

Case Study #2

Ejection Mishap, Class A

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1. SYNOPSIS

On Sunday, 25 March 2007 at approximately 1415 local, the crew of CG 25501, a Response Boat – Small (RB-S), from Maritime Safety and Security Team (MSST) was conducting a Ports Waterways and Coastal Security (PWCS) Patrol in Washington. During a turn to starboard, the bow gunner was ejected from CG 25501 and struck by the boat's propellers, suffering fatal injuries.

CG 25501 was part of a two boat patrol that planned to conduct four escorts of Ferry System (FS) ferries and patrol nearby critical infrastructure. On the second ferry escort, CG 25501 was maneuvering in the vicinity of the SF FERRY. The coxswain was repositioning CG 25501 from the stern to the bow of the ferry. The bow gunner was manning the M240B gun mount as the coxswain used a "tactical" or power turn to starboard to reposition the CG 25501. During this turn, the RB-S jerked in a manner that has become known as "Hooking a Chine," the bow gunner was ejected over the port gunwale, and immediately passed under the RB-S. The coxswain maneuvered the RB-S to recover the bow gunner, and a crewmember entered the water to assist the bow gunner who was floating face down. The bow gunner was recovered in less than 1 minute with significant head trauma, and a CG EMT from another nearby patrol arrived on scene within minutes. While the EMT performed first aid, the coxswain rushed the boat to the Fauntleroy terminal of the FS. Fire and Rescue personnel met CG 25501 at the dock and provided care for the bow gunner while en route Memorial Hospital. The bow gunner was declared Dead on Arrival at the hospital.

2. HISTORY

MSST was deployed to the Sector Area of Operations to conduct Operation "ICE FREE," in support of Sector PWCS mission, and to both accumulate boat hours and train the MSST boat crews/Force Protection/Law Enforcement team. The two-month deployment began on 3 February 2007 and was scheduled to end on 31 March 2007. Sunday, 25 March 2007 was the last day of scheduled operations. The latter half of the March deployment was led by ENS, the Detachment Team Leader, with BMC as the Waterside Section Chief Petty Officer.

On 25 March 2007 at 1235 local, two crews from the morning section, under the supervision of BMC, returned from a sortie on Lake. In lieu of conducting PWCS activities, they had transited the Ballard Locks and entered the lake to "do a little sight-seeing," according to BMC. BM2 was the afternoon patrol commander, as well as the coxswain on CG 25493, while BM2 was the coxswain on the second boat, CG 25501. When the crews for the afternoon section met the morning section at the pier they had to go back to the armory and check out the mounted automatic weapons, as the morning crew had not carried them on the lake. As compensation for having to do additional work beyond the normal "hot swap" of the boats, ENS bought each boat crew two dozen doughnuts.

The crews mustered, briefed the mission, and conducted a risk assessment using the

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Green-Amber-Red (GAR) scoring system, which was recorded on a locally generated form known as a "Trip Ticket." Both BM2 and BM2 crews scored the mission as low risk, and well "in the green." BM2 remarked that it was the lowest GAR score (15) he had ever agreed to. The intended mission was to spend approximately 7 hours underway on patrol, with the sequence of events starting with escorts of the State Ferry System, patrol of Maritime Critical Infrastructure, a lunch stop in WA, and then additional ferry escorts before concluding the mission. The coxswains handed in their Trip Tickets to ENS and prepared to get underway. ENS and BMC then went to lunch at a local restaurant.

CG 25501 and CG 25493 sortied from the Station docks at 1308 local. The weather was briefed as fair, with calm seas, air/sea temperatures were 40F/48F respectively. Rain and increasing winds were forecast for later in the day. Both boats proceeded west across Bay and just north of Point. In the vicinity of Point, the boats slowed and engaged in a "doughnut fight" between the crews, disposing of their remaining doughnuts. They then continued into Sound and towards the Vashon to Fauntleroy ferry route to commence escorts enforcing a 500-yard security zone instituted under 33 CFR 165, Part F. Their first escort, a ferry from Vashon Island to the Fauntleroy terminal, was conducted without incident. As that ferry was arriving at the Fauntleroy terminal, the SF FERRY was getting underway and the crews shifted their escort from the ferry that was mooring to the SF FERRY, which was heading west to Vashon Island. During this portion of the escort the master of the SF FERRY noted the Coast Guard vessels were patrolling in a more aggressive manner than he had seen in a long time. At times, the escorting boats were approaching so close to the ferry that he lost sight of them from the pilothouse. He noted that almost every maneuver was conducted using what he called "radical turns."

