety Advisory Committee on May1, 2024 for a final vote.

SUMMARY OF COMMITTEE TASK 22-02

1. The Subcommittee all agreed to divide the task into two (2) parts:
 - A) Recommendations for changes to training required in Sub M.
 - B) Items to consider when developing a successful training program.
2. The Chair and Co-Chair coordinated work for Part A with the Subcommittee for Task 22-01, “*Recommendation to the Coast Guard for Rulemaking Improvements to Subchapter M*”.
3. Gathered information from the maritime industry on current approaches to training methods along with pros and cons to the methods.
4. Researched adult education practices outside of the towing industry.

5. There is a diverse array of approaches used by the towing industry to meet the regulatory training requirements. In addition, there are just as many ways to record and document the completion of the training.
6. Many adult education and training techniques may not be known by all the towing vessel companies, especially those companies that do not have an in-house, full-time training staff.
7. During the in-person discussion during the 26 September 2023 NTSAC Meeting working session, several topics were brought up for consideration by the Subcommittee. Those topics were outlined below. The bold topics were added to the report. The other topics were discussed, and the consensus was that while they are important topics, they were too specific in nature and not necessary for inclusion in the report.
 - Skiff training
 - Tank barge training for wheelhouse personnel
 - Root cause training for boat crew, highlighting the “5 Whys technique”
 - Skills assessment for crew not just the wheelhouse
 - 46 CFR145.15 Safety and health hazards; is this enough guidance for adequate training regarding PPE, harness, and other equipment?
 - **Add comment about lost ability to easily sort/identify NMC Maritime training providers.**
 - **Add in "PRO" for E-Learning (4.4) - RECORD KEEPING**
 - Sexual assault and sexual harassment, reporting requirements, and topics themselves (MSIB 01-23)

DEFINITIONS

1. *Human Element* – people’s ability and capability to deal effectively and safely with the complexity, difficulty, pressures, and workload of their daily tasks, not only in emergency situations but also during routine operations.
2. *Quality Management Systems* – A formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives.
3. Currently required under STCW 10, Human Element will be incorporated into training. The Human Element will be considered in the review, development, and implementation of new and existing requirements, including skills, education, and training, and human capabilities, limitations, and needs.

RECOMMENDATIONS

The Subcommittee makes the following recommendations to the Coast Guard:

1. No changes to the training topics included in 46 CFR § 140. It was determined that there is a wide array of approaches used by the towing industry to meet these requirements. In addition, many adult education and training techniques may not be known by all the towing vessel companies.
2. The functionality of the USCG National Maritime Center's list of USCG approved courses on their website should be improved. The current configuration of the listing is very limited. It is only available in one (1) single PDF document. The ability for mariners or towing operators to locate individual maritime training providers for a specific area or specific courses is not available. The existing format considerably restricts the functionality and usefulness of the report.
3. The USCG should make the five (5) items that are identified as common to successful training programs readily available. The items will greatly assist towing companies in their effort to accomplish their goals with the required training.
 - 3.1. Incorporate your training processes into your company's existing system that documents processes, procedures, and responsibilities (Quality Management System philosophy).
 - 3.2. Understand and use adult learning and training principles.
 - 3.3. Understand and use a combination of different training methods.
 - 3.4. Incorporate Human Element principles and practices into the company training program.
 - 3.5. Available maritime training resources

FIVE (5) ITEMS COMMON TO SUCCESSFUL MARITIME TRAINING PROGRAMS

1. Incorporate your training processes into your company’s existing system that documents processes, procedures, and responsibilities (Quality Management System philosophy).

For reference the following are some general Information on an effective Quality Management Systems:

ISO 9001:2015 changed the focus from a sometimes passive, box-ticking preventative action plan to a more proactive, risk-based thinking approach. To comply with the latest release of ISO 9001, your business must take a greater strategic view of risk within the business. Management and team leaders need to be actively involved in identifying, recording, removing, and mitigating risk. Employees down the chain of command must be able to give their feedback on risk to management for consideration.

In every Quality Management System, once a non-conformity is identified, it is important to report on the responding Corrective and Preventive Action (CAPA) process.

ISO 9001 CAPA elements for a Quality Management System – CAPA processes are an important part of the ISO 13485:2016 Quality Management System, and for good reason. To correct non-conformances requires doing something different than the action that caused them. Following a set problem-solving procedure ensures that critical elements and resources will not be lost and wasted along the way. Where many CAPA processes lose steam is in either over or under responding. That is often a function of a poor set of risk filters built into the process. Multiple people might contribute to the report, including whoever initiated the CAPA process, the person responsible for implementing it, and whomever needs to approve it. The report would typically include:

- The nature of the nonconformity
- Its severity
- Immediate actions that were taken
- Suspected causes
- The plan for corrective and/or preventative actions
- Verification that action was taken and was effective
- Sign-off from a Quality Manager once the process is complete

Seven (7) Key Steps in a CAPA Inspired Training Process:

There is no one, single template for a training process that can be applied to every towing company or operations. The following steps will assist you in determining the best specifics for your situation.

