08-17-2006 Alaska- Hill and Duque -2 Coast Guard Divers – Training –Deep Ice - Accident

Lieutenant Jessica Hill

Petty Officer 2nd Class Steven Duque

United States Coast Guard Enlisted Memorial Foundation
Cape May New Jersey

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&cad=rja&uact=8&ved=0ahUKEwjQ4fDCyrPRAhVL7IMKHciVBS4QFgg0MAg&url=http%3A%2F%2Fwww.cgemf.org%2Fsteven-duque&usg=AFQjCNErMHNvEONCTSTiQNqUdlvRVQpFDQ&bvm=bv.142059868,d.amc

Steven Duque

At 3:55 p.m. on Aug. 17, 2006, U.S. Coast Guard Cutter Healy pushed into an open water lead in the ice approximately 490 miles north of Barrow, Alaska. While not in the plan for the day, completion of an ambitious science schedule and excellent weather conditions provided an opportunity for "ice liberty" – an opportunity for the crew to disembark the vessel, stretch their legs and take a break from regularly scheduled operations.

The diving officer also sought out this opportunity to conduct a familiarization training dive with Healy's newest divers. A dive plan was reviewed by the operations officer and executive officer and approved by the commanding officer. The plan called for all three divers to dive simultaneously using dry

suits and SCUBA gear. Two consecutive dives, not exceeding 20-feet in depth, would be conducted lasting 20 minutes each.

At 4:30 p.m., "ice liberty" was granted to the crew; and was being conducted at the same time, and in the same general location, as the dive operation. Ice liberty included "polar bear plunges," football, and consumption of alcoholic and non-alcoholic beverages.

At approximately 5 p.m., Petty Officer Steven Duque arrived at the dive side. Approximately 40 minutes later, the remaining two divers arrived. The dive officer briefed the divers and the diver tenders.

At approximately 6:10 p.m., the divers entered the water. Shortly after entering the water, Diver 3 had difficulty with the dry suit leaking, exited the water, and returned to the ship.

Lt. Hill and Petty Officer Duque continued the planned dive.

Petty Officer Duque experienced problems with his glove, briefly exited the water and warmed his hands. Petty Officer Duque returned to the water and Lt. Hill conducted in-water safety checks and they submerged.

After the divers were submerged for a few minutes, one of the tenders noted that the line sped out in a fast and forceful manner. Believing that about 100 feet of line had paid out, the tender asked for assistance in an attempt to stop the tending line from running further.

After changing out of the dive gear and into clothes, Diver 3 returned to the dive side and noted the diver tenders' concerns. Attempts to communicate with the submerged divers failed and the tenders began retrieving both divers. The initial retrieval rate was approximately one foot per second. At approximately 40 feet of depth, the divers became visible and neither appeared to be conscious, both divers were brought rapidly to the surface, pulled from the water, and received emergency medical assistance that was unsuccessful.

Name	Rating	Duty Station	Date
Duque, S.	BM2	USCGC Healy	8/17/2006

USCG ICEBREAKERS
UNITED STATES COAST GUARD SCIENCE OPERATIONS

https://icefloe.net/jhill

Marine Science Officer
LT Jessica Ellen Hill

Lieutenant Jessica E. Hill

LT Jessica Ellen Hill served as the Marine Science Officer on Healy from mid-summer 2004 until her tragic death on Aug 17, 2006. Jessica and BM2 Steven Duque perished while conducting a routine SCUBA dive from the ice at 77 12.3 N 177 35.8W. Jessica's sense of humor and ever present smile will be missed by all. Jessica was the Marine Science Officer (MSO) onboard Healy. She acted as the onboard Liaison between the science personnel and the Healy command. She also coordinated the on-load of science gear and also served as Healy's dive officer.

Two Seattle-Based Coast Guardsmen Die During Dive

http://www.komotv.com/stories/45013.htm
August 18, 2006 By KOMO Staff

SEATTLE - Two Seattle-based Coast Guard divers died Thursday afternoon during a dive operation in the Arctic Ocean, the Coast Guard said.

Lt. Jessica Hill, 30, of St. Augustine, Fla., and Petty Officer 2nd Class Steven Duque, 26, of Miami, were diving beneath the Coast Guard Cutter Healy to inspect the ship's rudder.

The cutter, which is based at Pier 36 in Seattle, was in the Arctic Ocean about 500 miles north of Barrow, Alaska conducting scientific research when the divers died.

Coast Guard officials declined to provide details of the incident and said the deaths were under investigation.

They described the shallow dive as a cold water familiarization exercise in which the divers were near the bow of the ship.

Divers will routinely inspect the hull and rudder of ships that are operating in Arctic ice. Before such dives, the ships stop and propellers are disengaged while the divers are under water.

"I felt a deep sense of loss when I received the initial report on this situation," said Vice Adm. Charles D. Wurster, Commander, Coast Guard Pacific Area, in a news release issued by the Coast Guard. "I offer my prayers to the families and friends of Lieutenant Hill and Petty Officer Duque in their time of grieving."

The cutter was expected to dock in Alaska to pick up Coast Guard investigators, and it's not known when the ship will return to Seattle, a Coast Guard spokesman said.

The Healy is a 420-foot cutter outfitted with scientific research equipment and is one of three ice breakers operated by the Coast Guard.

Two Coast Guard divers drown during science mission in Arctic

http://seattlepi.nwsource.com/local/281893_healy19.html?source=mypi
August 19, 2006 By MIKE BARBER P-I REPORTER

Thirty-year-old Coast Guard Lt. Jessica Hill, educated in marine science, loved the science missions she took aboard the Healy, a Seattle-based icebreaker.

She also was a Coast Guard diver, tested in the same Navy diving school popularized in the 2000 film "Men of Honor."

