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Asserting our right "...to petition the Government for redress of grievances."

Amendment 1, U.S. Constitution, Dec. 15, 1791

PREVENTION OF TOWING VESSEL CREW MEMBER FALLS OVERBOARD BEST MANAGEMENT PRACTICES



TOWING SAFETY ADVISORY COMMITTEE (TSAC)
PREVENTION OF TOWING VESSEL CREW MEMBERS FALLS OVERBOARD (TASK 12-01)

BEST PRACTICES

1. Discussion. This is a list of Best Management Practices compiled by a subcommittee of the members of the Towing Safety Advisory Committee (TSAC) and members of the public. This document is intended to provide towing companies best practices currently in use by various companies to prevent towing vessel crew member falls overboard. The best management practices contained herein do not necessarily constitute an exhaustive list of all potential risks or practices to mitigate these risks. We recommend that companies tailor these practices to best meet the needs of their particular company, its specific operations, tow configurations and mariners, as well as the areas of operation.
2. Background. At the March 2012 TSAC meeting held in Houston, Texas, the committee accepted Task Statement 12-01 for the Prevention of Towing Vessel Crewmember Falls Overboard. One basis for this task was the April 2012 Coast Guard-AWO Safety Partnership Quality Action Team (QAT) on Reducing Fall Overboard Crew Fatalities. The subcommittee was tasked with reviewing the 55 Towing Vessel Crewmember fatalities that occurred during 2000-2010. The Sub-Committee held in-person meetings in St. Paul, Minnesota, Seattle, Washington, and New York, New York. The Sub-Committee also held conference calls and worked via email and telephone to develop this report.
3. Methodology. At our early meetings, the group determined that merely re-plowing old ground by conducting a review of the 55 US Coast Guard fatality reports would be unproductive. After an in-depth review of the data contained in the April 2012 U.S. Coast Guard-AWO Quality Action Team report on Reducing Fall Overboard Crew Fatalities it was determined that there was sufficient data for the Sub-Committee to develop a list of specific activities or determine hazards that could cause falls overboard and for the compiling of industry best management practices to mitigate identified risks. After developing an initial list of activities and best management practices, the Sub-Committee reviewed various previous Best Management Practices to determine if they are still relevant. A list of those materials is attached as Enclosure (1) to this report.
4. Conclusion. Based on the Sub-Committee's review of incidents and specific activities and hazards that can lead to Falls Overboard, it determined that there is no "silver bullet" that will prevent fall overboard fatalities. There must be a concerted effort by companies and mariners using a combination of the following to reduce these events:
 - Development of "a culture of safety" reinforced by management practices;
 - Enforcement of existing or newly-created safety policies and procedures; and
 - Training of personnel and a "culture of learning and accountability."

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5. Recommendations.

- a. The Towing Vessel Industry and U. S. Coast Guard must set the expectation that managing safety fits all organizations. At the same time, both must demonstrate flexibility in safety management processes to avoid excluded individuals because of organization size, level of resources, or operating conditions.
- b. Additionally, both must request, gather, and assess data that broadens an understanding of why falls overboard occur. Industry and organizational contributors for fall overboard near misses and incidents require data (data fields) that allows analysis of causation and not just focusing on the people involved (what they were doing immediately before the fall, were they drug and alcohol tested, etc.).
- c. Encourage the Coast Guard to conduct a stronger investigative process for all falls overboard events. This means:
 - Analyzing all reported falls overboard whether or not fatalities occurred;
 - Consider regulatory change for reporting of all unintended fall overboard events.
 - Using a standardized form such as an improved and web-based CG-2692 to capture critical information. Open-ended questions help provide root cause analysis for a better understanding of interconnected events that led to falls overboard.
 - Providing back to industry a list of questions that Coast Guard analysts generated as a part of their data collection and analysis. Doing so would allow the opportunity for Coast Guard and industry to dialogue about the contributors to, and root causes of, falls overboard using the combination of high-level, industry-wide overview with ground-level, operational perspectives.
 - Standardizing data gathered in this manner using open-ended questions.
- d. Have the Towing Vessel National Center of Expertise incorporate the Best Practices for Prevention of Crewmember Falls Overboard in the training of Coast Guard Inspectors to better familiarize themselves with the hazards and activities encountered on Towing Vessels.
- e. View this report on fall overboard prevention as a dynamic, living document. As such, plan to evaluate its influence on individual organizations and the industry on a periodic basis. The Sub-Committee suggests reviewing this report in three yearsøtime in order to assess how well these recommendations contribute to noticeable (and noteworthy) decreases in falls overboard. At that time, additional data should be available for better understanding falls overboard risks and mitigation; Subchapter M will be in effect and may have affected safety processes in such a way as to lower falls overboard; and

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organizational and Coast Guard abilities to manage safety processes would have matured. Suggested progress-check questions to ask, perhaps as early as 2016, include:

- Fall overboard occurrence: What is the industry average for falls overboard? How does that compare with previous years' averages?
 - Safety-process management: To what extent are organizations individually and the industry overall shifting away from a "silver-bullet" mindset about falls overboard toward that of safety-process management?
 - Data collection and analysis: How does collected data identify root causes of falls overboard? In what ways does the more recent data provide more information than before? How did these proposed changes in data collection (amount, quality, completeness, etc.) affect the ability to prevent falls overboard and manage safety? What additional room for improvement exists relative to data collection and analysis?
- f. The Towing Vessel Industry and the Coast Guard must actively publicize these Best Practices by promoting and publishing them to the Towing Industry and Mariners. This may be accomplished publishing this information in newsletters, posting on the TVNCOE website, distribution by trade associations etc.
- g. TSAC Representative/Sub-Committee Chair and Participants: See Enclosure (2)

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SPECIFIC ACTIVITIES OR HAZARDS FOR POTENTIAL FALLS OVERBOARD

The following is an alphabetical list of various activities and hazards for falls overboard:

- Barge design, lack of lifelines, rails or bulwarks
- Being alone on deck when not working
- Breaking waves
- Cargo spillage
- Checking drafts, sounders, navigation lights and other gear
- Distraction during watch standing and other vessel operations
- Facing and unfacing boat
- Ice, rain, snow, frost, and dew on vessel and barge decks
- Improper use of and unsafe ladders (unsecured ladders)
- Inadequate supervision
- Inexperienced or new crew members
- Lack of hazard and situational awareness
- Lack of risk assessment/job safety briefing
- Lack of training on safe work practices
- Low gunnels/bulwarks
- Poor managerial and personnel interface between barge and shore and towing vessel and shore
- Slippery, oily and greasy decks/components
- Standing on bulwarks, hatches, or other raised surfaces
- Unsuitable footwear
- Misuse of alcohol
- Misuse of prescription drugs and illicit use of drugs, simulated drugs or other substances
- Violation of company policy
- Working alone on deck
- Working around duck ponds and notches
- Working in low visibility (for example, at night with inadequate lights)
- Working in rough sea conditions or heavy weather
- Working on cluttered or uneven barge decks
- Working with one's back to the water
- Yawl and skiff operations (embarking/disembarking, improper loading and weight distribution)

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BEST MANAGEMENT PRACTICES - FALL OVERBOARD PREVENTION

The following Best Management Practices describe safety measures that must be constantly managed. In some cases, practices are specific to a particular stakeholder group. Other practices must be shared equally among crew members, supervisors/managers, and senior leaders.

Organizational

Safety Culture/Management Practices

- Collect and use statistics (organizational and industry-wide).
- Empower employees to stop perceived unsafe work practices.
- Ensure that supervisor leads by example using correct safety methods
 - Captains/onboard management of crew
 - Shore side management
- Establish a safety culture through all levels of the organization.
- Investigate fall overboard incidents and conduct root-cause analysis using cause mapping.
- Investigate near-miss fall-overboard incidents and conduct root-cause analysis using cause mapping.
- Provide management support for data collection.
- Provide positive reinforcement or recognition of safe performance.

Enforcement of Policies/Procedures

- Communicate crew member roles and responsibilities.
- Hold people accountable for violating policy.
- Perform Job Task Analysis or risk assessments.
- Ensure that safety rules are constant. Safety rules are not best practices.
- Use behavior-based safety (in part or in whole) to engage front line personnel in safety.

Training/Learning Culture

- Ensure that fall overboard prevention is a topic at new hire training.
- Tracking of near-misses and lessons-learned.
- Training, including but not limited to initial and refresher training for all personnel and periodic fall overboard drills.
- Use survivor testimonials and share lessons learned.

Critical Activities for Supervisors, Managers, and Senior Leaders

Interface among Shore, Terminals, Barges, and Boats

- Establish procedures to ensure safe crew change and embarkation/disembarkation of crew members and visitors. Ensure personnel transfers are never conducted alone.
- Towing Companies are encouraged to report unsafe moorings, poor dock interface and lack of adequate gangways with the terminals that they service.

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Critical Activities for Captains/Masters

Safety Leadership Practices

- Accept responsibility as manager of crew's safety performance. As needed, correct or improve upon mentoring, training, monitoring, and providing feedback to crew members.
- Analyze the role Mates/Pilots play onboard relative to the vessel safety culture. As needed, correct bad habits or management practices and hold Mates accountable to company evaluation and/or discipline process to prevent negative influence on rest of crew, including greenhorns
- Develop the experience of greenhorns.
- Hold crew members accountable to policy and rule compliance.
- Maintain positive control over crew and vessel safety.