A. Identification

- When an issue is noticed by a staff member or customer, the nature of the issue must be recorded.
- Include as much context and information as possible.
- Use all available means to identify issues that may indicate training gaps. They all do not have to happen to you first.
- Lessons learned
- Near miss reports
- Internal audit findings
- External audit findings
- NTSB investigations
- USCG reports
- Industry meetings

B. Evaluation

- Evaluate the issue to decide if it warrants a training solution.
- Not all issues need a training response.
- This will depend on the complexity and potential harm of the issue.

C. Investigation

- Investigate the root cause of the issue.
- This can be a time-consuming step because there might be more than one (1) cause.
- Do not point fingers until the causes are clearly identified.
- Determine best training method to eliminate the gap.

D. Implementation

- Implement training solution for corrective or preventative action (or both).
- Corrective action needs to be immediate to resolve the issue.
- Preventative actions must ensure the issue does not reoccur.

E. Monitoring

- How do you know that the chosen training material/delivery and frequency of training corrected the issue?
- Monitor the implemented solution to document its effectiveness.
- The actions taken must have resolved the issue and stopped it from reoccurring.
- An internal audit can also be useful.

F. Modification

- If any weaknesses are identified in the training process, modifications must be made so that the initial corrective response is effective, and the preventative action is more proactive in the future.

G. Repeat

2. Understand and use Adult Learning and Training Principles.

Principles of Adult Education:

- A. Adults learn best when they understand why they need to learn
- B. Adults learn best when they have freedom to learn in their own way
- C. Adults learn best when learning from hands-on experience
- D. Adults learn best when the process is positive and encouraging

To learn best when they understand why they need to learn, we:

- Recommend operators share lessons learned and near misses with crews
- Recommend operators include root cause understanding when referring to incident investigations

To learn best when they have freedom to learn in their own way, we:

- Recommend operators offer various training formats – eLearning, hands-on, instructor-lead, simulations
- Recommend operators supply adult education learning/training that helps mariners understand their own personal learning style

To learn best when learning from hands-on experience, we:

- Recommend operators utilize scenarios, exercises and drills to enhance training topics
- Recommend operators focus on vessel-based and simulator training where available

To learn best when the process is positive and encouraging, we:

- Recommend trainings that do not include punishment or negative results for inadequate immediate retention
- Recommend refresher trainings at regular intervals

3. Understand and use a combination of different training methods.

- 1.1. Safety meetings/training on vessels with subject literature from the office.
- 1.2. Safety meetings/training held shoreside, i.e. – vessel employee (masters, engineers, tankermen, cooks, etc.) meetings, crew changes, etc.
- 1.3. Watch video/DVD onboard followed up by a written test.
- 1.4. E-learning on a computer or phone which consists of a video and written test.
- 1.5. Specific third-party training (Bridge Management, Shipyard Competent Person, Haz-Mat Operations/Responder, simulation, etc.)

PROS	CONS
#3.1	#3.1
Done on vessel with instruction from the office.	Time constraints, depending on service of the vessel.
A good facilitator will engage with the crewmembers and encourage dialogue and feedback.	Not all vessels have a good facilitator onboard or regular opportunity for a facilitator from the office to board.
#3.2	#3.2
Larger groups receive the same training and information.	Because of the location of crew changes, all individuals, if any, may not come to the office.
The company has the opportunity to choose the facilitator with the skills and expertise to speak with crewmembers at crew change or during management meetings.	During management meetings for Captains, Mates, Engineers, etc., there is so much information that companies need to squeeze into a short period of time that any time dedicated to training is usually “squeezed in” and is not effective.
#3.3	#3.3
Crewmembers can sit as a group to watch the topic and discuss information for the tests.	Without a facilitator there are no discussions. Tests are usually true or false or multiple choice and do not necessarily reflect retention or understanding of the material.

#3.4	#3.4
Crewmembers can complete topics and tests on their own schedule.	Without a facilitator there are not usually any discussions. Tests are usually true or false or multiple choice and do not necessarily reflect retention or understanding of the material.
Provides for record keeping and data retrieval for company personnel and auditors, inspectors, and investigators.	If topics are not monitored (so many topics per month, quarter, etc.) they could be all done at once potentially reducing retention.
#3.5	#3.5
The hands-on instructor-led training by subject experts can be more effective if it includes case studies and interaction. This training is usually for specific individuals/positions on the vessels.	The time and cost of crewmembers going to this training on their off time or on-the-job replacement if during their scheduled workdays may not be feasible.