On Friday, friends and family were remembering Hill as "a woman of honor" She died, with another Coast Guard diver, Petty Officer 2nd Class Steve Duque, 26, of Miami, in a diving accident Thursday afternoon during a science mission to the Arctic Ocean on the Healy.

"Jess was vibrant, smart, mentally and physically strong ... and funny. She was doing what she loved when she died. She was a joy. ... She was the bright star in the family," said Bill Eby of Savannah, Ga., the father of one of Hill's stepbrothers.

Duque's family could not be reached for comment. But his family probably feels, like Hill's, "that it doesn't make any sense," Eby said.

"It's not fair, and we're all just trying to deal with it."

The 420-foot Healy was conducting science missions sponsored by the U.S. National Science Foundation, and was 500 miles north of Barrow, Alaska, on Thursday afternoon when the two were killed, said Senior Chief Petty Officer Keith Alholm, spokesman for Coast Guard Pacific Area in Alameda, Calif.

The bodies of Hill and Duque were being transported Friday aboard the Healy to the nearest port, where a Coast Guard C-130 will fly them to their hometowns and families.

An investigation has been launched to determine the cause of the accident. The Coast Guard late Friday had conflicting information about what the two divers were doing when they were killed. In the late afternoon, Coast Guard officials said the two died during a "familiarization dive" for cold water at the bow of the ship.

Earlier in the day, Coast Guard officials had said the two died during a routine shallow-water dive to inspect the ship's rudder.

The losses quickly rippled throughout the Coast Guard community.
In Seattle, Lt. Cmdr. Andre Billeaudeaux, a former Coast Guard diver, said that although he did not know the two, the small community of Coast Guard divers was grieving.

"I wish I could put the words to the feelings we share. Safety is stressed from top to bottom, day in and day out, whenever you do a dive," he said. Coast Guard divers train with U.S. Navy divers at the Navy diving school in Panama City, Fla.

Any able-bodied person who is physically fit, whether an officer or enlisted person, can apply. Only a few openings are available each year. Selection is determined by factors including command approval, physical fitness, swimming abilities and other capabilities.

"They are a highly spirited, can-do group of professional men and women," Billeaudeaux said.

Though the nation's polar icebreaking fleet is based in Seattle, all Coast Guard vessels over 210 feet long come under direct control of the Coast Guard's Pacific Area commander.

The Healy is one of three polar icebreakers operated by the Coast Guard though one, the Polar Star, was mothballed here recently. The Healy is primarily used for Arctic science operations, its budget controlled by the U.S. National Science Foundation.

Hill had a boyfriend in the Coast Guard in Seattle who took a job on land to avoid a conflict of interest with her work at sea, Eby said. The boyfriend could not be reached for comment.

Hill grew up in St. Augustine, Fla., and had a master's degree in marine science from the University of South Alabama, Eby said. She joined the Coast Guard after college.

Hill left with the ship for a mission in April and again in July.
She was due back with the ship in November.

She e-mailed Eby in April, telling him about all that was new and good in her life, including her boyfriend, Tim, good friends, baseball and her dog, Jester.

Former local resident killed in Coast Guard accident

http://www.pressrepublican.com/apps/pbcs.dll/article?AID=/20060820/NEWS/608200325/1001&ts=ts1
August 20, 2006 By: ANDREA VanVALKENBURG

PLATTSBURGH — A woman who lived in the area as a child died Thursday afternoon during a dive mission for the U.S. Coast Guard.

Jessica Hill, a 30-year-old Coast Guard lieutenant and diver, who was born in Saranac Lake, was killed during a scientific expedition about 500 miles from the Alaskan coast.

Hill was killed along with another diver, Petty Officer 2nd Class, Steve Duque, of Miami, while she was familiarizing herself with the cold-water area during a routine dive mission.

The exact cause of the accident has yet to be determined and an investigation is continuing.

Hill, who was also one of the science officers onboard the Cutter Healy, a Seattle-based ice-cutter ship, had been conducting similar expeditions from the ship since July and was expected to return to the West Coast in November.

"Right now, the Cutter Healy is making its way back to Barrow, Alaska and it should arrive there sometime tomorrow," Coast Guard Petty Officer and spokesperson Russ Tippet said Saturday afternoon from a Pacific Regional Office. "Our investigators will head out there when it arrives to begin the investigation. Right now the focus is on bringing the bodies back."

According to local relatives, Hill spent a few years in the area while she was a young child and had lived with her family in Bloomingdale.

"She moved with her parents when she was younger. She came back to Westport for family reunions through the years though," said her

grandfather, Archie Rosenquist, of Westport. "She had a lot of family ties here."

Hill, had spent much of her life in St. Augustine, Fla. and had joined the Coast Guard after she graduated from the University of South Alabama with a master's degree in marine science.

"It was what she lived for," said Rosenquist. "She kind of grew up on a sailboat. She had always traveled a lot with her parents on their boat."

Hill had been accepted into the Navy diving school in Panama City, Fla. several years ago, where she had competed and surpassed many other Coast Guard and Navy enlisted personnel.

She was accepted and tested in the same diving school that was popularized in the 2000 film "Men of Honor."

The intense diving program offers only a few openings each year for enlisted men and women. Acceptance into the program is determined by several factors, including command approval, physical fitness and swimming capabilities, and is extremely selective.

"It was very competitive, and she excelled at what she did. It was really a unique program," said her grandfather.

The bodies of the two divers are now being transported to the nearest port, where they will be returned to their families.

The 420-foot Healy was financially controlled by the U.S. National Science Foundation, and was one of three Coast Guard polar icebreakers. The ship is primarily used for Arctic science research.

Hill left behind a boyfriend in Seattle, her mother, father, step-father, siblings, grandparents and many other members of her extended family.

