

May 21, 2018

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

Subj: *Towing Safety Advisory Committee Final Report - Task 16-02- Recommendations Regarding Firefighting Training Requirements for Officer Endorsement for Master, Mate (Pilot) of Towing Vessels, Except Assistance Towing and Apprentice Mate (Steersman) of Towing Vessels, in Inland Service*

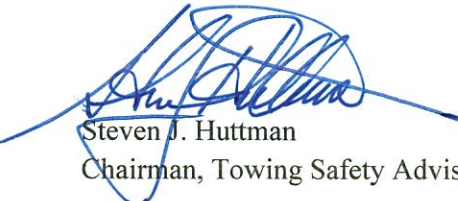
Dear Admiral Nadeau,

I am writing today to forward the final report and recommendations of the Towing Safety Advisory Committee for Task Statement 16-02, Inland Firefighting. At the spring TSAC meeting in Charleston, South Carolina on March 21, 2018, the Committee formally approved the enclosed report, its recommendations.

The Subcommittee Co-Chairs, Ms. Jill Taft and JoAnn Salyers and the 39 subcommittee members worked very diligently to prepare a comprehensive report, which includes several recommendations as how to resolve the issue of training for firefighting for Towing Vessels in Inland Service.

The members of the 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 chance to provide to the Coast Guard, the thoughtful advice and recommendations from the Towing Industry 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,



Steven J. Huttman
Chairman, Towing Safety Advisory Committee

Encl: (1) Final Report – Towing Safety Advisory Committee Task 16-02 – Inland Firefighting

cc: Ms. Jill Taft, Subcommittee Co-Chair
Ms. JoAnn Salyers, Subcommittee Co-Chair
CDR Jose Perez, Designated Federal Official - Towing Safety Advisory Committee
LCDR William Nabach– ADFO – Towing Safety Advisory Committee
Mr. Ken Doyle– ADFO – Towing Safety Advisory Committee



Towing Safety Advisory Committee

Task 16-02

Recommendations Regarding Firefighting Training Requirements for
Officer Endorsements for Master, Mate (Pilot) of Towing Vessels,
Except Assistance Towing and Apprentice Mate (Steersman) of
Towing Vessels, in Inland Service

Short Title: Inland Firefighting

Final Report

March 21, 2018

EXECUTIVE SUMMARY

On December 24, 2013 the Coast Guard’s final rule to implement the STCW (Standards of Training, Certification and Watchkeeping) Convention and Code,¹ to address public comments submitted in the earlier Supplemental Notice of Proposed Rulemaking on the same subject, to incorporate the 2010 STCW Manila Amendments and to make other changes not related to STCW in order to reorganize, clarify and update regulations, was published in the Federal Register. The United States is signatory to the STCW Convention but the Convention is not self-implementing. Therefore, the United States through the Coast Guard, initiated regulatory changes in order to comply with its treaty obligations through full implementation of the amendments to the STCW Convention and STCW Code. Implementation was achieved by the Coast Guard’s amendment of 46 C.F.R. Subchapter B to fully harmonize and incorporate the requirements for national licenses with those of the STCW Convention, and for other purposes. As part of the implementation process, new requirements for training in accordance with STCW were placed on certain national – formerly known as “domestic” – merchant mariner officer endorsements.

Specifically, new regulations at 46 C.F.R. § 11.201(h)(3)(ii) – general requirements for national and STCW officer endorsements – require mariners seeking officer endorsements for Master or Mate (Pilot) of towing vessels in all services except oceans, who began their sea service after March 24, 2013, to obtain a firefighting certificate by completing a Coast Guard-approved firefighting course that meets the requirements for basic firefighting in Regulation VI/1 of STCW and Table A-VI/1-2 of the STCW Code. Prior to the new requirement to obtain a certificate for STCW-compliant basic firefighting, there was no prerequisite to complete any level of firefighting certification to obtain an endorsement for towing vessel Master or Mate (Pilot) in service other than oceans.

The Coast Guard subsequently presented the Towing Safety Advisory Committee (TSAC) with Task 16-02: Recommendations Regarding Firefighting Training Requirements for Officer Endorsements for Master, Mate (Pilot) of Towing Vessels, Except Assistance Towing and Apprentice Mate (Steersman) of Towing Vessels, in Inland Service (hereinafter “Inland Firefighting” or “Task 16-02”), at the Spring 2016 TSAC meeting held in Washington, D.C. TSAC voted to accept the tasking on April 14, 2016.

The Coast Guard’s Problem Statement in Task 16-02 recited the then-current regulation at 46 C.F.R. § 27.303 for uninspected towing vessels in inland service, and those in “coastal” or oceans service built before 2003 to carry certain types of fire extinguishing equipment – a combination of hand-held fire extinguishers and semi-portable extinguishers or hand-held fire extinguishers and a fixed system to protect the engine spaces. The problem statement went on to describe particular knowledge, understanding and proficiency (hereinafter, KUPs) requirements for demonstrating compliance in firefighting training as set forth in STCW Table A-VI/1-2 of the STCW Code – specification of minimum standard of competence in fire prevention and

¹ The International Convention on Standards of Training Certification and Watchkeeping for Seafarers 1978, as amended and the Standards of Training Certification and Watchkeeping Code

firefighting. The STCW firefighting KUPs and related equipment were in addition to and different from the existing domestic equipment regulations for towing vessels. STCW basic firefighting requires KUPs and demonstrations of compliance with fire extinguishing equipment that towing vessels in inland service do not carry and are not required to carry. Subsequent publication of towing vessel inspection regulations at 46 C.F.R. Subchapter M did not change the fire extinguishing equipment requirements. Thus, the problem presented is that mariners who wish to obtain a national endorsement as Master or Mate (Pilot) of towing vessels for all services except oceans (Inland/Great Lakes, Western Rivers, Coastwise), must be certificated in STCW basic firefighting, when STCW requires KUPs for equipment not carried by “Inland” towing vessels and does not apply to either the credential the mariner applies for or the vessel on which he or she is credentialed to operate.

Based on the Problem Statement, the Task Statement in 16-02 was presented as:

1. Review Regulation VI/1 of the STCW Convention, and Table A-VI/1-2 of the STCW Code, and consider whether the requirements are appropriate for towing vessels in inland service.
2. If the above is not appropriate, provide recommendations for firefighting training requirements for officer endorsements for Master or Mate (Pilot) of towing vessels as required by 46 C.F.R. §11.201 (h)(3)(ii) for vessels in inland service.
3. Provide any other recommendations to the Coast Guard that the committee feels is appropriate for this subject matter.

In numerous meetings, teleconferences and discussions, the Inland Firefighting Committee concluded STCW basic firefighting requirements – the requirements of Regulation VI/1 of the STCW Convention and Table A-VI/1-2 of the STCW Code, were not appropriate for towing vessels in inland service.

Having concluded that STCW basic firefighting certification is not appropriate for Masters or Mate (Pilots) credentialed to serve on inland vessels, the committee provides several alternative recommendations to satisfy firefighting training.

First, the committee recommends that the Coast Guard review the decision-making process that led to the requirement for Masters or Mate (Pilots) on inland vessels to obtain basic firefighting certification in accordance with the STCW Code, and revise the current regulation at 46 C.F.R. 11.201(h)(3)(ii) because the final regulation is inconsistent with positions stated by the Coast Guard in rulemaking commentary in both the STCW final rule and the Subchapter M final rule.

