

U.S. Department of  
Homeland Security

United States  
Coast Guard



Commandant  
United States Coast Guard

2100 Second Street, SW  
MAIL STOP 7902  
Washington, DC 20593-7902  
Staff Symbol: CG-11  
Phone: (202) 475-5130  
Fax: (202) 475-5906

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## MEMORANDUM

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From: M. J. TEDESCO, RADM  
COMDT (CG-11)

Reply to: CG-1134  
Attn of: Mr George Borlase  
(202) 475-5218

To: Deployable Operations Group (DOG)  
COMDT (CG-731)

Subj: FINAL SUMMARY LTR ON PSU 311 CLASS "C" EJECTION MISHAP, 17 NOV 08

Ref: (a) Safety and Environmental Health Manual, COMDTINST M5100.47 (series)  
(b) Department of Defense Human Factors Analysis and Classification System DoD  
HFACS

1. SYNOPSIS. On November 17, 2008, CG-25140 (TPSB) was underway in south San Diego Bay for training with three Coast Guard members on board. A break-in coxswain was at the helm in the coxswain seat, a qualified coxswain was on the port side of the center console and a break-in crewmember was on the starboard side of the center console. The break-in coxswain performed a turn to port after appropriate notification of the turn was announced. During this turn, the break-in crewmember took tension on the tether portion of the gunner restraint system causing the tether to fail, consequently ejecting him off the starboard side of the vessel. The break-in coxswain brought the boat around and immediately recovered the person in the water. There were no injuries.

2. CLASSIFICATION. This is a Class "C" mishap per reference (a).

3. CAUSAL AND CONTRIBUTORY FACTORS. A factor is considered "causal" when if removed in the sequence of events it would most likely have broken the chain of errors and the mishap would not have occurred. A factor is considered "contributory" when it is not singularly responsible for the mishap; however, when combined with causal or other contributory errors it influenced the progression of the mishap.

a. Human Factors: As outlined in reference (b), the Department of Defense Human Factors Analysis and Classification System (DoD HFACS) provides a systematic, multidimensional approach to error analysis, standardizing the human factors analysis approach for the investigation of mishaps. DoD HFACS examines four main tiers of failures/conditions: Acts, Preconditions, Supervision, and Organization.

(1) ACTS: The purpose of this section is to describe what happened in the mishap. The following errors (mental or physical activities in which the operator failed to achieve intended outcome) were committed.

(a) Errors: Skill-based Errors - Procedural Errors: (Causal) - During the mishap, CG 25410 was conducting TTP. If the coxswain used proper throttle management while conducting the maneuvers the crewmember may not have been ejected.

(2) PRECONDITIONS: Active and/or latent conditions of the operators prior to the mishap, or environmental or personnel factors which affect practices, conditions or actions of individuals and result in human error or an unsafe situation. The following preconditions existed:

(a) Condition of Individuals:

(1) Psycho Behavioral Factors – Overconfidence (Causal) - The qualified basic coxswain was overconfident in the helmsman's ability to control the vessel under high speed turns. The helmsman turned the helm abruptly which led the boat crew survival belt to break causing the ejection. If the coxswain wouldn't have been over confident with the helmsman's abilities he may have placed himself near the throttles where he would have had better control of the boat.

(2) Perceptual Factors - Misperception of Operational Conditions (Causal) - The helmsman misjudged the sea conditions. CG 25410 made two consecutive high speed turns and proceeded forward. The vessel made a third turn to port just before it crossed the wake it made from its previous turn which caused the boat to suddenly heel. Had the helmsman been a certified tactical coxswain he may have known to cross the wake then proceed with the high speed turn.

(b) Environmental Conditions: Technological Environment - Seating and Restraints (Causal) - The center console is very sturdy and well built; however, the rail around the top of the console does not constitute a true hand hold. The current design only provides the ability to grasp the top of the rail and wrap the hand around 90 degrees. The inability to wrap the hand completely around a hand hold, especially in a wet environment, makes it very easy for a hand to lose its grip. Along the aft side of the console there are sections of the rail where the ability to firmly grasp the rails is available. With optimal hand placement in the current design, it only allows for one hand to be fully engaged and "holding on" during high speed maneuvers which are a large part of this boat's mission.

(3) SUPERVISION: Methods, decisions or policies of the supervisory chain of command which directly affect practices, conditions, or actions of individuals and result in human error or an unsafe condition. The following supervisory factors were identified:

(a) Inadequate Supervision: Oversight Inadequate (Contributory) - The responsibility of assigning personnel to boats fell solely on the Chief (E-7) within the Boat Division with very little oversight and/or undersight from the division officer or first class. There was the assumption that if everyone was on the boat then they were all qualified. Very few checks and balances were in place to ensure that everyone was held accountable for their own Personnel Qualification Standard (PQS), qualification letters and data entry into TMT. TMT entry was left to one person at the unit which can be overwhelming for unit of this size and with this op tempo.

(b) Planned Inappropriate Operations:

(1) Ordered/Led Mission Beyond Capability: (Contributory) – Three personnel were ordered to conduct tactical maneuvers without the proper qualifications according to Coast Guard standards. Although this mission may have been successful with the same unqualified personnel in the past, it does not preclude leadership from ensuring that all appropriate qualification standards are adhered to and documented. Failure to follow prescribed guidelines can expose the unit to gaps in training and readiness which undoubtedly leads to mishaps as it did in this situation. There is no way to legitimately support the adequacy and suitability of the skill level of the crewmembers for this mission without a combination of completed personnel qualification standards (PQS), OJT, exams and/or oral boards.