"She was a real vivacious person and she loved what she was doing," Rosenquist said.

Two Florida Divers Die in Arctic Ocean

http://www.theledger.com/apps/pbcs.dll/article?AID=/20060820/NEWS/608200344/1004
August 20, 2006

SEATTLE WA. -- Two divers from Florida aboard the Coast Guard icebreaker Healy died during a routine dive operation in the Arctic Ocean about 500 miles north of Barrow, Alaska, the agency said Friday.

The cause of the deaths was being investigated, the Coast Guard said.

Lt. Jessica Hill, 30, of St. Augustine and Petty Officer 2nd Class Steven Duque, 26, of Miami had entered the water Thursday afternoon to examine the ship's rudder, which is done often as it operates in Arctic ice.

Local Coast Guard Dies

http://www.fox30online.com/news/local/story.aspx?content_id=2AD12AF0-61EE-497E-99DA-22B591D92600

8/21/2006 Posted By: Assignment Desk

A Coast Guard diver from St. Augustine has died in an accident in the Arctic Ocean.

Lieutenant Jessica Hill and another diver were on a routine dive off the coast of Alaska when something went wrong. She and a petty officer from Miami went down near the rudder of the coast guard ship called the Healy on Thursday for a scientific mission.

Both of them died. The coast guard is investigating their deaths.

Coast Guard skipper out over 2 diving deaths

http://www.seattlepi.com/local/article/Coast-Guard-skipper-out-over-2-diving-deaths-1213158.php

August 30, 2006 By MIKE BARBER, P-I REPORTER

'Loss of confidence' cited after disaster on icebreaker

The Coast Guard relieved the skipper of the Seattle-based icebreaker Healy of command Wednesday as it continues an investigation into the deaths of two divers from the ship.

Capt. Douglas Russell, right, took over command of the Healy from Capt. Daniel Oliver in June. Now Oliver is coming back
Photo: / U.S. Coast Guard

In replacing Capt. Douglas Russell, Vice Adm. Charles Wurster, who commands all Coast Guard operations in the Pacific from San Francisco headquarters, said he had "a loss of confidence in the officer's ability to command."

The Coast Guard flew Capt. Daniel Oliver, the Healy's commander before Russell, to Alaska to take temporary command of the ship.

Wurster also ended early the Healy's annual Arctic West science mission. The ship is slated to return to Elliott Bay on Monday. It had been due home in November.

Mystery Surrounds Deaths of Coast Guard Divers in the Arctic; Two Investigations, 'No Word Whatsoever'

http://www.underwatertimes.com/news.php?article_id=65720109384
September 23, 2006 by Gene Johnson

SEATTLE, Washington -- Five hundred miles north of Alaska, a group of shipmates from the Coast Guard cutter Healy tossed a football on the blue-and-white, diamond-hard Arctic ice.

Others milled about in the pleasantly cold, brilliant summer day, stretching their legs after a month aboard a rocking, bucking, 420-foot icebreaker. Lt. Jessica Hill and Boatswain's Mate Steven Duque seized the chance to fit in a training dive and slipped into a patch of open water near the Healy's bow.

A support team held ropes attached to the divers, lest they become disoriented under the ice. Several research scientists watched from the deck, waiting for them to resurface.

More than a month later, what happened on the other end of those ropes remains unclear — except that both divers died.

The Coast Guard has started two investigations, relieved the Healy's captain, pulled all diving equipment off the ship for examination, and suspended all polar diving. Nothing has been said about what might have killed Hill, 31, and Duque, 22, on Aug. 17, or when the investigations will conclude.

"We can get no word whatsoever, and that's tough," Hill's father, William Hill Jr., said. "We can't even get the death certificates."

The Healy, commissioned in 1999 and capable of sailing through ice up to 8 feet thick, was in the Arctic as part of a research mission backed by the National Science Foundation. On board were three dozen scientists, led by a group from the University of Texas at Austin, collecting data that would help them map the ocean floor and study the Earth's crust in hopes of gaining a better understanding of earthquakes, tsunamis and plate tectonics.

Hill, the ship's marine science officer and a native of St. Augustine, Fla., was an experienced civilian diver before she joined the Coast Guard about four years ago. Her shipmates described her as a fun-loving officer who enjoyed working with the researchers onboard. During the Healy's trip to the North Pole last year, she posed on the ice in a bikini by a red-and-white-striped pole brought for the occasion.

Duque, whose responsibilities included keeping the Healy's decks in order, operating machinery and driving launch boats, was from Miami. His colleagues said he was exceedingly professional and inspired others to take their jobs seriously.

They had been under water for about 10 minutes, estimated Harm Van Avendonk, a University of Texas geophysics researcher. It was near the end of the two-hour break, and many people had returned to the ship.

"I saw people from the bow looking intently down on the ice, and I sensed immediately that they didn't look relaxed," he said. "It was taking a long time for the divers to reappear."

Steve Stevenoski, a high school teacher from Wisconsin Rapids, Wis., remained on the ice and was videotaping the expansive frozen seascape when he heard shouts from the dive support team, calling for extra hands to man the ropes. He dropped his camera and tried to help.

In a blur, the crew's training took over, several witnesses said.

The divers were pulled up by the ropes. Blankets and stretchers were rushed onto the ice, and EMTs immediately began performing CPR in an attempt to revive them. Soon they were carried to the sick bay onboard, where they were pronounced dead at 8 p.m., roughly two hours after the accident.

"What I can tell you is this: These people were very well trained. Every time we did something we had to have a safety briefing," Stevenoski said. "There was an accident that was completely unforeseen. What's unusual is we don't know why they died."

Van Avendonk stressed that while about 50 others were playing football on the ice, taking panoramic photos and going for walks, "the people involved in the dive were entirely focused on the dive."