Shortly after getting underway, the SF FERRY paused to conduct a rescue boat drill. The drill included stopping the ferry and lowering a small boat to recover a simulated man overboard. As is common, the drill drew a large number of the passengers to the weather decks. While the ferry was stopped, the MSST boats continued to patrol in the area. On board CG 25501, BM2 was the coxswain, while MK3 was the bow gunner; PS3 sat in the communications/navigation seat on the port side, adjacent to the coxswain; MST2 was in the aft, starboard seat, behind BM2.

MK3 was inexperienced as a bow gunner. While they were waiting for the ferry to complete its drill, PS3 told BM2 "Pull him (MK3) off and I'll get up there and show him how it's done." PS3 and MK3 swapped positions.

Shortly after they traded positions, a sailboat was spotted heading in the general direction of the stationary ferry, and the two boats turned to face the sailboat in the event it required escorting away from the security zone in place around the SF FERRY. Two other Defender Class boats were in the area on patrol for Sector: CG- 255002 from MSST and CG 25661 from Station. These boats were transiting south from the vicinity of Blake Island and contacted the sailboat well before it became an issue the MSST boats would have to react to. At about this time, the SF FERRY was wrapping up the rescue boat drill and starting to get underway toward the Vashon Island ferry terminal.

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On the bow of CG 25501, as it became apparent no action would be needed to keep the sailing vessel out of the security zone, PS3 turned, looked at BM2, held up his hand, twirled a finger in the air and pointed towards the ferry. BM2 interpreted this signal as something along the lines of "Let's turn around and get back over there." He also indicated that when PS3 signaled like this, it meant he wanted to go fast and "do some turns."

As the SF FERRY resumed its transit, BM2 executed a power turn and crossed under the stern of the ferry shifting from the starboard side to the port side of the ferry. He then proceeded to the bow of the SF FERRY on the port side, executed a power turn to port and headed towards the stern of the ferry.

At approximately 1415 local, as he approached the stern of the vessel, BM2 executed another power turn to starboard. MK3 was in the comms/nav seat, MST2 was in the seat aft of the coxswain, and BM2 was in the coxswain's chair. As the turn commenced, PS3 was standing on the port side of the bow deck, facing to starboard (towards the ferry), with one hand on the M240B stock or possibly the ammunition can, and the other raised but not visible to the crew (The consensus among the crew is that he probably was waving to ferry passengers). The power turn was conducted by starting to turn the boat to starboard, feathering the throttle (briefly reducing power on the inboard engine to steady the boat), putting the helm hard over and then reapplying full power.

As the boat entered the turn, it heeled sharply to starboard and briefly shuddered as the performance fin on the starboard side dug into the water in what is commonly referred to among Defender Class boat operators as "hooking a chine." At the same time, the crew in the cabin of the CG 25501 saw PS3 flipping over the port gunwale backwards with his feet high in the air. He appeared to nearly complete a backwards somersault before the crew lost sight of him. The coxswain had seen PS3 being ejected out of the corner of his eye as he was completing the turn, and began to maneuver to recover him from the water.

MST2 and MK3 immediately moved to the aft deck to prepare to recover PS3. They spotted him lying face down in the water and moving his arms in a jerking manner; they also noticed blood in the water. MST2 yelled that PS3 could not flip himself over and entered the water to recover him.

At 1420 local, BM2 made a radio call on VHF channel 21A announcing the man overboard and requesting EMS assistance. He reported the man overboard position as N, W.

When MST2 reached PS3, he struggled to turn him over, and did not sense that PS3 was able to do anything for himself. When he rolled him onto his back, he noted significant trauma to PS3 face, and then put his arms across PS3 chest and began swimming towards the CG 25501, which was less than 20 yards away.

On board CG 25493 BM2 heard the radio call and looked over towards CG 25501, saw PS3 in the water (he was distinguishable among the CG 25501 crew because he wore a

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blue dry-suit as opposed to the standard orange ensemble), and quickly discerned that another crewman was swimming him toward CG 25501.

On board CG 255002, BM1 also heard the call and diverted his patrol towards the location of the mishap.