Critical Activities for Crew

Awareness

- Always allow yourself enough room/space to regain footing/balance to prevent falling overboard.
- Be attentive to the potential dangers of falling overboard.
- Constantly observe safety measures taken to prevent falls overboard and adjust as needed based on changes in conditions.
- Heightened awareness at areas where fall overboard hazards exists.
- Squat/kneel when needs to lower your center of gravity when working with equipment or conducting a task.

Communication

- Participate in a safety briefing when reporting aboard the vessel. Cover, at a minimum, work practices to prevent falls overboard.

Work Practices

- Always position portable ratchets so they are tightened inboard.
- Conduct job briefings or "safety huddles" to prepare for tasks beforehand. Make sure that all personnel involved understand their tasks, the sequence they will be undertaken, and how the tasks are to be done.
- Maintain extreme caution while facing or un-facing boat to tow because of close proximity to the water. When possible, other personnel on watch should assist.
- The towing vessel should not be underway while placing sounders/head gear.
- Use extreme care and have someone assist when using stationary rigging that must be tightened outboard on barge or vessel perimeter using extreme caution using someone assisting.
- Use the boat to move the equipment rather than having crew carry it.
- When sounders/head gear is being adjusted, stop headway if possible; at the very least, slow headway as much as possible while allowing for steerage.
- While on deck, always walk with one hand free.

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Communication

- Always receive authorization from the wheelhouse when conducting work activities on the tow, on the main deck, and outside of the bulwarks.
- Communicate and watch the bump when a bump is about to occur. When hearing the bump, grab hold of a secure object and lower center of gravity for stability to prevent falling.
- Communicate known hazards verbally and use an updated tow board to show hazardous deck areas such as notches, duck ponds, walking conditions, and current weather conditions.
- Communicate the timeframe or duration of expected work.
- Consider outfitting all personnel on deck with radios. Radios should not be earned. Safety is important for all crew members.
- Consider the use of Person Overboard Transmitter Systems or Personnel Locator Beacons (PLBs) to alert wheelhouse personnel to falls overboard.
- Deck crew should communicate with wheelhouse when working in a known blind spot or going out on the tow and upon returning to the boat. While on the tow, maintain frequent radio contact with the wheelhouse.
- Prior to working in critical area (any part of tow perimeter), notify the wheelhouse for permission and use buddy system before entering critical area.
- Use flashlight for visual communication (allows for a visual observation of their location on deck or on barge).
- Use the buddy system at all times. Maintain visual and/or verbal contact when outside the vessel. Crew members should not be left alone.

Barge/Tow Issues

- Consider the installation of life-lines and handrails where feasible.
- Paint perimeter and all tripping hazards (hatches, face wire leads, bits, cavils/kevels, etc.) in contrasting colors.
- Protect duck ponds (line, netting etc.).
- Use non-skid protective deck coatings.

Personal Protective Equipment

- Always wear approved footwear with slip resistant soles; Keep footwear clean of mud, snow, ice, spilled liquids, and debris.
- Consider the use of Fall Arrest Systems and prevention measures when working near or over the side.
- Consider the use of Inflatable Type Work Vests which provide more buoyancy and are more comfortable.
- Ensure radio and flashlight/headlight have fresh batteries before going out on tow.
- Maintain safety equipment in a serviceable condition.
- Personal Floatation Devices (PFDs) must be worn while working outside on lower deck and barges.
- Provide flashlights to all crew members working on deck at night

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- Use the right type PFD for the task: Type III in skiffs and yawls, Type V Work Vests for boat and barge decks.
- Wear appropriate personal protective equipment (PPE) for required work task.
- Wear billed cap or hardhat at night while out on tow to prevent potential blindness from search lights.
- Wear Coast Guard-approved personal floatation device properly, adjusted for a snug fit.
- Wear hard hat when required or needed.

Lighting

- Always have flashlight/headlamp readily available during night hours.
- Illuminate all shadows with a flashlight or headlamp before walking through them.
- Utilize deck from dusk to dawn.

Walk and Working Surfaces

- Face or push wire/cable location should be painted safety yellow or contrasting colors to highlight tripping hazards.
- Have de-icing procedures in place to keep work area free of ice, frozen spray or snow.
- Keep decks clean and free from clutter at all times. Coil lines, stow tools correctly, and stock material out of walking and working areas. Stow all equipment properly upon completion of task.
- Keep decks clear of trip and slip hazards such as cargo, debris, or slippery products that may get on shoes (oil, grease, soy bean products).
- Keep guard ropes and guard rails taut and in place at all times. Never hang, swing or lean on lifelines or rails.
- Paint vessel and barge perimeters safety yellow/white, or use retro-reflective materials to increase awareness to proximity.
- Don't use wooden planks instead of proper gangways.