According to Coast Guard protocol, they would have created a "dive profile," detailing who was diving, how far down they were going and how long they would spend at various depths.

Typically such plans are drawn up by a ship's dive officer, though the captain is ultimately responsible for the safety of divers. That could explain why Capt. Douglas Russell, who transferred from a desk job in Washington, D.C., to the Healy in June, was relieved of command less than two weeks after the accident. Vice Adm. Charles D. Wurster, commander of the Coast Guard in the Pacific, said he had lost confidence in Russell.

Before he was relieved, Russell wrote on the ship's Web site that Arctic operations would continue following a four-day stop in Kodiak, Alaska. Instead, the Healy returned to its home port of Seattle under Russell's predecessor, Capt. Daniel K. Oliver.

The only signs of the tragedy during a recent tour of the ship were a grief counseling pamphlet on a table in the scientists' lounge and the locked and empty room where dive equipment was stored. The equipment was shipped

to the Navy's dive school in Panama City, Fla., for examination. One investigation is focusing on the root cause in hopes of preventing future accidents; the other is a broader administrative investigation that could result in findings of responsibility.

One investigator, a lieutenant, said Hill and Duque were the first Coast Guard divers to die under water since the 1970s.

The Coast Guard described the dive as routine, but any dive in frigid waters beneath 4-feet-thick ice poses serious dangers. The cold can numb the extremities. Divers typically wear dry suits, which use air to help determine buoyancy. Such suits can balloon during ascents as pressure decreases — if the diver doesn't release the air quickly enough, he or she can shoot toward the surface and crash into the ice.

Lt. Jessica Hill, right, administers the re-enlistment oath to Boatswain's Mate Steven Duque in July. Both died on August 17.

They also must use equipment that can handle the cold water, such as breathing regulators outfitted with rubberized covers filled with antifreeze. Hill and Duque had both attended the Navy's dive school, which is required of all Coast Guard divers. William Hill said his daughter resolved to attend the school shortly after joining the Coast Guard, when her crew investigated a sunken German ship that was leaking oil off California.

"She had to stand on the deck while everyone else was going down," he said.

"That's when she decided to become a Coast Guard diver. She was only 5-foot-5, and her little short legs had to work like mad to compete with the guys, but she thought she could do anything they could do."

The deaths hit the Healy's crew of 75 hard, said Ensign Stephen Elliott, who was on the ice as part of the dive support team that day. He said he couldn't discuss anything that might be covered by the investigation.

"I know everyone on board," he said. "These are people you watch movies with, eat with, joke around with. It's hard to explain to someone who doesn't live on a ship what it's like to be a shipmate. They were incredible shipmates."

source: **http://www.kgw.com**

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Autopsy: Coast Guard Divers Suffered 'Uncontrolled Descent' to 189 Feet and Suffocated

http://www.underwatertimes.com/news.php?article_id=47310896201
November 22, 2006 by Underwatertimes.com News Service

SEATTLE, Washington -- One of two Coast Guard divers who mysteriously perished during a training dive in the Arctic last summer plunged toward the ocean floor in an uncontrolled descent, suffocated and developed lung trauma during a rapid rise to the surface, according to an autopsy report summary obtained by The Associated Press on Tuesday.

Boatswain's Mate Steven Duque, left, swears the oath of re-enlistment as Lt. Jessica Hill, right, administers the oath

And by the time the two divers from the icebreaker Healy had been pulled up, "one diver's (air) tank was completely empty and the other diver's tank contained 90 psi (pounds per square inch)" _ the latter typically not sufficient to deliver air through the breathing regulator, the report said.

The report was provided to the AP by William Hill Jr., of St. Augustine, Fla., the father of Coast Guard Lt. Jessica Hill, who died along with Boatswain's Mate Steven Duque on Aug. 17, 500 miles north of Alaska.

The Coast Guard has released little information about the deaths but relieved the Healy's commander, citing a loss of confidence in his ability. A spokesman said the Coast Guard would not discuss the autopsy report pending the outcome of its investigations, expected next year.

Hill, 31, and Duque, 22, had slipped into a patch of open water near the ship's bow and were planning to dive to a maximum depth of 20 feet, William Hill said. A support team held ropes attached to them lest they become disoriented under the ice.

The autopsy report summary, written by Armed Forces Regional Medical Examiner Stanley D. Adams, said Hill suffered "an uncontrolled descent to a possible depth of 189 feet." Her father said that if in fact she went that deep, he didn't understand how the dive support team could have failed to prevent it.

"Why in the hell did they let out that much rope?" he asked. "It was only scheduled for 20 feet." Furthermore, he said, the amount of air in the divers' tanks would have lasted a half hour at 20 feet, but only 10 minutes at 180.

The dive support team reportedly pulled the divers to the surface after becoming concerned; attempts to resuscitate the two failed.

The autopsy ruled Hill's death an accident. The cause was asphyxia (a lack of oxygen or buildup of carbon dioxide in the body) with pulmonary barotrauma (an expansion of air in the lungs as pressure decreases during ascents) and possible air embolism (air bubbles in the blood). Duque's family could not immediately be reached to confirm whether he died of the same causes.

"It is quite likely the divers lost consciousness prior to or during the ascent," Adams wrote.

He added that his findings must be squared with investigations into the state of the divers' equipment and into the circumstances of the dive.

The autopsy summary also noted that a third diver planned to take part, but "immediately aborted the dive" for reasons that are not mentioned.

The Healy was sailing through the Arctic with about 35 scientists to collect data that would help them map the ocean floor. Hill was the ship's dive officer, as well as the liaison between the scientists and the crew.