(2) Crew makeup/Composition: (Contributory) - The minimum crew manning for training evolutions involving tactical maneuvering is: one certified tactical coxswain, one certified tactical crewmember, and one certified crewmember. Prior to starting the tactical coxswain certification process, a member must be a certified standard coxswain. The crew manning during the mishap consisted of one standard coxswain, one certified crewmember, and one break-in crewmember. The certified crewmember was in training to become a standard coxswain and was taking the boat through tactical maneuvers under the supervision of a coxswain who did not hold the certification to do so.

(3) Proficiency: (Contributory) - CG 25410 was not properly manned at the time of the mishap. The Boat Operations Manual states when conducting TTP training one certified tactical coxswain must be onboard. During this evolution the boat was not manned with a certified tactical coxswain. If there was a certified tactical coxswain onboard this would have minimized the risk factor.

(4) Risk Assessment – Formal: (Contributory) – A risk analysis was conducted using the GAR tool by the crew prior to getting under way. The score assigned was 18 placing the perceived risk in the "green" or low risk category. Only one of the crewmembers held the required qualification at their assigned position during this highly complex evolution involving tactical maneuvering, consequently a higher risk situation. The initial score was questionable and further mitigating strategies were not implemented or discussed which may have increased the score to adequately identify the risk for that event.

(c) Supervisory Violations:

(1) Supervision - Discipline Enforcement (Supervisory act of omission): (Contributory) - When any 25 ft. boat or larger gets underway for training the minimum crew requirements are one qualified coxswain and two certified crew members. At the time of the mishap the 25410 had one certified boat crew member, one certified standard boat coxswain, and one break-in crew member. The training supervisor should have made sure all boats were manned with the properly qualified crew.

(2) Currency: (Contributory) - The coxswain is required to complete the Tactical Coxswain PQS. When conducting training in tactics techniques and procedures both crew members are required to complete the boat crew member PQS. During the mishap evolution only one crewmember was certified and there was no certified tactical coxswain. The crew was not certified for the training, but was still allowed to perform the mission.

(4) ORGANIZATIONAL: Communications, actions, omissions or policies of upper-level management which directly or indirectly affect supervisory practices, conditions or actions of the operator(s) and result in system failure, human error or an unsafe situation.

(a) Organizational Climate: Perceptions of Equipment: (Causal) – All crew members were outfitted in the prescribed PPE; the two crew members on the sides of the console were tethered to the console hand rails. During a high speed turn to port, the crewmember on the starboard side lost his grip on the console producing a shock load on the belt which caused it to fail at the adjustment slide. While this belt should not have failed, being strapped into the boat may have provided a false sense of security to the crewmember by allowing him to relax his grip on the console.

(b) Organizational Processes:

(1) Ops Tempo/Workload: (Causal) – The pace of deployments, workload and/or additional duties necessary to get the unit ready for deployment may have put pressure on this unit to expedite training/qualifications which created an unsafe situation. The unit had an urgent need to get the crew trained and ready in a short amount of time while also balancing personal needs (e.g. rest, time with family, personal finances, etc.) with mission requirements.

(2) Program Oversight/Program Management: (Causal) – At the time of the Mishap Analysis Board convening, the unit's security training had not been evaluated by a standardization (STAN) or ready for operations (RFO) team. This lack of program oversight enabled the unit to conduct training without a properly qualified crew. If the unit had been evaluated they may have found the crew discrepancy prior to conducting the training.

4. COMPLETED ACTIONS.

a. Policy requiring all crewmembers (including the coxswain) to strap in during high speed tactical evolutions was included in COMDTINST M16114.42, Coast Guard Boat Operations and Training Manual, Vol III.

b. As per ALCOAST 595/08, Personal Protective Equipment – Recall of Boat Gunner Restraint System Tether, the metal adjuster on the restraint system was found to be faulty causing the tether to part. A recall of the restraint system was immediately initiated by the manufacturer and all tethers that contained the faulty metal adjuster were replaced.

5. RECOMMENDED ACTIONS.

a. All PSUs should consider the location of qualified coxswains while breaking in prospective coxswains. In the TPSB, the optimal position for the coxswain is the starboard side of the console. Standing in this location would allow the coxswain to have positive control of the boat by enabling them to adjust the throttles immediately if necessary.

b. Crewmembers should be restricted from having excessive slack in the tether which can create a shock load during sharp turns. The member involved in this mishap weighed 180 lbs and still created enough force to break the adjuster slide. On deployments, personnel can be at least 40 lbs heavier with gear which can put even more stress on the tether when it snaps taught during a turn.

c. All PSUs should address optimal hand placement for crewmembers while underway in the TPSB.

d. The unit should conduct a review of their GAR model criteria and how they arrive at their assigned risk level for any given event.

e. The unit should ensure all boat crews are manned in accordance COMDTINST M16114.32B, U.S. Coast Guard Boat Operations and Training Manual-Volume I at all times.

f. An engineering change request (ECR) on the TPSB should be implemented to cut hand holds along the top of the center console. The center console has a continuous piece of aluminum tubing running from the top forward of the console to the portion of the console where the helm flat is located. The tubing is raised approximately 2 inches above the console. On the downward slope there are oblong holes in the riser which accommodates a very secure hand hold. These holes do not exist on the top portion of the console where it appears many crewmembers hold on. Without the holes, it is impossible to take a strong grip along this vital section of tubing.

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g. An ECR should also be issued to accommodate an anchor point for the coxswain to tie in during tactical evolutions. There are bars on both sides of the console slightly below waist level that are used as anchor points for crewmembers; however, these do not exist on the aft side of the console. Adding a bar to the backside of the console would provide a strong, non-intrusive location for the coxswain to tie-in.

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