When MST2 arrived alongside the CG 25501, he and MK3 struggled to get PS3 out of the water, and eventually got him onto the aft deck. PS3 had suffered a wound to his face that dislodged his left eye and a deeper wound to the left side of his head. (PS3 also had a wound on his left shin, but in the confusion on-scene it was not noted by the boat crews). It took MST2 a few moments to exit the water, and he did so shortly before CG 255002 came alongside.

BM2, a certified coxswain acting as crewman on CG 25493, assumed coxswain duties when BM2 transferred to CG 25501 to assist BM1. At the direction of BM1, he called Sector and requested a helicopter from Air Station to conduct a Medical Evacuation of PS3.

When BM1 arrived alongside, he described the crew of CG 25501 as being somewhat overcome by the trauma to PS3. He immediately checked for a pulse and for eye response from PS3, he said PS3 was making a gurgling/groaning noise, had a very faint pulse, and his right eye was responsive (his left eye was damaged). PS3 quickly became quiet and unresponsive, so BM1 focused on clearing his airway. BM1 concentrated on preparing to perform CPR by cutting away PS3 dry-suit and directing BM2 to “bag” or provide artificial ventilation for PS3 with a Bag-Valve Mask or “Ambu” Bag. When it became evident condition was rapidly deteriorating, BM1 directed BM2 to get them ashore where they could hand over PS3 to Emergency Medical Services. The relatively short transit (2-3 miles) to the terminal obviated the need for a helicopter, so the boats called Sector to cancel that request.

At 1438 local CG 25501, CG 25493, CG 255002, and CG 25661 arrived at the Ferry terminal where Fire and Rescue was waiting with an Advanced Life Support (ALS) capable ambulance (as requested by BM1). BM1 went into the ambulance with the Fire and Rescue personnel and exited immediately before the ambulance left for Memorial Hospital. PS3 was declared dead at the hospital at approximately 1500 local time.

The boat crews secured PS3 weapon, rinsed the aft deck on CG 25501 as much as possible and returned to ISC .

Sector was first notified of the mishap at 1420 local when BM2 broadcasted his “Man Overboard” announcement. The Sector Command Center Watch began command notification and SAR response by requesting a MEDEVAC aircraft and contacting County Emergency Services almost immediately.

The boat crews returned to Sector and began to store their gear and preserve any physical evidence from the mishap. CG 25501 was trailered “as is,” and at the direction of the

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Duty Flight Surgeon, the crews of CG 25501 and CG 25493 reported to ISC Medical for drug and alcohol testing.

Prior to queuing up at ISC Medical, the crews were addressed by CAPT, the Sector Commander, and had access to Critical Incident Stress Management counselors. It was during this period that both crews had blood drawn and were directed to craft written statements as well as fill out the 72-hour Pre-Mishap Chronological Questionnaires.

ISC Medical was staffed by a single corpsman who was assisted by the Sector's Senior Investigations Officer, LCDR, for post-mishap information collection. The crews were released from these proceedings at 2230 local.

3. INJURIES

	CREW	PASSENGERS	OPERATOR	OTHER	TOTAL
INJURIES	0	0	0	0	0
FATALITIES	1	0	0	0	1
NO INJURIES	2	0	1	0	3

4. VESSEL INFORMATION

A. Daily boat checks were conducted the day of the incident, no discrepancies were noted.

B. CG 25501 had no discrepancies the day of the incident.

C. An inspection of PMS records indicates that maintenance on the boat was within program standards.

D. Bow number CG 25501, Hull Identification Number EGO00499F404T1741

E. CG 25501 was accepted as new by Coast Guard MSST on 26 August, 2004.

F. General Description:

Hull Design – Deep-V hull, rigid mono-hull with a stabilizing solid, closed cell polyethylene foam collar.

Propulsion Machinery – Twin 225 horse power 4-stroke outboard engines manufactured by Honda Corporation.

Propellers – Stainless Steel 14x19 inch Mercury Offshore Series.

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Hull and Deck – The hull and deck structure of the RB-S is constructed of marine grade aluminum and are welded using Metal Inert Gas (MIG) or Tungsten Inert Gas (TIG) welding techniques, as required.

Walking Surface – Non-skid material is installed on the deck areas except that a 1-inch “no non-skid” area is provided around fittings, between non-skid pads, and around deck drains.