Second, in order to provide the broadest spectrum of options in our recommendations, the committee proposes the following additional actions: 1) Retain the option for an “inland” mariner to obtain firefighting training in either STCW Basic or Advanced Firefighting; 2) recognize as acceptable firefighting training through an approved Tankerman-PIC firefighting course that satisfies 46 C.F.R. § 13.121(e)(3); 3) approve the option for a mariner to obtain firefighting training by completion of a company-based (in-house) firefighting program provided to the mariner through either a TPO (Third Party Organization)-approved firefighting training

program included in the TSMS (Towing Safety Management System) or a Coast-Guard approved training program included in the Health and Safety Plan, for companies utilizing the Coast Guard inspection option.

Additionally, the committee recommends that the Coast Guard clarify the definition of “service” and “training” in paragraph 1.d. of Enclosure (1) to NVIC 02-14, Grandfathering and Transitional Provisions for Merchant Mariner Credentials. The Coast Guard should clarify that mariners who began their sea service before March 24, 2014, qualify for grandfathering.

In light of these recommendations, the committee asks the Coast Guard to exercise its authority under 46 C.F.R. § 11.201(l) to suspend the application of the STCW firefighting training requirement until the recommendations included in this report have been fully reviewed and considered.

Details of the conclusions and recommendations are discussed more fully below.

I. STCW BASIC FIREFIGHTING CERTIFICATION SHOULD NOT BE MANDATORY FOR MASTER AND MATE (PILOT) ON INLAND TOWING VESSELS

A. STCW Applies to Seagoing Vessels – Inland Towing Vessels are not Seagoing Vessels

As an initial matter, the STCW Convention and Code apply to *seagoing ships* and the mariners who are credentialed to operate them. Article II of the STCW Convention defines seagoing ship as “a ship other than those which navigate exclusively in inland waters or in waters within, or closely adjacent to, sheltered waters or areas where port regulations apply.” Article III of the STCW Convention states “that The Convention shall apply to seafarers serving on board seagoing ships.” Similarly, seagoing vessel is defined in 46 C.F.R. Subpart B – General Requirement for all Merchant Mariner Credentials at 46 C.F.R. 10.107: “*Seagoing vessel* means a ship that operates beyond the boundary line specified in 46 C.F.R. Part 7.” Regulations applicable to towing vessels in 46 C.F.R. Subchapter M do not define the term seagoing, but the term *inland waters* appears in Definitions 46 C.F.R. § 136.110 and is “the navigable waters of the United States shoreward of the Boundary Lines as described in 46 C.F.R. Part 7, excluding the Great Lakes and, for towing vessels, excluding the Western Rivers.” 33 C.F.R. Part 151 – Implementation of MARPOL 73/78 defines seagoing vessel more specifically in 33 C.F.R. § 151.05 as “a vessel in commercial service that operates beyond the boundary line established by 46 C.F.R. Part 7. It does not include a vessel that navigates exclusively on inland waters.” By all accounts then, seagoing vessels are those certificated for routes outside the boundary line and a vessel that operates exclusively inside the boundary line is not a seagoing vessel – thus STCW has no application or regulatory force over “inland” vessels – those that operate exclusively inside the boundary line.

Nonetheless, the Coast Guard in promulgation of the final rule to amend 46 C.F.R. Subchapter B which included regulations implementing the STCW Convention including the 2010 Manila Amendments, placed an STCW firefighting training certification requirement on national mariner credentials for applicants seeking Master or Mate (Pilot) of towing vessels in all services except oceans. See 46 C.F.R. 11.201. The practical effect of this regulation change was to place

an STCW certification requirement on national (domestic) mariner credentials for service on *non-seagoing* vessels. Specifically, 46 C.F.R. 11.201(h)(3)(ii) now requires STCW firefighting certification for mariners seeking national endorsements for service on Great Lakes/Inland and Western Rivers – service in areas technically inside the boundary line – areas in “inland waters.”

The Inland Firefighting Committee has found that the regulatory history of the Coast Guard’s actions to implement the STCW Convention indicate that STCW requirements would not be applied to vessels in inland service – which by extension, means no STCW requirements should apply to mariners seeking “inland” operating credentials. For instance, in response to public comments suggesting that STCW should apply to all license categories, the Coast Guard responded in the negative:

“We do not propose to extend application of the STCW Convention to inland waters, since the scope of the STCW Convention is limited to seagoing ships. Our entire scheme of licensing, testing, inspection, and continued oversight for inland water and Great Lakes provides a level of safety equivalent to the STCW Convention.”²

In a later proposed rulemaking, the Coast Guard again declined to enact across-the-board application of STCW for all mariners, commenting that there was no intent to apply strict international standards upon domestic mariners (76 FR 45928, Aug. 1, 2011).

Despite the Coast Guard commentary in earlier proposed rulemakings that STCW would not extend its reach to domestic mariners, when the final rule was issued, mariners seeking officer endorsements for Master or Mate (Pilot) of towing vessels in all services except oceans would be required to take STCW basic firefighting meeting the requirements of Regulation VI/1 of the STCW Convention and Table A-VI/1-2 of the STCW Code. See 46 C.F.R. 11.201(h)(3)(ii). In the Table of Changes to the final rule it is remarked that the new regulation “[m]andates basic firefighting training for some endorsements on non-ocean services. This is to ensure that mariners with those endorsements have basic firefighting skills and to improve overall maritime safety” (78 FR at 77802).

No one disputes the necessity and good practice to require mariners be trained in basic firefighting skills with the goal of improving overall maritime safety and there is no argument that training is necessary in this regard. However, this goal may be accomplished without resort to extending the reach of STCW into national waters. Requiring STCW-compliant training for inland mariners serving on inland towing vessels was perceived as overreaching by some inland operators and a well-intentioned rule gave rise to contentious debates within the towing community over the appropriate application of international regulations.

² Implementation of the 1995 Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978; Coast Guard notice of proposed rulemaking; 74 Fed. Reg. 59367 (proposed Nov. 17, 2009).

B. Prior Positions Advocated by the Coast Guard Rejected Extension of STCW Training to Inland Mariners

Coast Guard response to public comments in the NPRM – Implementation of the 1995 Amendments to STCW state that extension of STCW to inland waters was not necessary because the current scheme of licensing, testing and inspection for inland waters was equivalent to STCW (74 FR 59376 Nov. 17, 2009). Coast Guard response to public comments in the SNPRM (Supplemental Notice of Proposed Rulemaking) followed similar reasoning, remarking that the Coast Guard chose not to extend STCW requirements to inland waters, but was required to enact regulations consistent with STCW for seagoing vessels (76 FR 45928 Aug. 1, 2011).

Commentary from rulemakings included in the table below support the committee’s recommendation that the Coast Guard revisit the rationale that led to a regulation that placed additional training burdens on inland mariners and that departed significantly from earlier justifications rejecting those burdens. The table below is a summary of Coast Guard comments in response to public input in the STCW NPRM (Notice of Proposed Rulemaking) and SNPRM consistently arguing against application of STCW to inland mariners.

