MISSION TO MINOTS LEDGE ON THE *CGC ABBIE BURGESS*

By Brian McMahon, FSO-PA 4-15
Nor'easter Feature Writer



CGC Abbie Burgess drops anchor at Minots Ledge Light

Editor's note: This is a follow-up report to an earlier Minots Ledge lighthouse story by Brian, which appeared in the March 2007 edition of Nor'easter.

This June, a multi-mission team boarded buoy tender USCGC *Abbie Burgess* and left Boston for the lighthouse on Minots Ledge, one mile off Cohasset, Massachusetts. Built on the footprint of the original structure that was toppled during a severe storm in 1851, the second tower has survived 147 years of New England's worst winter maelstroms. But parts of the first lighthouse on this site, constructed of nine solid iron columns, may remain in nearby waters and give us some clues to the reasons for its failure, which caused the deaths of the Assistant Keepers Joseph Wilson and Joseph Antoine who were on duty during the storm. The primary missions were to send divers down to map out the debris field and locate any likely fragments of the original tower. Other compatible missions included placing an underwater memorial marker attached to a 5,000 lb. concrete buoy mooring near the site (since this area is strewn with shipwrecks and is popular with recreational divers), provide worthwhile training and qualification opportunities for Coast Guard Reserve divers, and test a Port Security anti-swimmer roving camera for possible use in US harbors. Many organizations were represented in this effort, led by LANTAREA Historian William Thiesen including Coast Guard (Active, Reserve, Academy and Auxiliary), the Foundation for Coast Guard History, Massachusetts Underwater Archeology, Massachusetts Environmental Police, the Cohasset Harbormaster, University of Massachusetts-Boston, as well as local historians and journalists.

USCGC *Abbie Burgess* is named after the daughter of Lightkeeper Sam Burgess who brought his invalid wife and five children to Matinicus Rock in 1853, and served as Lightkeeper for the two lighthouses on that Maine island. In those times, the wives and children of light keepers usually assisted the keeper, but were rarely acknowledged officially as assistant lightkeepers. Having read the keepers' logs, his daughter Abbie knew that an 1839 storm had destroyed the original lighthouse, so she moved her mother's quarters from the older (and less protected) house to the one located directly behind a lighthouse tower. The September 1855 lighthouse supply cutter failed to arrive, so Keeper Burgess knew that he would have to make the 25-mile trip to Rockland, ME himself and left in January 1856. Making a wise decision, Sam Burgess made his 16-year-old daughter Abbie responsible for keeping the lights burning, and caring for her ailing mother and her siblings. "I can depend on you, Abbie," he said as he dragged the light station's sailing dory down to the beach.

Soon after, a severe winter storm raged for four days, with waves demolishing the old keeper's cottage where Abbie's mother initially resided, and even the newer house was flooded. Only the lighthouse towers themselves were safe havens, so she moved her family inside to safety. As she noted, "For some reason, I know not why, I had no misgivings, and went on with my work as usual. For four weeks, due to rough weather, no landing could be affected on the Rock. During this time we were without the assistance of any male member of our family. Though at times greatly exhausted by my labors, not once did the lights fail. Under God I was able to perform all my accustomed duties as well as my father's."

An 1857 storm again threatened the Matinicus Rock lighthouses while Keeper Burgess was away on a supply run. During a lull, Abbie's brother launched a small skiff and also tried to secure more food, but neither he nor Abbie's father would return for 21 days. Responsible for the operation of the lighthouses and for her family's survival, the resourceful teenaged Abbie rationed their available food to a daily diet of one cup of corn meal mush and one egg. Her father and brother returned with provisions and found Abbie exhausted from worry, assuming that they had both perished in the storm. Because of her outstanding devotion to duty, the US Lighthouse Service officially recognized her as Assistant Lightkeeper under her father, as well as her father's successor.

Having transited from its Rockland, Maine homeport to ISC Boston a few days earlier, USCGC *Abbie Burgess* was underway at 0700 sharp for the short passage through Boston Harbor and its islands for Minots Ledge. The commanding officer, CWO4 Paul Dilger, kept the bridge team alert with questions and comments about the islands and local Aids to Navigation, inviting observations from those of us familiar with the histories of Fort Warren, Boston Light and Nixes Mate. When I asked BM1 Barra, the cutter's XPO, about the buoy tender's cruising speed, he replied "11 knots" as we headed seaward. What's the max? "12 knots" he replied with a smile, so I inquired more about the buoy tender's characteristics and capabilities.