Shortly after the tragedy, the Healy's commander, Capt. Douglas G. Russell, was relieved of duty and reassigned to administrative tasks; his superiors cited "a loss of confidence in Russell's continued ability to command." Capt. Tedric R. Lindstrom is the new commanding officer. Hill said he plans to ask an independent pathologist to review the autopsy results.

His daughter's birthday was Monday.

"Right now, I'm just waiting to get the Christmas holidays over and wait for the new year," he said. "Then I can expect the next report."

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Report: Coast Guard Arctic Diver Died of Trauma to the Lungs; Rapid Ascent Suspected

http://www.underwatertimes.com/news.php?article_id=70895263104
November 21, 2006 by Underwatertimes.com

SEATTLE, Washington -- One of the two Coast Guard divers who perished in the Arctic last summer died of trauma to the lungs — a condition caused by rapid ascent — and possibly had dived deeper than planned, her father said Tuesday.

William Hill Jr., of St. Augustine, Fla., told The Associated Press that he finally received the autopsy report for his daughter, Lt. Jessica Hill, two weeks ago, but couldn`t bear to open it for several days.

"It was pulmonary barotrauma — trauma to the lungs — that was the immediate cause of death," Hill said. "There was speculation they were much deeper than they should have been, but why that happened I don`t know. The official report will go into much more detail about that."

Pulmonary barotrauma is caused by the rapid expansion of air held in the lungs, which can occur during ascents as pressure outside the body decreases. The family of Hill's diving partner, Boatswain's Mate Steven Duque, could not immediately be reached to confirm whether that was also the cause of his death.

The two died Aug. 17 about 500 miles north of Alaska, and the results of two Coast Guard investigations into the matter are not expected to be released until next year. A spokesman for the Coast Guard said Tuesday the agency was not releasing any information on the autopsy.

Hill, 31, and Duque, 22, of Miami, were shipmates on the Seattle-based icebreaker Healy, which was sailing through the region with about 35 scientists to collect data that would help them map the ocean floor. Hill was the ship`s dive officer, as well as the liaison between the scientists and the crew.

During a break in operations, she and Duque slipped into a small patch of open water near the Healy`s bow to conduct a cold-water training dive. They were tethered to the surface by ropes, lest they become disoriented under the ice, and were monitored by a support team.

Their dive plan called for them to descend 20 feet, Hill`s father said. Duque had never before gone diving in the Arctic, and only had been in a dry suit once before — while at the Coast Guard dive school in Panama City, Fla., he said.

Jessica Hill. Both Hill and Steven Duque died under mysterious circumstances during an Arctic training dive

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Administrative Investigation into the Diving Mishap and the Resulting Deaths of the USCGC Healy's Crewmembers that occurred on 17 Aug 2006

http://www.amphibtx.org/divesafe/knwbase/administrative-investigation-into-the-diving-mishap-and-the-resulting-deaths-of-the-uscgc-healys-crewmembers-that-occurred-on-17-aug-2006/

Date Released: Jan 10, 2007
Date of Accident: 17 Aug 2006

Executive Summary

In the late afternoon hours of 17 August 2006, three Coast Guard divers from Coast Guard Cutter HEALY (WAGB 20) attempted to conduct two 20-minute cold water familiarization dives at 20- foot depth during an ice liberty stop in the Arctic ice approximately 490 nautical miles north of Barrow, Alaska. After one of the divers exited the water due to equipment malfunction, the other two divers continued the dive in 29-degree Fahrenheit waters. The divers quickly descended to depths far exceeding their planned 20-foot depth, one diver descending to 187 feet and the other diver descending to at least 220 feet. Once it became evident that too much tending line had paid out to support a 20-foot dive depth, the divers were brought to the water surface. The divers were recovered with no vital signs and were pronounced dead after extensive resuscitation efforts failed.

Contributing Factors

- **Leadership** – This mishap revealed numerous departures from standard Coast Guard policy at various levels despite the availability of policy that would have prevented the loss of life. Had CGC HEALY's divers and Command Cadre followed the policies in the Coast Guard and Navy Diving Manuals they would have been in a position to identify the shortfalls in their staffing, equipment and procedures and would likely have terminated the dive or not approved it in the first place. A lack of oversight of the onboard dive program contributed to this leadership shortfall. Active utilization of Operational Risk Management would have provided a sound check on the timing, necessity, value and risk of this dive.
- **Training, Experience, and Judgment** – It is clear that the divers who lost their lives lacked an adequate combination of training, experience, and judgment to recognize and properly manage the high risk of cold water diving and failed to follow known procedures and regulations. My direction to determine the right staffing of dive units and increased training and inspection visits will focus on providing sufficient dive expertise in unit dive lockers to address this shortfall.

- **Program Management** – The dive program in the Coast Guard has not kept pace with the growth of Coast Guard missions following the terrorist attack of 11 September 2001. The number of Coast Guard dive units has expanded from 5 to 17 over the past five years. There has been no growth in dive program management or training billets, or in their seniority to accompany that expansion. The dive program needs to be elevated on par with other high risk, training intensive operations such as aviation.