NPRM & SNPRM Preamble	Final Rule Preamble & Regulation
<p><u>“We do not propose to extend application of the STCW Convention to inland waters, since the scope of the STCW Convention is limited to seagoing ships.</u> Our entire scheme of licensing, testing, inspection, and continued oversight for Inland water and Great Lakes provides a level of safety equivalent to the STCW Convention.”³</p> <p><u>“STCW is not applicable to inland waters.</u> The Coast Guard has chosen not to extend STCW requirements to Inland waters but recognizes that as a signatory to the Convention, we must ensure our rules are consistent with the requirements for ships on seagoing voyages.”²</p> <p><u>“The STCW Convention applies to mariners serving on seagoing ships</u> (except pleasure craft, fishing vessels, and ships entitled to sovereign immunity such as warships). Article II of the Convention defines a seagoing ship as a ship other than one that “navigates exclusively in Inland waters or in waters within, or closely adjacent to, sheltered waters or areas where port regulations apply.”⁴</p> <p><u>“The provisions in this SNPRM which would implement amendments to the STCW Convention only apply to commercial vessels operating seaward of the boundary line, as specified in 46 C.F.R. part 7.</u> As stated in Article III of the STCW Convention, the Convention “shall apply to seafarers serving on board seagoing ships entitled to fly the flag of a Party * * *” Article II of the Convention defines “seagoing ship” as a ship other than those navigating exclusively in Inland waters or waters within or adjacent to sheltered waters. <u>The Coast Guard does not intend to apply strict</u></p>	<p>“One commenter states that the final rule should clearly state that the requirements of STCW do not apply to Inland towing operations or to crewmembers who work on Inland towing vessels. The Coast Guard agrees and emphasizes the STCW Convention applies to mariners serving on seagoing vessels, except pleasure craft, fishing vessels, and vessels entitled to sovereign immunity such as warships. Article II of the Convention defines a seagoing ship as a ship other than one that “navigates exclusively in Inland waters or in waters within, or closely adjacent to, sheltered waters or areas where port regulations apply.” <u>The provisions in this final rule that implement amendments to the STCW Convention only apply to commercial vessels operating seaward of the boundary line, as specified in 46 C.F.R. part 7.</u>⁵</p> <p><i>(Though the Coast Guard stated clearly throughout the rulemaking process that the requirements of STCW did not apply to mariners operating on Inland and Western Rivers routes, a new firefighting training requirement for these mariners was created by their inclusion in the Final Rule. The only justification for this inclusion was a reference in the preamble concerning mariners operating on Inland and Western Rivers routes which follows.)</i></p> <p><u>“This is to ensure that mariners with those endorsements have basic firefighting skills and to improve overall maritime safety.”</u>⁶</p> <p>§11.201 General requirements for national and STCW officer endorsements: “(h) Firefighting certificate. (1) Applicants for an original officer endorsement in the following categories must present a certificate</p>

³ Federal Register / Vol. 74, No. 220 / Tuesday, November 17, 2009 / Proposed Rules 59367

² Federal Register / Vol. 76, No. 147 / Monday, August 1, 2011 / Proposed Rules 45928

⁴ Federal Register / Vol. 78, No. 247 / Tuesday, December 24, 2013 / Rules and Regulations 77802

⁵ Federal Register / Vol. 78, No. 247 / Tuesday, December 24, 2013 / Rules and Regulations 77840

⁶ Federal Register / Vol. 78, No. 247 / Tuesday, December 24, 2013 / Rules and Regulations 77802

<p>international standards upon our domestic mariners in this regard. As such, the Coast Guard would apply the STCW provisions only to vessels operating beyond the boundary line.”²</p>	<p>of completion from a firefighting course of instruction that has been approved by the Coast Guard. The firefighting course must have been completed within the past 5 years, or if it was completed more than 5 years before the date of application, the applicant must provide evidence of maintaining the standard of competence in accordance with the firefighting requirements for the credential sought.</p> <p>(2) The following categories must meet the requirements for basic and advanced firefighting in Regulations VI/1 and VI/3 of the STCW Convention and Tables A-VI/1-2 and A-VI/3 of the STCW Code (both incorporated by reference, see §11.102 of this part)</p> <p>(ii) All national officer endorsements for master or mate (pilot) of towing vessels, except apprentice mate (steersman) of the vessels, on oceans.”⁷</p>
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Not only was the application of STCW training for inland mariners rejected in the STCW rulemakings noted above, it was also rejected in the recent rulemaking finalizing 46 C.F.R. Subchapter M – Towing Vessel Inspection regulations. Significantly, the Coast Guard specifically addressed a comment suggesting that all licensed towing vessel officers, including apprentice mates and steersmen complete formal firefighting training courses:

“Another commenter requested that we strengthen the [firefighting] training requirements by mandating that all licensed officers, apprentice mates, steersmen, and engineers complete formal fire-fighting training courses. We considered comments on these same issues in a previous rulemaking [...] and believed at the time that the level of training proposed in our Inspection of Towing Vessels NPRM would provide crew members with adequate knowledge of the procedures and equipment on board their vessels needed to respond to fires; we have not changed our opinion on this issue based on these comments [...]. In support of our previous rulemaking, TSAC had performed an independent analysis of our casualty data, which showed that over 80 percent of the reported fires on inland vessels had been extinguished by the crewmembers with only seven reported injuries. Further review of the Coast Guard casualty reports on the vessels where injuries were reported revealed that most of the seven injuries were the result of conditions in the engine room (e.g., burns from the fire outbreak) and were not attributable to fire-fighting efforts.”⁸

These seemingly inconsistent positions by the Coast Guard support the committee’s recommendation to revisit and revise regulation 46 C.F.R. 11.201(h)(3)(ii).⁹

⁷ **Federal Register** / Vol. 78, No. 247 / Tuesday, December 24, 2013 / Rules and Regulations **77912**

⁸ Inspection of Towing Vessels; Coast Guard final rule; 81 Fed. Reg. 40059 (June 20, 2016).

⁹ Consideration should also be given to harmonizing the firefighting training requirements for mariner credentials with the regulations for firefighting training and drills in Subchapter M 46 C.F.R. 142.245 – Requirements for training crews to respond to fires.

C. STCW Basic Firefighting Requires Instruction and Training with Fire Fighting Equipment not Found on Inland Towing Vessels

Non-seagoing vessels certificated for operation inside the boundary line are not required to be equipped with the type of firefighting equipment contemplated for use aboard seagoing vessels by STCW-certified crewmembers. An STCW endorsement for inland mariners qualified for service on inland vessels should not be required because there are differences between firefighting equipment for towing vessels operating on inland routes and those operating on coastwise or oceans routes.

Towing vessel inspection regulations – 46 C.F.R. Subchapter M – were published in June 2016, and Part 142 of Subchapter M – Fire Protection – did not change the substance of earlier firefighting equipment carriage requirements for uninspected towing vessels (46 C.F.R. 27.303). The new regulation at 46 C.F.R. § 142.315(a)(1) requires an inspected towing vessel that is certificated for service on rivers, lakes, bays, and sounds, and less than 3 nautical miles from shore on the Great Lakes be equipped with either an approved B-V semi-portable fire extinguishing system to protect the engine room or a fixed fire extinguishing system installed to protect the engine room. Towing vessels of 79 feet or more in coastwise and oceans service that are not fitted with a fixed fire extinguishing system are required to carry two sets of firefighter’s outfits and two SCBAs (Self-Contained Breathing Apparatus). 46 C.F.R. 142.226. This equipment is not a requirement for “inland” towing vessels – those certificated for operation on rivers, lakes, bays, sounds and less than 3 miles from shore on the Great Lakes, but it is equipment mariners must be trained on when required to obtain an STCW-compliant certificate in basic firefighting.

In addition to the fact that current regulations for “inland” towing vessels do not require the same level of fire extinguishing equipment as STCW-compliant seagoing vessels, is the practical reality that firefighting tactics on towing vessels certificated for “inland” routes – and by extension, the mariners that operate those vessels – is not the same either. Inland towing vessel crews faced with fighting extensive fires that have grown beyond the ability to extinguish with the required firefighting resources onboard have more options than a coastwise or oceans towing vessel to save life and property: They may solicit outside assistance, either from shore-based firefighters or other nearby towing vessels, they may ground and/or break the tow to isolate the burning vessel and get the crew out of harm’s way. No one can seriously argue that if a fire breaks out on an inland towing vessel the crew will simply abandon ship and initiate no firefighting response at all, but it should be acknowledged that differences in firefighting equipment required onboard equate to differences in tactics to extinguish a fire and by extension to the training and certification required for those mariners.

