

***REGIONAL RISK ASSESSMENT OF  
PETROLEUM TRANSPORTATION ON THE  
WATERS OF THE NORTHEAST UNITED STATES***

***CONDUCTED BY  
THE FIRST U.S. COAST GUARD DISTRICT  
THE AMERICAN WATERWAYS OPERATORS  
NORTHEAST STATES  
ENVIRONMENTAL COMMUNITY***

**EXECUTIVE SUMMARY**  
**ON**  
**RECOMMENDATIONS ON VESSEL OPERATIONS AND RISK REDUCTION**

**OBJECTIVE**

The Regional Risk Assessment Team (RRAT) was tasked to conduct a thorough review of tank barge and towing vessel operations on waters of the Northeast<sup>1</sup>. The Team's goal was to make recommendations to improve safety and to reduce the risks associated with the transportation of petroleum products through the waters of the Northeast states. The Team focused on the "assigned" topics, contained in the Charter, which were developed from the Towing Vessel/Tank Barge Safety Workshop held at Massachusetts Maritime Academy in Buzzards Bay, Massachusetts in June 1996.

**APPROACH**

For each assigned topic of discussion, the RRAT members attempted to identify current industry practices; review available casualty and spill data; critique current and proposed federal rules/regulations; assess proposed state legislation; assess the current level of industry compliance or effectiveness; and identify current and proposed industry and Coast Guard programs that may influence vessel operation. Working systematically through the list of topics "assigned" in the Charter, the Team developed recommendations which either adopted an improved practice, or made existing regulations more encompassing. Ideally, the Team sought unanimous consensus as to recommendations and methods of implementation, although divergent viewpoints were often discussed and evaluated.

**IMPLEMENTATION PLAN**

The Regional Risk Assessment Team recommends the development and the adoption of a Coast Guard rulemaking in order to establish enforcement capability for the recommendations contained in this report. The industry representatives that participated on the Team, representing seven of the major towing companies operating in the Northeast, have agreed to voluntarily adopt the operational recommendations contained in this report prior to any regulatory imposed dates.

The RRAT agreed that the Team should meet again in January 1998 to assess the effectiveness of the recommendations contained in this report. Members of the First Coast Guard District Marine Safety Division and representatives of the tow companies on the Team agreed to begin detailed tracking of incidents involving tugs and barges in the Northeast. This information will be made available to the Team at the future meeting.

**RECOMMENDATIONS**

Numerous recommendations to adopt or change industry operating practices were documented and agreed upon for inclusion in this report. These recommendations are outlined below. The Team discussion/thinking which relates to each of the recommendations is contained in Section V of this report. Some recommendations address the prevention of a casualty while others seek to mitigate the adverse effects of an incident by putting in place redundant systems or other safety nets to prevent

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<sup>1</sup> The waters of the Northeast, for purposes of this report, include all waters within the First Coast Guard District as defined in Title 33 Code of Federal Regulations (CFR) Part 3.

major oil spills.

The following is a compilation of the recommendations of the Regional Risk Assessment Team. The recommendations which the Team believes should be included in a regional rulemaking initiative are identified with an asterisk (\*) in this section.

### *Manning*

#### Recommendations:

a.\* That barges that are being pushed, or are alongside the tugboat, be considered as equivalent to being manned barges if there is a Person-in-Charge (PIC-documented tankerman) certified individual on the towing vessel that is in excess of the manning required on the towing vessel.

b.\* That unmanned barges be required to meet the more strict Towing Safety Advisory Committee (TSAC) recommendations in Section V of this report addressing Anchoring and Barge Retrieval Systems.

### *Anchoring and Barge Retrieval Systems*

#### Recommendations:

a.\* For Manned Barges: The Team agreed that in order to keep the barge and tug from drifting ashore if the units separate, the owner or operator of a manned tank barge on any and all routes in the Northeast must employ the following barge anchoring and/or retrieval methods or systems:

TSAC Recommendation 1. An Operable Anchor System, and  
TSAC Recommendation 2. An Emergency Insurance Tow Line with Pickup  
Capability on the Tug;

or,

TSAC Recommendation 1. An Operable Anchor System, and  
TSAC Recommendation 3. Barge Retrieval Device with Pickup Capability on the  
Tug.

b.\* For Unmanned Barges: The Team agreed that in order to keep the barge and tug from drifting ashore if the units separate, the owner or operator of an unmanned tank barge on any and all routes in the Northeast must employ all of the following barge anchoring and/or retrieval methods or systems:

TSAC Recommendation 1. An Operable Anchor System, and  
TSAC Recommendation 2. An Emergency Insurance Tow Line with Pickup  
Capability on the Tug; and  
TSAC Recommendation 3. Barge Retrieval Device with Pickup Capability on the  
Tug.

There were some exemptions considered appropriate as related to equipment requirements. These are discussed in Section V of the report.

## *Voyage Planning*

### **Recommendation:\***

The RRAT makes the recommendation that all barge companies operating in the Northeast prepare a comprehensive voyage plan which includes specific information related to weather, vessel equipment, communication and navigation requirements for each transit of a barge and towing unit. The individual vessel master shall be responsible for ensuring voyage plans are effectively used in daily operations.