Cabin – The cabin is constructed of 5052 marine grade aluminum and is welded to the hull. The cabin provides seating for four crewmembers. All boat systems operating controls are contained in the cabin. A small cuddy cabin, forward of the main cabin area, provides access to the electronics, the heater, and the forward deck area. A hinged radar pod and VHF antennas atop the cabin can be lowered for transport on a C-130 aircraft.

Collar – The collar is manufactured from closed cell polyethylene foam with an ultraviolet (UV) stable polyethylene coating. The collar is bolted directly to the outside of the hull and cannot lose buoyancy or absorb water.

Operational Characteristics:

Maximum Speed:	46 knots at 6000 RPM
Cruise Speed:	35 knots at 4100 RPM
Maximum Range at Cruising Speed:	150 NM
Maximum Operating Winds:	25 knots
Maximum Operating Seas:	6' (no surf)
Maximum Towing Capacity:	10 displacement tons
Maximum Operating Offshore:	10 NM
Outside Air Temperature:	0 to 105 degrees Fahrenheit
Outside Water Temperature:	28 to 95 degrees Fahrenheit
Operation in Ice:	None

Manufacturer: Safe Boat International (SBI)
8800 Barney White Road
Port Orchard WA, 98367

A complete inspection of CG 25501 was conducted; no physical damage to the boat occurred as a result of this incident, and no discrepancies were noted. All boat systems were in satisfactory condition.

SINS data was extracted from the RDP-139 Radar/Chart Plotter on CG 25501 and brought to a commercial vendor in for analysis since the reader hardware/software, PC Planner, was not available. The PC Planner hardware/software is no longer in production for the RDP-139. The commercial vendor had considerable difficulty reconstructing the tracks into a PC-readable file; the hard data was there, but he could not reconstruct it in picture format as is displayed on the chart plotter monitor. Before removing the chart

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card, the Mishap Analysis Board took a photograph of the chart plotter monitor displaying the tracklines of CG 25501 at the time of the mishap. During interviews, the statements of the coxswain and crew of CG 25501 validated the trackline information that the Mishap Analysis Board had collected.

Both port and starboard engine ECM data was extracted and analyzed, no anomalies were noted. The ECM only retains data from the last 30 minutes of operation and therefore no data from the actual mishap maneuvers was recovered (approximately 1 hour, 22 minutes elapsed between the time of the mishap and mooring).

The stability of CG 25501 is not considered to be contributory to the mishap. CG 25501 was physically weighed after the incident, no weight anomalies noted.

An inspection of PMS records indicates that maintenance on the boat was generally within program standards.

5. METEOROLOGICAL INFORMATION

Date: Sunday, 25 March 2007

Location: WA

Forecast:

Winds: SW, 10 knots becoming light

Seas: Wind waves 1 foot or less

Precipitation: Chance of a shower in the evening

Sunrise: 0703

Sunset: 1929

Observed:

Winds: 180T, 5-15 knots

Seas: 1 foot

Precipitation: None

Visibility: 10 nautical miles

Sky Condition: Partly sunny, scattered clouds

Air Temperature: 48F

Water Temperature: 46F

6. COMMUNICATIONS

The RB-S communications suite consists of two VHF radios. Both radios are similar in capability. The Raymarine 215 VHF Transceiver radio has built-in digital selective calling (DSC) for transmitting and receiving DSC distress calls. The Motorola VHF-FM Astro Spectra W9 has the ability to utilize digital encryption to transmit and receive secured communications. Both personal and unit cellular phones are used for secondary communications.

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The radio communications guard for CG 25493 and CG 25501 was held by Sector at the time of the mishap. Recordings of the radio and telephone conversations between Sector, CG 25501, CG 25493, CG 255002 and CG 25661 were provided to the Mishap Analysis Board. A handheld VHF radio was carried by the DTL, but proved to be ineffective once the boats were away from the pier.

There is currently no installed internal communications system for embarked crewmembers. Communications to the forward and aft gunners are limited to hand signals, use of the installed Raymarine 430 loudhailer, or yelling through the back door or an open side window. The enclosed cabin allows crewmembers to communicate effectively inside the cabin, but the forward gunner is completely out of the communications loop due to the windshield barrier and noise associated with operations.

A current initiative is in place for the Boat Crew Communications System (BCCS) to be deployed to selected units by Spring/Summer 2007. The system will incorporate an internal hardwire intercom system that can be integrated with the proposed gunner helmet. The same system will also be installed onboard the 47 MLB.