To detail the differences between STCW Basic Firefighting KUPs and current firefighting regulations for inland towing vessels, a table comparing the requirements found in Table A-VI/1-2 of the STCW Code and current regulations in 46 C.F.R. parts 27 and 142 is provided below.

Table A-VI/1-2 of the STCW Code	46 C.F.R. §27.209 and 46 C.F.R. §142.245
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Firefighter’s outfits	Firefighter’s outfits not required for towing vessels in inland service—but if towing vessel is so equipped, would be subject to training and drills on how to don a firefighter’s outfit per 46 C.F.R. §27.209 (a)(4) and (c)(4) and also 46 C.F.R. §142.245 (a)(4) and (c)(4).
Use of self-contained breathing apparatus	SCBAs not required for towing vessels in inland service—but if towing vessel is so equipped, would be subject to training on how to don self-contained breathing apparatus per 46 C.F.R. §142.245 (a)(4).
Extinguishing extensive fires with water, using jet and spray nozzles	Required for towing vessels because of 46 C.F.R. §27.301 (e)(3) and 46 C.F.R. §142.325 (e)(3); however, text of requirement does not address “extinguishing extensive fires.”
Fighting fire in smoke-filled enclosed spaces wearing self-contained breathing apparatus	SCBAs not required for towing vessels in inland service—but if towing vessel is so equipped, would be subject to training on how to don SCBAs per 46 C.F.R. §142.245 (a)(4); however, regulation text does not address “fighting fire in smoke-filled enclosed spaces” wearing SCBAs.
Extinguishing fire with water fog or any other suitable fire-fighting agent in an accommodation room or simulated engine room with fire and heavy smoke	A nozzle capable of providing a solid stream and a spray pattern is required equipment for towing vessels in inland service under 46 C.F.R. §27.301 (e)(3) and 46 C.F.R. §142.325 (e)(3); however, the regulation only requires training on how to operate the nozzle.
Effecting a rescue in a smoke-filled space wearing breathing apparatus	SCBAs not required for Rivers towing vessels in inland service.

Firefighting training and certification for Masters or Mate (Pilots) seeking “inland” endorsements for service on “inland” vessels should be based on the firefighting equipment and techniques that these mariners actually have available to them to utilize in a fire emergency. This is in contrast to towing vessel crews on coastwise or oceans routes for whom help may not be near at hand, and for this reason those mariners require certification and training on more extensive fire extinguishing equipment and more extensive firefighting techniques – as rightfully contemplated for mariners on seagoing vessels as required by STCW.

II. ALTERNATIVES FOR FIREFIGHTING TRAINING AND CERTIFICATION FOR MASTERS OR MATE (PILOTS) ON INLAND VESSELS

It is important to note at this juncture that having found STCW Regulation VI/I and Table A-VI/1-2 not appropriate for mariners seeking Master or Mate (Pilot) of towing vessels in “inland” service, the disagreement is not based on the requirement to obtain basic firefighting training, but based on the mandatory requirement to rely on STCW as the vehicle to do so. In addition to the recommendation for Coast Guard to take a “second look” at regulation 46 C.F.R.

11.201(h)(3)(ii), the committee proposes the following additional options for firefighting training, in order to present a comprehensive set of options.

It may be the case that certain towing vessel operators will conclude that the best, most cost-efficient option is to send employees seeking Master or Mate (Pilot) of towing vessels in inland service to a Coast Guard-approved STCW Basic Firefighting course, other inland towing vessel operators, with existing in-house (company-based) firefighting training programs, have proposed

an alternative to the mandatory STCW firefighting certification requirement as it now stands in 46 C.F.R. § 11.201(h)(3)(ii). That alternative provides for Coast Guard acceptance of company-based firefighting training and certification for mariners seeking an endorsement as Master or Mate (Pilot) in “inland” service for operation of “inland” vessels.

A. Company-based Firefighting Training Certification

Company-based firefighting certification would be administered in concert with a company’s Towing Safety Management System (TSMS) or be included within a company’s health and safety plan as required by 46 C.F.R. Subpart E – Safety and Health, for those vessel operators opting for the Coast Guard Inspection regulatory regime. Oversight and approval of the firefighting training certification program would be governed by the TPO or OCMI, depending on whether the operator is utilizing the TSMS inspection option or the Coast Guard inspection option.

The specified training shall utilize the actual or similar firefighting equipment and towing vessels that the company’s mariners would be engaged upon. Company-based firefighting instruction shall address specific elements appropriate to the towing vessel, its firefighting equipment, the size of its crew and its route and service. The company-based firefighting training must include live-fire elements and portions of the training may be accomplished by the use of video or electronic training materials.

Company-based firefighting certification shall address the training elements that the Committee has developed, which are appropriate to the vessel, its firefighting equipment, the size of its crew, and its route and service:

1. Company-based firefighting instruction should be appropriate to its vessels, the equipment carried aboard, and the operating environment of those vessels. The company-based firefighting training must include live fire and may be accompanied by use of video or electronic training materials that address the appropriate fire-fighting training elements.
2. Companies are required to comply with the current requirements in 46 C.F.R. 142.245 and 46 C.F.R. 140.420. These existing requirements for drills and instruction shall include the firefighting training elements developed by the committee and enumerated below, in order to reinforce the initial training for certification.
3. Written records of the company-based firefighting training should be kept in accordance with the company’s TSMS, or Health and Safety Plan, if the operator has chosen the Coast Guard inspection option.

Inland operators choosing to offer company-based firefighting training for the purposes of documenting such training to qualify a mariner for a Master or Mate (Pilot) endorsement for inland service shall:

1. Include a description of the items the mariner has received training on, which may be in the form of a list (prescriptive approach) or learning objectives (performance approach) designed to achieve competency in required areas.
2. Include a general written description of how training is to be accomplished, how persons designated to conduct training are to be trained, and how trainees' competence levels are to be evaluated at the completion of training.
3. Receive approval and oversight of company-based firefighting training by the Coast Guard or TPO.

Having proposed an option for inland towing vessel operators to provide in-house training in basic firefighting, the committee suggests that firefighting training for mariners seeking Master or Mate (Pilot) of towing vessels endorsed for Inland/Great Lakes or Western Rivers ("inland" endorsement for "inland" vessels) might be accomplished in the following ways:

1. A Certificate of Completion from a Coast Guard-approved Firefighting Course:
 - a. STCW Basic Firefighting; or
 - b. STCW Advanced Firefighting; or
 - c. Firefighting Training for Tankerman-PIC¹⁰ endorsement per 46 C.F.R. § 13.121(e)(3).
2. For towing vessel operators with an approved Towing Safety Management System (TSMS), a certificate of completion of company-based firefighting training containing mandatory elements, given in accordance with the TSMS and approved by a recognized Third-Party Organization per Subchapter M.
3. For towing vessel operators utilizing the Coast Guard inspection option, a certificate of completion of company-based firefighting training containing mandatory elements given in accordance with the operator's Health and Safety Plan per 46 C.F.R. Subchapter M and approved by the cognizant OCMI.
 - a. Inland operators choosing to offer company-based basic firefighting training are required to develop:
 - i. A formal syllabus of mandatory training elements;
 - ii. A formal training record book shall be maintained; and
 - iii. Training documentation shall be readily available for either TPO or Coast Guard inspection.
 - b. Evidence of successful completion of training under the TSMS or Coast Guard inspection option shall be evidenced by a certificate and statement of compliance

¹⁰ Firefighting course for Tankerman-PIC (barge) 46 C.F.R. § 13.121(d)(1) is not sufficient, as the firefighting course topics are not sufficiently complete to address fires in accommodation spaces or other spaces or types of fire commonly encountered on a towing vessel. See Table 3 to 46 C.F.R. § 13.121(e) and compare topics in Column 1 (PIC Barge) to Column 2 (PIC).

in an applicant’s sea service letter written by company personnel on company letterhead.