### *Navigation Safety Equipment Aboard Towing Vessels*

### **Recommendations:**

The RRAT conducted discussions on the elements of the Coast Guard legislation that they wished to make more encompassing on towing vessel operators in the Northeast. Specifically, the RRAT recommends:

a.\* Adoption of the Coast Guard final rules on navigation equipment of Title 33 CFR Part 164 for all waters, not just coastwise as required by the current CG rule.

b.\* A more strict regional adoption of an equipment requirement for Differential Global Positioning System (DGPS) for towing vessels on all waters in the Northeast. The working group recommends allowing each Captain of the Port (COTP) to grant exemptions to this more strict DGPS requirement on a case by case basis for vessels limited to restricted waterways only. The RRAT also considered the potential of non-availability of DGPS to commercial mariners during times of national emergency and maintenance downtime.

### *Enhanced Communications*

### **Recommendations:**

a.\* All towing vessels traversing Long Island Sound or the territorial waters of the Northeast states must initiate securite calls on VHF Channels 13 and/or 16 with other vessels in the same geographic areas at the specific reference points listed below:

Execution Rock Light (USCG Light List No. 21440); The Race (LLNR 19815); Mattituck Inlet Breakwater (LLNR 21650); 32 A Buoy (LLNR 21380); Cable & Anchor Reef (LLNR 21330); Stratford Middle Ground (LLNR 21260); Old Field Point Light (LLNR 21275); North at Stratford off Riverhead Platform (NOAA Chart 12370); Faulkner Island Light (LLNR 21170); TE Buoy (LLNR 21160); CF Buoy (LLNR 21140); PI Buoy (LLNR 21080); and Valiant Rock (LLNR 19825); Race Rock Light (LLNR 19815); Block Island/Point Judith approaching Point Judith to Block Island ferry route; Buzzards Bay Entrance Light (LLNR 630); Buzzards Bay Mid-channel Lighted Bell Buoy (LLNR 16055), Cleveland East Ledge (LLNR 16085); Hog Island Buoys 1 (LLNR 16130) and 2 (LLNR 16135); approaching the Bourne Bridge; approaching the Sagamore Bridge; and approaching the eastern entrance to Cape Canal: Lighted Bell Buoy CC (LLNR 13040).

b. The Coast Guard and the Coast Guard Auxiliary develop appropriate vessel-to-vessel communication training for small recreational vessels and fishing vessels

operating on waterways utilized by the barge and towing industry.

c. The Coast Guard and the individual states in the Northeast develop a comprehensive safe vessel program/public safety initiative which focuses on enhancing communications with recreational vessel operators and raising the standard of awareness when operating vessels on or near commercial waterways.

#### *Vessel Traffic Schemes and Exclusion Zones*

**Recommendations:** The RRAT recommends that the segment of the tug and barge industry which operates in the waters of the Northeast states adopt the following measures:

a.\* Tug operators adopt a practice of increased securite calls at the geographic locations specified in the Enhanced Communications section of this report.

b.\* Fishers Island Sound and the eastern portion of Cape Cod Bay, all waters east of the 70 degrees 25 minutes west longitude, be an exclusion zone for all tank barge traffic.

c. The Coast Guard work with Coast Guard Auxiliary to incorporate into public boating safety courses information related to the potential hazards associated with operating vessels in proximity to tug and barge combinations.

Additionally, the Coast Guard will review requests for marine event permits to ensure navigational buoys and markers are not used for yacht racing or regatta markers. While race/regatta courses may use portions of federal channels, such events shall not impede the safe navigation of commercial shipping or other traffic which can safely navigate only within a narrow channel or fairway.

#### *Lightering Activities*

**Recommendation:**

The individual COTPs need to develop guidelines which reflect the best recognized practices for lightering of petroleum products in the harbor and/or near coastal areas. COTPs should consider the elements contained in the regulations in Title 33 CFR 156 Subpart B in developing these guidelines.

#### *Tug Escorts*

**Recommendations:**

a.\* Vessels towing petroleum laden tank barges with a capacity of 25,000 barrels or greater must be equipped with twin screws and two engines to add a significant measure of safety to the operation and navigation of vessels in the territorial waters of the Northeast states. Any petroleum laden tank barge with a capacity of 25,000 barrels or greater being towed by a towing vessel that does not have twin screws and two engines must have an escort/assist tug of sufficient horsepower and capability alongside during the entire voyage to effectively render assistance to the tug/barge unit should the primary towing vessel lose power or steering, while operating in Northeast waters. The cognizant COTP may consider exemptions, in concert with applicable state entities and adjacent COTPs, to this requirement after an evaluation of mitigating factors, such as the use of a double hulled/double bottomed barge, manning, issuance of a valid Coast Guard Voluntary Examination decal to the

towing vessel, company compliance with the American Waterways Operators Responsible Carrier Program (RCP) or equivalent program, availability of on-call assistance, and barge anchoring/retrieval equipment. An essential element for an exemption for barges with a capacity of 25,000 barrels and greater is the double hull/double bottomed feature.