Key Recommendations

- The Assistant Commandant for Operations to charter a cross-directorate study team, including dive expertise from the Navy and other recognized sources of dive expertise, to evaluate the requirements, management and policy guidance of the Coast Guard's dive program with a report out to the Chief of Staff by 1 June 2007. At a minimum, the following aspects will be covered:
  - Validation of the operational requirement for dive capability aboard Polar Icebreakers, seagoing buoy tenders, MSSTs and any other types of units currently having such capability. If such a capability is found to be warranted, identify options for fulfilling that capability aside from organic Coast Guard staff (contracted divers, divers from other agencies, etc)
  - Determination of proper mix of dive experience and training levels required at Coast Guard dive units.
  - Determination of proper staffing levels of Coast Guard dive program management at Headquarters, Area and District levels.
  - Develop a section in the Coast Guard Diving Manual that addresses command cadre oversight and management guidelines.
  - Evaluation and determination of optimal method of conducting onboard preventive maintenance of Coast Guard dive equipment. Specifically evaluate the practice of equipment exchanges versus onboard maintenance
  - Review and revise, if necessary, the Safety Survey Form to ensure a more objective process that accounts for differences in experience levels of inspectors. Include the Safety Form as an enclosure to the Coast Guard Diving Manual.
- Until such time that the dive study team reports out and final actions are determined, the following actions should commence immediately:

- The Assistant Commandant for Operations will amend and correct the existing Coast Guard Diving Manual to address the following items:
-
    - Provide comprehensive policy on cold water diving.
    - Establish standard relief process for Diving Officers.
    - Develop standard checklists for dive operations which accommodate different dive scenarios such as diving on the ship, in close proximity to the ship, and away from the ship.
    - Mandate diving pre-briefs using standardized checklists.
    - Establish clear guidance for units conducting dive operations outside of external emergency response capabilities.
    - Correct discrepancy in guidance regarding diving recertification after qualifications lapse beyond six months, but less than 12 months.
    - Emphasize that ORM shall be used prior to conducting dive operations.
    - The Assistant Commandants for C4IT and Operations to investigate compatibility issues between the Coast Guard Standard Workstation 111 and the Navy Dive Reporting System.

The Complete report can be downloaded at: http://www.uscg.mil/foia/healy/healy_fam.pdf

Exclusive: Coast Guard Deaths Were Preventable

http://abcnews.go.com/US/story?id=2790767
Jan. 12, 2007 BY **CLAYTON SANDELL**

A report released today sheds new light on the mysterious deaths of two U.S. Coast Guard divers killed during a training dive in the Arctic last summer. According to the report, the divers may have carried too much weight that they could not easily jettison in an underwater emergency.

Coast Guard investigators said the tragedy was preventable and resulted from a "failure" of the command staff and dive team to "properly plan for and execute" a standard cold water dive.

"We are totally committed to doing everything possible to ensure this tragedy is never repeated," said Real Admiral David Pekoske, the Coast Guard's assistant commandant for operations.

Thirty-one-year old Lt. Jessica Hill and 22-year-old boatswain's mate Steven Duque were killed Aug. 17, 2006, during what was supposed to be a routine training dive. The deaths -- the first Coast Guard diver fatalities in 30 years -- occurred about 500 miles north of Barrow Alaska. The divers were assigned to the Coast Guard icebreaker Healy.

'Numerous Violations'

The report cited "numerous violations of [Coast Guard] and Navy diving manuals," including inadequate preparation, improper use of the diving equipment, inadequately trained diver tenders, and a failure to ensure proper supervision and " redundancy " of the "dive capability in case of emergency."

Each of the divers carried approximately 60 pounds of weight-- twice the recommended amount-- in the pockets of their buoyancy compensation devices, or BCDs, the report says. The BCD provides neutral buoyancy underwater, using a combination of air pockets and weights.

Hill and Duque "filled not only the weight pockets but also the equipment pockets of the BCD. Thus, much of the divers' weight could not be easily jettisoned," the report says.

Soon after beginning the dive, Hill and Duque rapidly descended as much as 220 feet, according to the report. Dive tenders on the surface, who monitored ropelike lines connected to the divers, became concerned that too much tending line was being let out too quickly. They brought the divers to the surface at 6:48 PM. Despite efforts to resuscitate them, both divers were pronounced dead at about 8:00 PM.

An autopsy found the cause was a "lack of oxygen with severe air pressure damage to the lungs," according to the report, which notes that Hill and Duque were still carrying all the weight they had when they started the dive. "The amount of weight used by the two divers is considered excessive," said Rear Admiral Paul Higgins in a statement released by the Coast Guard. Higgins is the Coast Guard's director of health and safety.

Higgins said that experienced divers typically wear 20 to 30 pounds of weight, but that Hill usually dove with about 50 pounds of weight, perhaps because of a rapid uncontrolled ascent to the surface she had experienced a year earlier.

Harsh Words for Command Staff

The report notes that neither diver wore weight belts, as required. In addition, the investigation found that not enough qualified dive staff was on hand during the dive. The dive tenders, for example, were not qualified.

But the report also has harsh words for the Healy's command staff. The ship's captain, executive officer and operations officer "failed to exercise leadership and supervision expected," in the words of the report.

"Their actions demonstrated a lack of knowledge of the Coast Guard's dive program, and a lack of knowledge and disregard for the high level of risk of cold water diving," investigators found.

The ship's captain, Cmdr. Douglas Russell, was removed from command shortly after the incident.

"These unfortunate deaths were not caused by a single decision, or the failure of a single person or entity," said the Coast Guard's Pacific Area commander, Vice Admiral Charles Wurster. "We have learned many things from this accident. In years to come, when we look back on this tragedy, it will, without question, be seen as the distinct and positive turning point in the Coast Guard dive program."

In a statement, Hill's family said that "no one failure can be blamed, but each contributed to a series of events resulting in a tragic loss to the families, friends and the Coast Guard. Their deaths will not be in vain if the actions proposed by the Coast Guard resulting from this investigation are implemented and no other family will go through what we have experienced."

Scathing report on fatal dive

http://www.seattlepi.com/local/article/Scathing-report-on-fatal-dive-1225252.php
January 12, 2007 By MIKE BARBER, P-I REPORTER

Coast Guard gets partial blame in tragedy

On a day when everything seemed so right, everything went so wrong. Aug. 17 was a sunny polar day when shortly after 6 p.m., Coast Guard Lt. Jessica Hill and Boatswain's Mate Steven Duque descended into the 29-degree Arctic Ocean. It was to be a familiarization scuba dive in cold water during a festive "ice liberty" granted the crew and scientists by the skipper of the Seattle-based icebreaker Healy.