B. Mandatory Elements of Company-based Firefighting Training

i. Background

In order to inform development of mandatory elements comprising company-based firefighting training for licensed officers on towing vessels in inland service, the Inland Firefighting Committee reviewed casualty data and information made available by the Coast Guard and investigation reports issued by the National Transportation Safety Board (NTSB).

Additionally, to understand how these regulatory requirements and voluntary industry standards were being applied, the Committee solicited industry input via a survey that provided inland towing vessel operators with a list of the topics covered in an approved firefighting course for Tankerman endorsements, as outlined in Table 3 of 46 C.F.R. § 13.121 (e), and asked whether the topics were covered in the education, training, and drills these operators are currently conducting.¹¹ Requirements for training in the use of firefighter’s outfits, self-contained breathing apparatus and foam were not included because they are not required or typically encountered on towing vessels in inland service. The survey confirmed that the majority of respondents are conducting instruction and drills that cover the topics that are relevant to crewmembers of towing vessels in inland service responding to a fire emergency.

The committee also reviewed recent rulemakings in which the Coast Guard considered the adequacy of firefighting equipment for towing vessel crewmembers. The issue was first raised during the promulgation of the rule to require the installation of fire suppression systems in the engine rooms of towing vessels: “Our analysis of casualties indicates that all fires put out by crewmembers were put out without benefit of extensive training or protective clothing. We therefore have considered the costs and benefits associated with such training and clothing, and we have decided not to require these in this interim rule.”¹²

ii. Firefighting Training Elements for Masters, Mate (Pilots) in “Inland” Service

The committee analyzed casualty data and industry practice and using that information, developed a list of training elements that it recommends for inclusion in company-based firefighting training for mariners seeking an endorsement as master or mate (pilot) of towing vessels in inland service. This will ensure that these mariners are trained on equipment they will have access to in a fire emergency, and that they received training tailored to the service in which they operate.

Firefighting Training Elements for Mariners on Towing Vessels in Inland Service

1. Elements of fire (fire tetrahedron):

¹¹ See Appendix V.

¹² Fire-Suppression Systems and Voyage Planning for Towing Vessels; Coast Guard interim rule; 68 Fed. Reg. 22609 (April 29, 2003).

- Fuel
 - Source of ignition
 - Oxygen
 - Ignition sources (general)
 - Ignition sources applicable to towing vessels
- 2. Definitions of flammability and combustibility:**
- Flammability
 - Ignition point
 - Static electricity
 - Flash point
 - Auto-ignition
- 3. Spread of fire:**
- By radiation
 - By convection
 - By conduction
- 4. Main causes of fire:**
- Oil leakage
 - Smoking
 - Overheating equipment
 - Galley appliances
 - Spontaneous ignition
 - Hot work
 - Electrical apparatus
- 5. Fire prevention:**
- General
 - Fire hazards of Class A, B, C, D and K materials
- 6. Fire detection:**
- Fire and smoke-detection systems
 - Automatic fire alarms
- 7. Firefighting equipment:**
- Fire mains, hydrants
 - Smothering-installations, carbon dioxide (CO₂), foam (if fitted)
 - Fire pump and generator/s
 - Chemical-powder applicants
 - Fire hose, nozzles, connections, and fire axes
 - Portable fire extinguishers
 - Limitations of portable and semi-portable extinguishers
- 8. Emergency procedures**
- 9. Arrangements:**

- Escape routes

10. Vessel firefighting organization:

- General alarms
- Emergency stations and duties
- Communications
- Periodic vessel drills
- Reflash watch

11. Command and Control:

- Vessel Personnel Resources
- External Resources

12. Basic firefighting techniques:

- Sounding alarm
- Locating and isolating fires
- De-energizing electrical equipment in the area the fire is located in
- Stopping of fuel source by fuel shut-off, if told to do so by the designated person(s)
- Cooling
- Smothering
- Sizing up situation /stability/ dewatering if appropriate
- Extinguishing with fixed and/or portable units
- Setting reflash watch
- Using additional personnel

13. Fire classifications and applicable extinguishing agents

14. Firefighting extinguishing-agents:

- Water (solid jet, spray, fog, and flooding)
- Carbon dioxide (CO₂)
- Dry chemicals

15. Use of extinguisher on:

- Galley fire
- Electrical fire
- Fire in accommodation spaces
- Drills for typical fires on towing vessels

16. Field exercises:

- Extinguish small fires using portable extinguishers
- Extinguish small Class A fire with water from a fire hose

iii. Documentation of Company-based Firefighting Training

Written records of the company-based firefighting training will be kept in accordance with the company's TSMS or Health and Safety Plan, depending on whether the operator is following the

TSMS or Coast Guard towing vessel inspection option. For towing vessel operators with an approved Towing Safety Management System (TSMS), a certificate of completion of company-based firefighting training given in accordance with the mandatory training elements and included with procedures in the TSMS and approved by a recognized Third-Party Organization. For towing vessel operators operating under the Coast Guard inspection option, a certificate of completion of company-based firefighting training given in accordance with the mandatory training elements and included with procedures in the operator's Health and Safety Plan and approved by the cognizant OCMI.

The training shall include a general written description of how training is to be accomplished, how persons designated to conduct training are to be trained and how the trainee's competence levels are to be evaluated at the completion of training. Documenting training designed to achieve competency in required elements shall include a general description of the items the applicant is to receive training on, whether in prescriptive form using a list, or by the performance approach by based on learning objectives. A formal syllabus of mandatory training elements shall be developed, a formal training record book shall be maintained, and training documentation shall be readily available for either TPO or Coast Guard inspection.

Evidence of successful completion of training under the TSMS or Coast Guard inspection option shall be evidenced by a certificate and statement of compliance in an applicant's sea service letter written by company personnel on company letterhead.

III. Recommendations for Clarification of Certain Terms

The Inland Firefighting Committee recommends that the Coast Guard clarify the definition of "service" and "training" in paragraph 1.d. of Enclosure (1) to NVIC 02-14, Grandfathering and Transitional Provisions for Merchant Mariner Credentials. The paragraph states, "A mariner will be considered to have started service on the first day of their service that meets the requirements for the endorsement for which they have applied." The paragraph continues, "Training is considered to have started on the first day of a period of training used to qualify for an endorsement." Despite having different definitions, both terms are used in the preceding sentence that sets the dates for grandfathering: "A mariner who started approved or accepted training or seagoing service before March 24, 2014 and is applying for his or her first raise of grade or original credential after March 24, 2014, may qualify under the regulations in place before March 24, 2014, provided that the application is made before March 24, 2019."

IV. CONCLUSION

The Towing Safety Advisory Committee is united in its belief that recommendations made by committees and the final reports approved by the full committee are in the best interests for the health and safety of all mariners in the towing industry and in the best interests of the Coast Guard and the industry it regulates. The paths to TSAC final reports are not always forecasted by “fair winds and following seas” and so it was with task 16-02. It may be the case that the Coast Guard concluded that the most effective and efficient means to ensure that applicants for Master or Mate (Pilot) of towing vessels in “inland” service receive sufficient, complete firefighting training was to require the STCW Basic Firefighting endorsement as a perfect off-the-rack solution. However, because the towing industry includes many different disciplines in very different circumstances, one-size-fits-all can be an ill-fitting solution.

Towing vessel mariners seeking national officer endorsements for service on inland waters, qualified for operation on inland, non-seagoing vessels should have options to obtain basic firefighting training by a number of means, not limited to STCW endorsements intended for international-level credentials and vessels in seagoing service.