Abbie Burgess is a "Keeper" Class coastal buoy tender, 175 feet overall, a draft of only 7.9 feet, with a crew of 23, and equipped with the latest navigation and station-keeping advances. Instead of propellers on fixed shafts with rudders, her two diesel engines power "Z-drives", which can direct both thrust and steering through 360 degrees and independently of each other. Along with a powerful bow thruster that quickly nudges the fo'c'sle sideways, and automated GPS station keeping capability, this 845-ton buoy

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Underwater at Minots Ledge
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tender can hover in place while aids to navigation are hauled up, serviced and re-positioned. Instead of a teak and brass wheel, *Abbie Burgess*'s helm is a stainless steel knob the size of a channel selector on a fifties-vintage TV set. The payoff: use of advanced technology means that this 175 foot buoy tender needs less than half the crew of the retired 180-foot buoy tenders of the past.

The captain had said no area of the ship was off-limits, so I took his advice that the best view onboard was gained by climbing two sets of vertical bulkhead ladders straight up to the wide expanse of the flying bridge during our passage to Minots Ledge. While waiting for the return of the divers, I asked Chief Engineer MKCS DeVos to show me around the cutter's engine room. We ended up making a full tour of all the engineering spaces from the forward chain locker to the Z-drives at the stern, donning hearing protectors where needed, and wrestling the watertight doors open and closed against the changes in air pressure caused by the diesels' air intakes.

Upon arrival near Minots Ledge Lighthouse, we anchored north of the expected debris field in calm seas. Members of the dive team, some from as far away as New York and San Diego, met on the buoy deck. They reviewed the objectives, hazards and special conditions of the event, while the deck crew launched the cutter's RHIB. CWO4 Dilger believes that safety is paramount, since buoy tending is dangerous work in an unforgiving environment. With no hectoring, all of the crew were ready for ship's evolutions in hard hats, PFDs and gloves as required, repeating orders and responses, while working calmly and efficiently. Morale and safety consciousness on *Abbie Burgess* is so high, that a crewmember razzed an onshore line handler on our return to ISC Boston for not wearing the chinstrap of his hard hat.

The captain also believes that a good leader develops other new leaders. Coast Guard Academy cadets usually make summer cruises on large cutters, to gain the "wardroom experience". But CWO4 Dilger welcomed a cadet onboard this summer who wanted to see the "black hull" Coast Guard of buoy tenders and tugboats at work, a promising development for both the cadet and the Coast Guard. Navy and Coast Guard captains are often reluctant to turn over the "conn" (the authority to make course and speed changes) to junior officers when entering or leaving a major port, fearing that a young officer might crunch the dock in a highly public way and damage the captain's career. Inbound off Boston's Deer Island Light at day's end, however, CWO Dilger turned to the cadet and said "I believe that you are ready to conn us back to ISC Boston ... Do you agree?" "Yes, sir" replied the cadet, who brought *Abbie Burgess* safely dockside.



Retrieving the ROV.

Since this was the first day of a planned five days of underwater exploration, the dive team planted a series of orange floats that delineated search areas for later assignments. A month earlier, a UMass / Coast Guard Academy team had conducted magnetometer and side-scan sonar searches of the area, providing indications of fragments from the original Minots Ledge Lighthouse.

While the dive team searched the seabed, another team tested a Remotely Operated Vehicle (ROV), which is being considered for use by port security detachments in the future. This is a small neutral-buoyancy "submarine" with a camera that is controlled through a 200-foot electronic umbilical cord. It may be used to check ship bottoms for limpet mines or contraband, as well as alerting port security to the presence of hostile scuba divers. We found no threats in these waters, but were able to see which lobster traps would bring a welcome surprise to Cohasset lobstermen.