Around the diving site were frivolity and relaxation as the crew of 84 and 35 scientists celebrated mission's end with football, strolls, photographs and approved cans of beer. Some even violated the executive officer's direct order against polar bear plunges, jumping into the chill water within 30 feet of the divers -- the skipper nonplused watching nearby.

To help with the diver's lifelines, Hill recruited a few crew members partying nearby as "dive tenders." They had no training or experience in the work, so she gave them an informal briefing. Two of the tenders had been drinking. She and Duque entered the water at 6:10 p.m. for what was to be a 20-minute, 20-foot-deep dive.

One tug means "OK," she had told the tenders. One tug upon descent, however, according to the Navy Dive Manual, the bible for military divers, also means "stop." None of the tenders remembers her telling them that. It probably will never be known what Hill meant when her tender felt her first pull, according to a detailed Coast Guard investigation released Friday in Seattle by a panel of admirals.

Hill, 31, of St. Augustine, Fla., and Duque, 22, of Miami, each loaded with too much weight and their buoyancy equipment incorrectly installed, died. They had descended uncontrollably, Hill to 187 feet and Duque to nearly 220 feet, the investigation found.

Safety regulations were either violated or non-existent, and there were judgment lapses across the board, from the Healy's captain and senior officers to the divers themselves and throughout the Coast Guard, a bluntly worded report, the Commandant's Final Action Memo, said Friday. The investigation found no criminal wrongdoing.

Vice Adm. Charles Wurster, commander of the Coast Guard's Pacific Area, who fired the Healy's skipper, Capt. Douglas Russell after the accident, released the findings at Pier 36, home of Coast Guard Sector Seattle and the nation's polar icebreakers.

"The investigation uncovered a chain of events and decisions which, had any link been broken, this tragedy would not have occurred," Wurster said. Russell and the executive officer and operations officer, who were not identified, each received punitive letters of reprimand.

Although it might not sound like much, such letters are career enders, especially for Russell. Wurster said the other two officers remain on the Healy in part because absolute authority rested with Russell.

Wurster, based in Alameda, Calif., was joined in Seattle by officers from Washington, D.C., Rear Adm. David Pekoske, assistant commandant of Coast Guard operations, and Rear Adm. Paul Higgins, a physician and director of the U.S. Public Health Service's health and safety directorate.

The Coast Guard's chief of staff told Hill's and Duque's families about the report.

Hill's family said in a statement that the report "answered many questions" and agreed that the deaths were "a failure" of the Coast Guard, the Healy's command staff and the dive team.

"Their deaths will not be in vain if the actions proposed by the Coast Guard resulting from this investigation are implemented and no other family will go through what we have experienced," Hill's family said.

The report portrays a lax, informal, almost casual atmosphere surrounding the Coast Guard's entire dive program, which had grown so fast, from five units to 17 nationwide in five years, that current policies are "inadequate to properly guide and manage" the program.

The Healy's festive "ice liberty" seems a metaphorical backdrop for what the admirals called the "error chain." On the Healy, investigators found no safety survey of the dive program had ever been conducted, and no discernible records since 2002 for preventive maintenance on dive equipment were found.

The report blistered the Healy's "command cadre," Russell and the unidentified executive and operations officers. Together, they "failed to exercise leadership and supervision expected in command afloat. Their actions demonstrated a lack of knowledge of the Coast Guard's dive program and a lack of knowledge and disregard for the high level of risk of cold-water diving," the report said.

Hill shared in the responsibility, the report said.

Planning to leave the service in February, she was intent on imparting her skills and training to other divers the Coast Guard has sorely needed since 9/11.

However, twice when informally asked whether her dive plan for Aug. 17 met standards, Hill told Russell and the operations officer it did. A check by either senior officer would have shown she was wrong, the report said.
On the day of the dive, the area was not cordoned off from ice liberty revelers. The site was 60 feet off the port bow of the Healy but out of view of the pilothouse. There was no communication link between the dive team and wheelhouse.

Hill and Duque had not taken part in the ice liberty and hadn't been drinking before the dive.

As Hill and Duque slipped into the water and their tethers began to spin away, the untrained dive tenders at first thought they might still be at 20 feet but swimming under the ice, Pekoske said.

The report then describes a scene of increasing confusion and chaos, as the divers' lines sank faster and faster and the novice diver tenders grew increasingly confused and alarmed, before some ice-liberty revelers took notice and ended the party, pitching in to help.

They pulled the divers up at a rate of a foot a second. Duque and Hill were first spotted, unconscious, at about 40 feet. They were never revived. An autopsy found both divers died from lack of oxygen with severe air pressure damage to the lungs, including possible air bubbles in the circulatory system.

Duque had never done a cold-water dive. Hill, who had done seven previously with surface-supplied air through a hose, had never before done a cold-water scuba dive, the report said. Neither Hill nor Duque wore weight belts that could be easily jettisoned. Instead, they jammed weights into whatever pockets and pouches they had. Each carried at least 60 pounds ballast, with their tanks, instead of the 20 to 30 pounds most divers recommend, the report said.

The investigation also found that Hill's diving certificate had lapsed. The Healy's previous commander in April signed one, but of the four dives in six months Hill was to have made to requalify for her certification, two were later found to have been recreational, so they didn't count, the report said.

Staffing and death on the Healy

http://www.seattletimes.com/opinion/staffing-and-death-on-the-healy/
February 20, 2007 By Neal Amaral

Since its inception in 1790 as a tariff collection service, the United States Coast Guard has seen its workload multiply exponentially. If ever there was a book written about how to do so much with so little, Coasties probably wrote it.