The Inland Firefighting Committee, after much debate and informed discussion recommends the following options to satisfy firefighting training for Masters or Mate (Pilots) of Towing Vessels in “inland” service:

1. Pursuant to its authority under 46 C.F.R. 11.201(l), recommend that the Coast Guard suspend application of regulation 46 C.F.R. 11.201(h)(3)(ii), the requirement to complete an STCW Basic Firefighting Course for mariners seeking an officer endorsement for Master or Mate (Pilot) of towing vessels in inland service, until the regulation has been reviewed and revised for applicability and to consider alternative options to satisfy firefighting training appropriate to inland mariners serving on inland towing vessels. Any revisions to the regulation should be consistent with stated rationale in STCW and Subchapter M rulemakings that rejected application of STCW and additional training burdens on “inland mariners” serving on “inland vessels”
2. Keep in place the option for mariners to satisfy basic firefighting training by obtaining a Certificate of Completion from a Coast Guard-approved Firefighting Course including:
 - a. STCW Basic Firefighting; or
 - b. STCW Advanced Firefighting; or
 - c. Firefighting Training for Tankerman-PIC endorsement in accordance with Table 3 of 46 C.F.R. § 13.121(e)(3).
3. Additionally, accept company-based firefighting training and certification: For towing vessel operators with an approved Towing Safety Management System (TSMS), a certificate of completion of company-based firefighting training containing mandatory elements as described in this report, given in accordance with the TSMS and approved by a recognized Third-Party Organization in accordance with Subchapter M.

4. Additionally, accept company-based firefighting training and certification: For towing vessel operators using the Coast Guard inspection option, a certificate of completion of company-based firefighting training conducted in accordance with the operator's Health and Safety Plan, which includes the mandatory training elements set forth in this report, and is approved by the Officer in Charge Marine Inspection (OCMI) per Subchapter M.
5. The Committee recommends that the Coast Guard clarify the definition of "service" and "training" in paragraph 1.d. of Enclosure (1) to NVIC 02-14, Grandfathering and Transitional Provisions for Merchant Mariner Credentials. The Coast Guard should clarify that mariners who began their sea service before March 24, 2014, qualify for grandfathering, as described in the foregoing section.

APPENDIX I – TASK 16-02

TOWING SAFETY ADVISORY COMMITTEE (TSAC)

TASK STATEMENT

TASK 16-02

Short Title: (Inland Firefighting)

I. **TASK TITLE**

Recommendations Regarding Firefighting Training Requirements for Officer Endorsements for Master or Mate (Pilot) of Towing Vessels, Except Assistance Towing and Apprentice Mate (Steersman) of Towing Vessels, in Inland Service.

II. **BACKGROUND**

The December 24, 2013 final rule to implement the amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW Convention, and to make changes to national endorsements, established additional firefighting training requirements for certain endorsements. The Coast Guard stated in its Table of Changes that the reason for the change was “to ensure that mariners with those endorsements have basic firefighting skills and to improve overall maritime safety.” Now, mariners seeking any officer endorsement for master or mate (pilot) of towing vessels, except Assistance towing and apprentice mate (steersman) of towing vessels, in all services except oceans, who began their sea service after March 24, 2013, must meet the requirements for basic firefighting in Regulation VI/1 of the STCW Convention and Table A-VI/1-2 of the STCW Code (46 C.F.R. §11.201 (h)(3)(ii)).

III. **PROBLEM STATEMENT**

46 C.F.R. §27.303 requires uninspected towing vessels in inland service, and uninspected towing vessels in ocean or coastal service whose construction was contracted for before August 27, 2003, to be equipped with the following fire-extinguishing equipment: the minimum number of hand-portable fire extinguishers required by §25.30; and either “(1) An approved B-V semi-portable fire-extinguishing system to protect the engine room, or (2) A fixed fire-extinguishing system installed to protect the engine room of the vessel”. There is no requirement for towing vessels in inland service to have firemen’s outfits or self-contained breathing apparatus.

Table A-VI/1-2 of the STCW Code requires instruction in, among other things, “firefighter’s outfits” and “use of breathing apparatus for fighting fires and effecting rescues”. It requires mariners to demonstrate competence in, among other things, “us[ing] self-contained breathing apparatus”; “extinguish[ing] extensive fires with water, using jet and spray nozzles”; “fight[ing] fire in smoke-filled enclosed spaces wearing self-contained breathing apparatus”; “extinguish[ing] fire with water fog or any other suitable

fire-fighting agent in an accommodation room or simulated engine room with fire and heavy smoke”; and “effect[ing] a rescue in a smoke-filled space wearing breathing apparatus”.

V. TASK

1. Review Regulation VI/1 of the STCW Convention, and Table A-VI/1-2 of the STCW Code, and consider whether the requirements are appropriate for towing vessels in inland service.
2. If the above is not appropriate, provide recommendations for firefighting training requirements for officer endorsements for master or mate (pilot) of towing vessels as required by 46 C.F.R. §11.201 (h)(3)(ii) for vessels in inland service
3. Provide any other recommendations to the Coast Guard that the Committee feels is appropriate for this subject matter.

VI. ESTIMATED TIME TO COMPLETE TASK

TSAC will provide its recommendations to the Coast Guard at its Spring 2017 meeting.

VII. COAST GUARD TECHNICAL REPRESENTATIVE:

Mr. Davis Breyer, 202-372-1441, davis.j.breyer@uscg.mil

VIII. TSAC REPRESENTATIVE

Mr. Michael Rushing, Subcommittee Chairman

IX. ENCLOSURES:

- (1) STCW Convention, Regulation VI/1, Mandatory minimum requirements for familiarization, basic safety training and instruction for all seafarers
- (2) STCW Code, Table A-VI/1-2, Specification of minimum standard of competence in fire prevention and fire fighting

APPENDIX II: Inland Firefighting Committee Roster

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*** Denotes committee members who remained engaged throughout the process.**

APPENDIX III: Summary of Inland Firefighting Committee Actions

14 April 2016: TSAC votes to accept Task Statement 16-02, Recommendations Regarding Firefighting Training Requirements for Officer Endorsements for Master or Mate (Pilot) of Towing Vessels, except Apprentice Mate (Steersman) of Towing Vessels, in Inland Service (Short Title: Inland Firefighting) at its meeting in New Orleans, LA.

Summer 2016: Committee Co-Chairs Mr. Rushing and Mr. Richmond conduct information-gathering and research. In addition to the relevant regulations in 46 C.F.R. Subchapters B, C and M, and the relevant requirements of the STCW Convention and Code, the documents reviewed by the co-chairs included:

- Report #75 of the Merchant Marine Personnel Advisory Committee, which recommended clarifications to the definition of “domestic voyage” and “domestic officer.”
- National Transportation Safety Board reports involving fires onboard towing vessels, which were provided by Mike Karr and Larry Bowling of the NTSB at the Committee co-chairs’ request.

14-15 Sept 2016: Committee Co-Chair Mr. Richmond attends Merchant Marine Personnel Advisory Committee meeting in St. Louis, MO, and participates in discussion of MERPAC Task #95, which is identical to TSAC Task Statement 16-02 and was accepted by MERPAC on September 15, 2016. Participants: Mr. McWhorter (MERPAC Committee Chair), Ms. Stewart, Alan Bernstein.

The co-chairs and other members of the Committee continued to follow the progress of MERPAC Task #95 through late 2016 and early 2017.

21 Sept 2016: Conference call to discuss task and methodology. Participants: Mr. Rushing, Mr. Richmond, Mr. McWhorter, Mr. Nyhuis.

26 Sept 2016: Conference call to further discuss task and methodology. Participants: Mr. Rushing, Mr. Richmond, Mr. McWhorter, Jennifer Carpenter, Ms. Stewart, Jerry Gallion.