b.\* Vessels towing petroleum laden tank barges with a capacity of less than 25,000 barrels must be equipped with twin screws and two engines to add a significant measure of safety to the operation and navigation of vessels in the territorial waters of the Northeast states. Any petroleum laden tank barge with a capacity of less than 25,000 barrels being towed by a towing vessel that does not have twin screws and two engines must have an escort/assist tug of sufficient horsepower and capability alongside during the entire voyage to effectively render assistance to the tug/barge unit should the primary towing vessel lose power or steering, while operating in Northeast waters. The RRAT recognizes that in some geographic areas such as the Connecticut River and other small creeks and rivers with limited depth or breadth, the use of single-screw tugs may be preferred for safety or practicability reasons. In those instances, the COTP may evaluate whether to exempt such vessels from the escort/assist tug requirement. The cognizant COTP may consider exemptions, in concert with applicable state entities, to this requirement after an evaluation of mitigating factors, such as manning, issuance of a valid Coast Guard Voluntary Examination decal to the towing vessel, company compliance with the RCP or equivalent program, availability of on-call assistance, barge anchoring/retrieval equipment, and restricted route.

c.\* The operator of a twin engine, twin screw towing vessel engaged in towing a petroleum laden tank barge must immediately call for an escort/assist tug to render assistance if a tug loses power, loses one of its engines, or suffers a casualty which affects the seaworthiness of the vessel, including, but not limited to, parted towing line, fire, grounding, reduction of horsepower or loss of reduction gear or steering.

d.\* The operator of any towing vessel engaged in towing a petroleum laden tank barge must immediately notify the Coast Guard if a tug loses power, loses one of its engines, or suffers a casualty which affects the seaworthiness of the vessel, including, but not limited to, fire, grounding, reduction of horsepower or loss of reduction gear or steering.

e.\* In some geographic areas, such as harbors, small creeks, rivers, and some situations, such as short duration voyages, the use of single-screw tugs may be preferred for safety or practicability reasons. In those cases, the COTP may evaluate whether to exempt such vessels from the escort/assist tug requirement within that specific COTP zone.

The COTP shall consult with the appropriate state agency as well as adjacent COTPs when considering an exemption. While the COTP shall not be bound by comments or recommendations resulting from the consultation, such comments should be weighed appropriately in the final decision. Exemptions for barges which intend to make regular repeat voyages to the same destination shall be valid for the prolonged service of the barge. The occurrence of a marine casualty may be cause for the COTP to revoke the exemption.

### *Double-Hull Tank Barges*

#### Recommendation:

While acknowledging the benefits anticipated to be gained, the majority of the Team believes that a state requirement for double-hull tank barges transiting state waters may disrupt the existing petroleum transportation and distribution network in the Northeast states. Therefore, recommendations regarding the Oil Pollution Act (OPA) 90 retirement schedule should await the recommendations of the National Research

Council's review of the economic and operational impacts of OPA 90 Section 4115 on the marine petroleum transportation industry.

### *Crew Fatigue: The Human Factor*

#### Recommendations:

The RRAT recommends that the segment of the tug and barge industry which operates in the waters of the Northeast states adopt the following measures:

a.\* Provide human factors awareness training to operational and management personnel every two years and ensure that records of the training be kept for a period of two years.

b. Ensure that all levels of management and vessel operators are familiar with the contents of the human factors studies: such as National Transportation Safety Board's (NTSB) "*Safety Study, Factors That Affect Fatigue in Heavy Truck Accidents*" and the Coast Guard's Prevention Through People report, "A Systems Approach to Human Element Risk Analysis," recognizing that most of the concepts of such studies are relevant to the marine industry.

c. Empower operations departments to use the knowledge gained from items a) and b) above to improve communication and planning with vessel operators and revise dispatching procedures so as to minimize tug and barge crew fatigue related to operational requirements.

d. Recognize that the subject of human factors and fatigue in the marine industry is an evolving discipline with new studies being published. Ensure that the facts and theories which are developed are carefully considered in all aspects of vessel operations.

The RRAT further recommends that either the National Transportation Safety Board (NTSB), the Towing Safety Advisory Committee (TSAC), or the American Waterways Operators (AWO) - U. S. Coast Guard National Steering Committee charter a Team to conduct a study into the matter of human factors/crew fatigue as related to the towing vessel and tank barge industry.

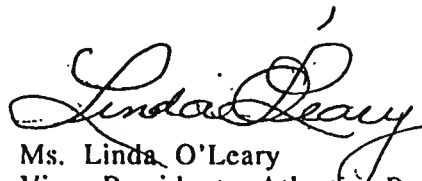
February 6, 1997

I have served as a Steering Committee member of the Regional Risk Assessment Team and concur with the enclosed recommendations and supporting data.

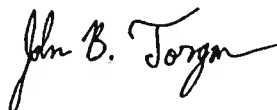
I strongly suggest these recommendations be considered for regional federal rulemaking.



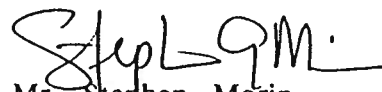
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