Somewhere among the lobster traps on the seabed there may be remnants of the original tower, although some reports say that major pieces were recycled. Without physical evidence, we can't be certain whether it was the design or the construction of the original Minots Ledge Lighthouse that was faulty, because severe winter storms in this area

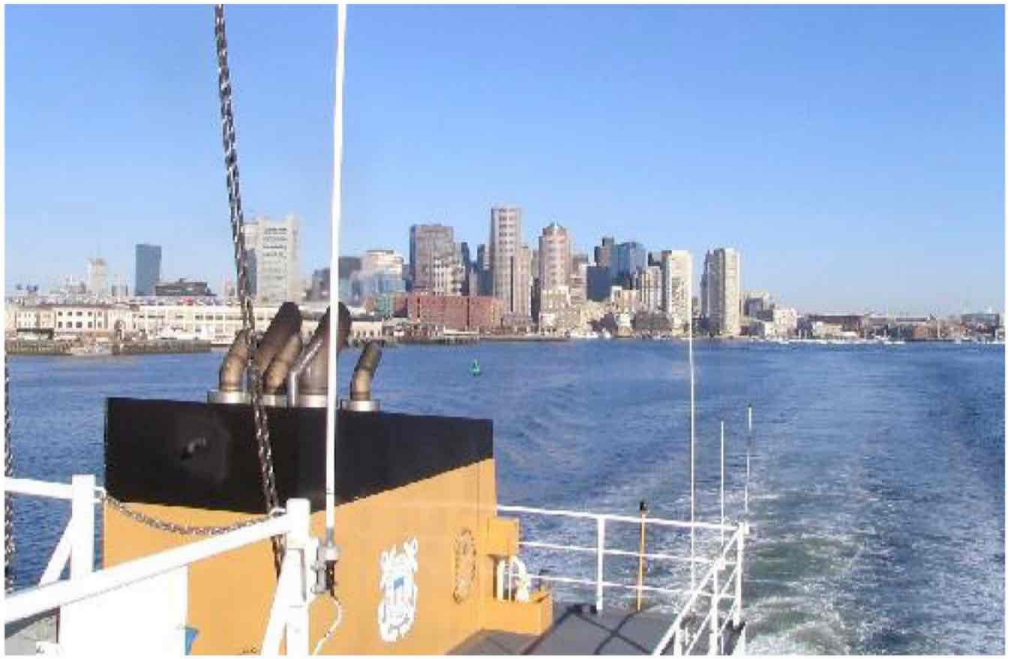
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Dive team briefing on the buoy deck of the *CGC Abbie Burgess*.

Underwater at Minots Ledge *(Continued)*

have been common for hundreds of years. The stilt design may appear less rugged than the masonry structure that successfully replaced it, but the stilt design is used for oil drilling rigs in the brutal North Sea between Scotland and Norway and they survive the area's prevalent heavy weather. Of the 4,000 oil-drilling rigs in the Gulf of Mexico, only 200 of these stilt structures were seriously damaged or destroyed by Hurricanes Katrina and Rita in 2005. Moreover, a year after the 1851 loss of the original Minots Ledge Lighthouse, an iron-column lighthouse was erected on Carysfort Reef, 7 miles east of Key Largo, Florida and this lighthouse is still in operation today. It's important to note that oil-drilling rigs are constructed of hollow steel tubing that is welded, assembled on land with removable caps, and then towed by tugboats to the desired locations. The caps are removed, the tubing fills with seawater, and the rig settles on the seabed. The Carysfort Reef lighthouse was assembled of solid iron columns in Philadelphia over a four-year period and barged down the coast to Florida, where it was set in place on the reef.



The Boston Harbor and skyline fall astern as the *CGC Abbie Burgess* makes way towards Minots Ledge Light.

But the original Minots Ledge Lighthouse was constructed on-site of nine iron columns that weren't cast in continuous lengths; the upper 25-foot segments were sleeved onto the lower segments and held with steel pins. Welding did not exist until the early 20th century; so erecting a bolted-together structure was the only way to build the tower on-site. Despite extra diagonal bracing, it's easy to imagine that the completed structure would be prone to swaying in strong wind and seas, and that this structure would quickly deteriorate in a stormy area. As the first Minots Ledge lightkeeper noted in his log after only four months' service, the tower would "reel like a drunken man" during storms, and he resigned when the Lighthouse Service ignored his requests to strengthen the tower. The iron column design was much cheaper to build than a masonry lighthouse, and its designer believed that it would be structurally sound, perhaps not giving sufficient consideration to the frequency of the local gales that would loosen its bracing right from the start. Tragically, two US Lighthouse Service assistant keepers- Joseph Wilson and Joseph Antoine- paid the price.