30 Nov 2016: Committee meeting held in conjunction with International WorkBoat Show in New Orleans, LA.

Winter 2016: The Committee circulated to inland waterways towing vessel operators a survey of the topics covered in the education, training, and drills that they are required to provide to their crewmembers. The survey was sent to Committee members on December 12, 2016; to members of the American Waterways Operators on December 15, 2016; and to members of the Mid-

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America REC Stakeholders Group on December 21, 2016. The survey generated 31 responses.

- 10 Jan 2017:** Committee conference call held to discuss upcoming intercessional TSAC teleconference.
- 18 Jan 2017:** Status report provided at TSAC intercessional teleconference by Committee Co-Chair Mr. Rushing.
- Winter 2016-2017:** Draft report developed and refined.
- 11-12 April, 2017:** The Committee provided to TSAC what was intended to be a draft of its final report for consideration at its meeting in Memphis, TN. This draft final report, and a separate document used to describe the expectations of the draft final report, stimulated a lively discussion between Committee members and members of TSAC. Because of that discussion, the Committee agreed to make specific changes to the report, including the insertion of a list of firefighting training elements to be included in company-based firefighting instruction or Coast Guard-accepted or approved firefighting courses for inland mariners.
- 19 April 2017:** Committee conference call to discuss the results of the TSAC meeting and to achieve consensus on the list of firefighting training elements.
- 16 May 2017:** MERPAC accepts Report #95 at its meeting via teleconference.
- 5 June 2017:** Committee conference call to review new draft final report.
- 5-6 December 2017:** Committee provided to TSAC what was intended to be a draft of its final report for consideration at its meeting in New Orleans, LA. The discussion resulted in the recommendation to make some clarifications and reorganize portions of the report in order to present it as a draft final report at the next TSAC meeting in March 2018. Mike Rushing and Ray Richmond came to the end of their first term as TSC members and Jo Ann Salyers and Jill Taft were appointed Chair and Co-Chair of this Task.
- 22 February 2018:** Committee conference call to review latest draft final report.
- 14 March 2018:** Draft final report submitted to TSAC Chair for presentation at the upcoming TSAC meeting on March 21, 2018.

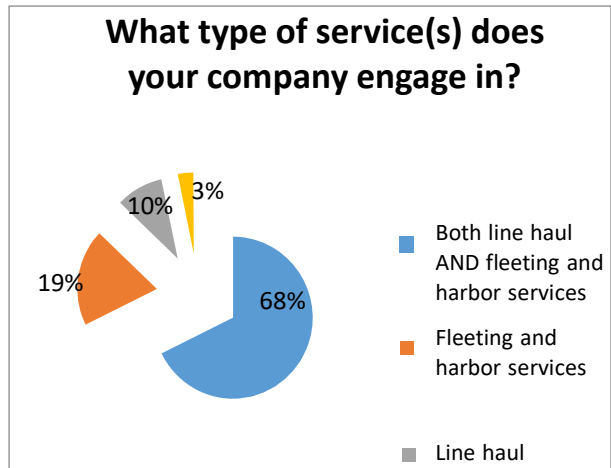
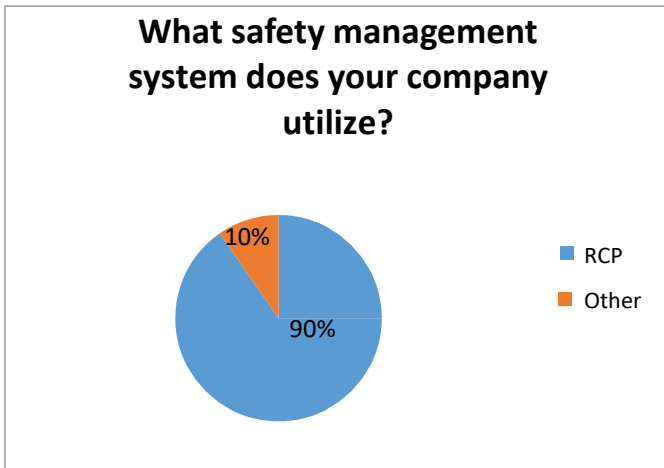
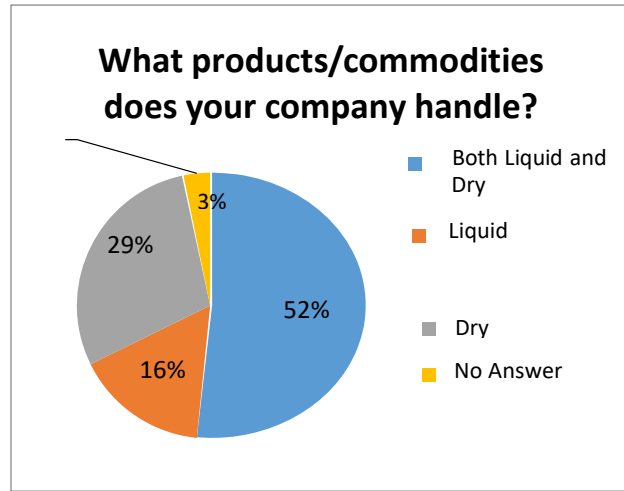
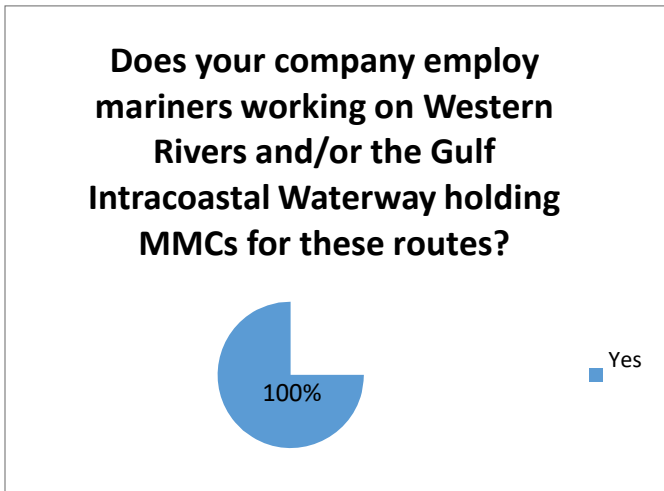
APPENDIX IV: NTSB Accident Reports of Towing Vessel Fire Events

NTSB #	Date	Vessel	Cause of Fire	Firefighting Equipment - Status	Contributing factors	Crew status
MAB-13/10	3/27/2012	M/V Paivce McAllister	Fatigue fractured fitting sprayed lube oil on engine's exhaust manifold.	CO2 system for engine room - activated; Main fire pump - couldn't run due to loss of power; Portable fire pump - fire blocked access to pump; Hand-held extinguishers - not used; Life rafts - fire blocked access to rafts.	Crewmember preliminarily opened doors to superstructure to de-smoke allowing CO2 to escape & fresh air to enter; inability to completely secure the engine room's fire boundaries; and the abundance of flammable material throughout the vessel.	6 crewmembers onboard; 5 crewmembers suffered minor injuries; 1 crewmember (Chief Engineer) died
MAB-14/04	6/9/2012	M/V Marquerte L. Terrall	Origin not determined but fire first observed near aft end of port main near turbocharger.	CO2 system for engine room - unable to access location of pull box & manual pull for CO2 bottles in aft rudder room not activated; Automatic ventilation system - to be activated by CO2 system & manual ventilation levers inside engine room & could not be accessed; Hand-held extinguishers - units stored in galley utilized unsuccessfully; Crew shut down fuel supply when abandoning vessel.	Crew's failure to set fire boundaries, shut down ventilation, use the onboard fire suppression equipment effectively,	6 crewmembers safely boarded barge in tow.
MAB-14/22	3/12/2013	M/V Shannon E. Sattoon	Introduction of petroleum gas into the main engines after vessel struck and ruptured a submerged pipeline.	Captain was enroute to shut down main engines when engines exploded and fire engulfed vessel.	Incomplete navigational information provided to the captain by the vessel company.	4 crewmembers onboard; 2 crewmembers evacuated onto a barge; 2 crewmembers ended up in the water and swam ashore. The Captain died 1 month later from injuries sustained.
MAB-15/22	10/31/2014	M/V Dennis Hendrix	Explosion due to catastrophic failure std. main from loose bolts on No. 5 cylinder rod cap. Engine operating at a high load condition.	CO2 system for engine room - activated; Fuel shut off - activated; Portable fire pump - utilized. Eight outside vessels assisted in towing & firefighting efforts. Approximately 7 hours later two Exxon Mobil fire boats arrive on scene - extinguished fire with foam.	None noted in report.	10 crewmembers safely taken from vessel by skiffs.
MAB-16/05	7/20/2015	M/V Capt. Shorty C M/V Jackie	Collision between lead barges of each vessel's tow. No damage to vessels.	No firefighting response was taken by the crews except to break away from one barge & ground it to prevent sinking.	Operators' attempt to meet in a location known for strong currents and shoaling, which was contrary to published guidance for that waterway.	No injuries sustained by crewmembers of either vessels.