Do's

- Always carry loads outboard if you must walk along the edge of boats and barges.
- Always face a ladder when climbing up or down.
- Always have a hand for yourself.
- Always keep walkways clear of obstructions.
- Always maintain three points of contact, two hands and a foot or two feet and a hand so that only one limb is in motion at a time.
- Always repair leaks from hoses, pipelines, and valves immediately.
- Always require that guard chains on the boat remain up at all times. If it is necessary to drop the chains, immediately re-hook when the task is complete.
- Always shuffle your feet when handling a line on deck to avoid stepping in the bight of line or tripping.
- Always step over rigging; never step on it.

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- Always step solidly and smoothly from one vessel or barge to the other, staying alert for possible movement.
- Always use handrails where available.
- Balance load in a yawl, and always abide by the capacity/weight restrictions.
- Ensure all relative movement has stopped before transiting to and from vessel or barge.
- Maintain your situational awareness of hazards.
- Use care and ladders (when appropriate) when transiting to or from a load to an empty (High/Low or Low/High)
- Use gangplanks or gangways with guardrails to prevent falls when embarking/disembarking.
- Walk on the inboard side of the deck fittings.
- When a task requires two people, never attempt to perform the task alone.

Don'ts

- Avoid overextending your body while performing a task, such as grabbing a line or reaching for anything. Instead, use a boat hook, pike pole, grappling hook, or handy line.
- Do not jump on or off vessels or barges.
- Do not loiter on the outboard gunwales when a vessel or barge is going to land on another vessel, barge or structure.
- Do not sit on deck fittings exposed to water.
- Do not step on manholes or hatches.
- Do not step over open water.
- Do not walk backwards on the vessel or tow.
- Do not walk on the outside of the tow while underway.
- Do not walk or step between the forward corner deck fittings and the end of barges.
- Do not work or stand with your back to the water.
- Minimize jumping to or from moving equipment.
- Never lean on locks walls, remain alert during locking and watch for gaps between the barge and the lock wall.
- Never lean over the head of tow under any circumstance.
- Never walk on an exposed notch while underway.

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Enclosure (1): **List of Reports and Practices Reviewed by the Sub Committee**

American Waterway Operators (AWO)/US Coast Guard Safety Partnership, Quality Action Team (QAT) report on Reducing Fall Overboard Crew Fatalities, April 2012

Occupational Safety & Health Administration (OSHA), Deck Barge Safety (OSHA 3358-01N 2009),

American Waterway Operators (AWO) Interregion Safety Committee, Lesson Plan for Fall Overboard Prevention ó Making and Breaking Tow, March 2006
American Waterway Operators (AWO) Interregion Safety Committee, Lesson Plan for Fall Overboard, June 2002

American Waterway Operators (AWO) Interregion Safety Committee, Fall Overboard Prevention - Best Practices, March 2001

American Waterways Operators, Fall Overboard Risk Factors and Fall Overboard Prevention Best Practices Handout, www.americanwaterways.com/commitment_safety/.../RISKFACT.doc

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Enclosure (2): **List of Sub-Committee Participants**

<u>Name</u>	<u>Affiliation</u>	
Steven J. Huttman	G & H Towing Company	TSAC Representative Sub-Committee Chair
Matthew Lagarde	AEP River Ops	(TSAC Member)
Lee LeBeouf	L and L Marine Transportation	(TSAC Member)
Russell Luttmann	Crowley	(TSAC Member)
Mike Vitt	EN Bisso	(TSAC Member)
Bill Abernathy	U. S. Coast Guard	(ADFO-TSAC)
Jason Adams	Ingram Barge	
CDR Lee Boone	U. S. Coast Guard	
Donald Blum	McGinnis Marine	
Jack Buri	Crounse Corp	
Andy Cannava	Score-Global	
Tina Cardone	CPort	
Robert Clinton	Dunlop Towing	
John Cox	Florida Marine Transporters	
Sloan Danenhower	Harley Marine	
Dave Dickey	U. S. Coast Guard	
Duane Dubrock	Ingram Barge	
Rick Dunn	SeaRiver Maritime, Inc	
Jeremy Dyer	Marquette Transportation Company	
Jim Fletcher	Team Services	
Paul Hassler	JB Marine Co	
Julie Hile	Hile Group	
Glenn Hotz	Hile Group	
James Horton	Marquette Transportation Company	
LCDR Charlotte Keogh	U. S. Coast Guard	
Chuck King	Buffalo Marine	
Mike Morris	AEP River Ops	
Roy Murphy	U. S. Coast Guard (TVNCOE)	
Andy Norval	Blessey Marine	
David Olsen	Moran Towing	
Steve Richards	British Petroleum	
Todd Rushing	Rushing Marine	
LCDR Wade Russell	US Coast Guard	
LT Jaime Salinas	US Coast Guard (TVNCOE)	
Christina Schulz	Hile Group	
Tim Sizemore	AEP River Ops	
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Rex Woodward	MMC Inc.	