4. Incorporate Human Element principles and practices into company training program.

The Human Element is recognized as a key element of the safety of life onboard vessels and a contributing factor to most of the casualties in the maritime sector.

How does a company use the principles of Human Element to reduce human error?

- Effective Bridge/Pilothouse Resource (Team) Management provides a consistent means by which the possibility of human factor errors and omissions are reduced to a minimum.
- Leadership and teamwork
 - Build an effective safety culture.
 - Develop effective training policies which underpin effective teamwork.
 - Know your impact on the work of others.
- Navigation Assessments/Voyage planning (checklists)
- Situational awareness
- Good practice in the Pilothouse/Bridge is the result of clear operational requirements established in the vessel's Safety Management System

5. Available Maritime Training Resources

- International Organizations
- USCG Towing Vessel National Center of Expertise
- Federal maritime academies and schools
- State maritime schools
- Private schools with maritime programs
- USCG approved maritime training providers
- Commercial maritime training content providers
- TPOs / ROs
- Maritime consultants

NTSAC Representatives and Subcommittee Participants

NTSAC Members		
John J Arenstam- Chair	Arenstam Maritime Consulting	John@ArenstamMaritime.Com
Robert Keister Chair	Sabine Surveyors	Robert.keister@sabinesurveyors.co
Laura Wilcox	Massachusetts Maritime	Laura.k.wilcox@gmail.com
Mark Sawyer	Marathon Petroleum	msawyer@marathonpetroleum.co
John Hazel	Marquette Transportation	jhazel@marquettetrans.com
Marc Dial	Plimsoll Marine	marc.t.dial@gmail.com
General Public		
Keith Alexander	The River School	keith.riverschool@gmail.com
Jo Ann Campbell (Salyers)	Salyers Solutions	joann@salyerssolutions.com
Jason Wisneski	Dann Marine Towing	Jwisneski@dannmarine.com
Kris Tower	Magnolia Marine Transport	Kris.Tower@ergon.com
Miranda Calender	Marquette Transportation	Mcalender@marquettetrans.com
Sandra Ashford	Ingram Barge	Sandra.Ashford@ingrambarge.com
Government Agencies		
Stephen T. Douglas	U.S. Coast Guard	Stephen.T.Douglas@uscg.mil

NATIONAL TOWING SAFETY ADVISORY COMMITTEE (NTSAC)

TASK STATEMENT 22-02

I. TASK TITLE

Recommendations for Training and Instruction for Crewmembers Working Aboard Subchapter M Inspected Towing Vessels (Short Title: Crewmember Training)

II. BACKGROUND

Towing vessels are distinguished by their ability to execute multifaceted marine operations in a variety of unique environments. Correspondingly, the hazards that towing vessels face on a daily basis are just as exceptional and diverse. Hence, working aboard a towing vessel requires a unique set of skills that can only be developed by receiving specialized instruction and training that is then complemented by operational proficiency developed through practical on-the-job applications.

Resultantly, 46 CFR § 140, requires that towing vessels inspected under Subchapter M provide crewmembers and non-crewmembers with baseline training and instruction to include:

- Emergency duties and duty stations (46 CFR § 140.405)
- Safety orientation (46 CFR § 140.410)
- Emergency drills and instruction (46 CFR § 140.420)
- Identification and mitigation of health and safety hazards (46 CFR § 140.510)
- Training requirements (OSH) (46 CFR § 140.515)
- Navigation safety training (46 CFR § 140.645)

Safe and successful towing vessel operators are distinguished by crews who not only have years of seasoned knowledge and experience but are also dedicated to the concept of teamwork and working together to ensure safe and efficient vessel operations.

III. TASK

NTSAC will develop a final report that provides a description of core competencies and training resources that vessel operators can leverage to not only comply with the minimum regulatory requirements mentioned above but empowers such operators to build proficient crews aware of and capable of responding to operational or emergency situations.

Particular attention should be given to proficiency items that focus not just on technical acumen but human factors as well. The final report should, at a minimum, discuss:

- 46 CFR § 140 Subpart D- Crew Safety
- 46 CFR § 140 Subpart E- Safety and Health
- 46 CFR § 140 Subpart F- Vessel Operational Safety

IV. ESTIMATED TIME TO COMPLETE TASK

NTSAC will provide a Draft Final Report to the Coast Guard at its fall 2023 meeting

V. COAST GUARD TECHNICAL REPRESENTATIVE

POC: USCG TVNCOE, USCG CVC-1

VI. NTSAC CONTACT

Chair: John Arenstam, jarenstam@seamenschurch.org

Co-Chair: Robert Keister, Robert.keister@sabinesurveyors.com

VII. ENCLOSURES