NTSR #	Date	Vessel	Cause of Fire	Firefighting Equipment - Status	Contributing factors	Crew status
MAB-16/25	2/26/2016	M/V San Gabriel	Electrical anomaly related to the lavatory exhaust fan located directly above combustible materials.	Fixed fire pump - unable to start due to electrical short-circuits in the system wiring because of the fire; Hand-held extinguishers - used but not effective; CO2 system for engine room - activated; Shore-side fire teams extinguished fire with water & foam.	Captain's excessive delay in requesting shore-side assistance; inconsistencies regarding drills & mustering; no dampers in engine room's ventilation ducts to close; exterior door on port side left open when vessel abandoned; crew re-entered engine room space after monitoring for 30 minutes resulting in a fire re-flash.	Crewmembers told to evacuate vessel to the barge by the terminal facility fire department.
MAB-17/35	7/14/2016	M/V The Admiral	Misfiring cylinder that ignited lubricating oil in the sump of the engine. Resulted in explosion and fire.	Fixed fire pump - inoperable because electrical power was secured; Portable fire pumps - used; Firefighting equipment from a nearby towing vessel - used. Fire extinguished in an hour and a half.	None noted in report.	6 crewmembers onboard - all remained on vessel fighting fire. The 2nd Engineer was severely burned & the 3rd Engineer died from his injuries after he was rescued from the engine room by the crew.
MAB-17/19	8/13/2016	M/V Jaxon Aaron	Catastrophic failure of components of the No. 15 power pack on the port main engine.	Two B-V CO2 system for engine room - activation attempted but not accomplished; Fuel shut off - activated; Portable fire pumps utilized but not effective to put out fire. USCG on scene - firefighting effort suspended due to safety concerns & fire burned itself out.	Substantial use of combustible materials in the interior spaces; chief engineer's unfamiliarity with the firefighting equipment.	Crew mustered on barges & master directed them to initiate firefighting effort. 9 crewmembers evacuated safely.

APPENDIX V: Survey of Current Industry Firefighting Training and Education Practices

The Inland Firefighting subcommittee prepared and circulated a survey to industry stakeholders to ascertain what firefighting training topics are covered in the instruction, training and drills that are currently being performed across the Western Rivers fleet of towing vessels. The survey generated 31 responses. The pie charts below show demographics of survey participants.



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Topic	Training	Drills	Training and Drills	N/A
Elements of Fire:	13	0	18	0
Fuel	9	1	21	0
Source of ignition	12	1	18	0
Oxygen	11	1	17	2
Chemical reaction	12	1	15	3
Ignition Sources	15	2	14	0
Ignition Sources Applicable to Towing Vessels	11	1	16	3
Definitions of flammability and combustibility:	14	1	11	5
Flammability	16	1	8	6
Ignition point	15	1	8	7
Burning temperature	12	1	6	12
Burning speed	10	1	6	14
Thermal value	11	1	6	13
Lower flammable limit	13	1	6	11
Upper flammable limit	13	1	6	11
Flammable range	15	1	5	10
Inerting	13	1	6	11
Static electricity	16	1	6	8
Flash point	17	1	5	8
Auto-ignition	18	1	5	7
Spread of Fire:	12	1	13	5
By radiation	10	0	10	11
By convection	12	1	11	7
By conduction	12	1	10	8
Reactivity	15	1	6	9
Fire classifications and applicable extinguishing agents	12	1	18	0
Main causes of fire:	14	1	16	0
Oil leakage	12	1	18	0
Smoking	12	1	18	0
Overheating pumps	7	1	14	9
Galley appliances	11	1	16	3
Spontaneous ignition	8	1	15	7
Hot work	11	1	17	2
Electrical apparatus	14	1	15	1
Reaction and self-heating	12	1	12	6
Fire Prevention:	13	1	16	1
General, including housekeeping	13	2	16	0
Fire hazards of Class A, B, C, D and K materials	14	2	13	2
Fire Detection:	11	1	18	1
Fire- and smoke-detection systems	9	2	20	0
Automatic fire alarms	9	1	20	1
Firefighting Equipment:	6	1	23	1
Fire mains, hydrants	3	1	24	3
Smothering-installations, carbon dioxide (CO ₂), foam		1	18	5
Emergency fire pump, emergency generator	4	1	24	2

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Chemical-powder applicants	10	2	16	3
Fire hose, nozzles, connections, and fire axes	5	1	24	1
Fire blankets	10	0	9	12
Portable fire extinguishers	5	1	25	0
Limitations of portable & semiportable extinguishers	13	1	17	0
Emergency Procedures:	9	1	21	0
Arrangements:	9	1	20	1
Escape routes	7	1	22	1
Vessel firefighting organization:	7	1	19	4
General alarms	5	1	25	0
Fire-control plans, muster stations, and duties	7	2	21	1
Communications	5	2	24	0
Periodic vessel drills	5	1	25	0
Patrol system	11	1	10	9
Basic firefighting techniques:	8	1	22	0
Sounding alarm	6	1	24	0
Locating and isolating fires	9	1	21	0
Stopping of fuel source by fuel shut-off, if applicable	5	1	25	0
Cooling	9	2	18	2
Smothering	8	2	18	3
Sizing up situation	11	2	18	0
Extinguishing	9	1	21	0
Extinguishing with portable units	8	1	22	0
Setting reflash watch	11	0	17	3
Using additional personnel	10	1	16	4
Firefighting extinguishing-agents:	14	2	15	0
Water (solid jet, spray, fog, and flooding)	13	2	16	0
Carbon dioxide (CO2)	11	2	15	3
Dry Chemicals	13	2	16	0
Use of extinguisher on:	10	2	19	0
Galley fire	7	3	20	1
Electrical fire	7	3	21	0
Fire in accommodation space	7	2	21	1
Pump fire	7	3	18	3
Drills for typical fires on towing vessels	5	2	24	0
Field Exercises:	7	1	13	10
Extinguish small fires using portable extinguishers:	8	1	12	10
Electrical	10	1	9	11
Drip-pan	9	1	10	11
Pumps	9	1	9	12
Extinguish fire with water from a fire hose	6	2	13	10

The table on the previous pages shows the total number of responses for each firefighting training topic. The topics were drawn from the list of topics covered in an approved firefighting course for Tankerman endorsements, as outlined in 46 C.F.R. Table 13.121 (g), with training in the use of firefighter’s outfits, self-contained breathing apparatus and foam deleted because they are not typically encountered on towing vessels in inland service.

The pie chart below illustrates the total responses for each category.

Total of questionnaire responses