Until recently, there were more New York City police officers than active duty Coast Guard. No other military service tasks its members more. That is why any further attempt by the world's premier maritime service to rely on smaller crews needs to be met with serious oversight and intellectual ambivalence.

Lt. Jessica Hill and Petty Officer Steven Duque on the day of their fatal dive 500 miles north of Barrow Alaska.

Lt. Jessica Hill was assigned to the Coast Guard icebreaker Healy when she and her diver, BM2 Steven Duque, perished in a dive accident last August. It is clear to me now why the Coast Guard took so long to release the results of its investigation. So many things went wrong on so many levels — beer, negligence and dereliction of duties.

The Coast Guard as an organization took some responsibility as well, which I salute. Curiously though, it did not mention the Healy's minimal crew allowance, which tragically took multitasking to an unsupportable level.

The Healy is a state-of-the-art icebreaker, with touch-screen navigation systems and computerized propulsion. It is the newest icebreaker in the Coast Guard, but unlike its sister ships, Polar Star and Polar Sea, the Healy is a science platform first, icebreaker second. It plays host to a greater number of Arctic scientists than the Coast Guard has ever accommodated before. Hill was the marine science officer in charge of executing every last detail of Healy's unprecedented science missions from start to finish, including science-support diving. Unfortunately, that's not all she was asked to do.

A bare-bones crew on the technologically advanced Healy makes perfect sense, except that there must be enough qualified people to drive it. Hill at one point drove the Healy three times a day for four-hour stretches, every day. As if that weren't enough, she also performed the duties of dive officer, assistant operations officer, morale officer and civil-rights officer.

The Coast Guard was correct to cite her inexperience in ice diving. But like her death and that of her diver, her inexperience was "preventable."

When I departed the Healy in 2004, no one in command quite understood the magnitude of Hill's responsibility. As her predecessor who worked for the same supervisors, who incidentally were not part of the reprimanded cadre, I was similarly overtaxed. I broke my silence when I was asked to supervise crew parking on top of all my other duties, which included training my divers and myself.

Hill should have been allowed to train her divers in accordance with the Coast Guard's own manual as well, not taxed with other obligations like organizing Casino Night.

But she does bear some responsibility for what happened in the Arctic Circle last August to her and Duque. After all, she spent four months at one of the world's most elite dive schools in Panama City, Fla., learning how to dive and supervise a dive. The U.S. Navy Dive Manual is thick for a reason: Diving is serious business.

Hill reported aboard the Healy in the best shape of her life because Arctic science diving requires it. Her experience in the ice, however, was limited by the amount of time her superiors gave her to gain experience.

As Healy's third dive officer, Hill was not allowed to effectively perform her duty as dive officer, as evidenced by the fact she had to record recreational dives completed on personal time for military qualification purposes.

I was forced to do something similar. Oftentimes, I placed my divers in a rescue chamber and pressurized it just to keep my certification and my divers' current. Other operational priorities always prevailed at the cost of Healy's dive locker.

Lower ranks perform the duties on other Coast Guard ships that Hill and I were asked to perform on the Healy. If this is not addressed locally on the Healy, the world's largest non-nuclear icebreaker, the preventable is probable.

Coast Guard officials must also analyze their decision to use fewer crew members. Otherwise, the beer consumed that August day will cloud the No. 1 reason why two of my fellow divers dove for their country for the last time.

Neal Amaral

Neal Amaral, a lieutenant in the Coast Guard Reserve, was Lt. Jessica Hill's predecessor as marine science officer, dive officer and officer of the deck on the Coast Guard cutter Healy. He lives in Seattle and is a fast-ferry captain working for the Navy.

Coast Guard report cites long list of mistakes that led to deaths of divers from icebreaker

http://www.professionalmariner.com/March-2007/Coast-Guard-report-cites-long-list-of-mistakes-that-led-to-deaths-of-divers-from-icebreaker/
Mar 28, 2007 DAVID TYLER

A series of mistakes in leadership, training and judgment led to the deaths of two U.S. Coast Guard divers from the U.S. Coast Guard Cutter *Healy* during a dive under the ice 500 miles northwest of Barrow, Alaska, according to a Coast Guard report on the accident.

The vessel's three top officers were found to be in dereliction of duty at an admiral's mast held on Jan. 11. The commanding officer and operations officer received letters of reprimand. The executive officer received a letter of admonition. Pay forfeitures for the commanding officer and operations officer were suspended.

Since the deaths, the Coast Guard has suspended all polar diving without prior approval from the Pacific Area Command, according to Lt. Cmdr. Glynn C. Smith, spokesman for the Pacific Area.

On Aug. 17 Lt. Jessica Hill, 31, and Petty Officer 2nd Class Steven Duque, 22, died during a cold-water dive from *Healy*. The 420-foot icebreaker had been on a research mission and stopped for the first time in a month on that day. Both died of asphyxia and injuries caused by expansion of air held in their lungs while they ascended. In such circumstances, the expanding air ruptures air sacs in the lungs and air bubbles form in the blood.

The Coast Guard report on the *Healy* investigation issued by Adm. Thad W.

Allen, the Coast Guard commandant, on Jan. 10 highlighted oversight failures at every level and numerous departures from standard policy. A combination of shortcomings and "a lengthy error chain" meant the accident was not prevented; but no single person caused it, according to Vice Adm. Charles Wurster's statement at a Jan. 12 press conference in Seattle, where *Healy* is based. Wurster is the Coast Guard's Pacific Area commander.

The report depicted a poorly planned and executed dive, which took place while many other crewmembers were drinking beer and hard lemonade and playing football as part of approved liberty.

Those involved in liberty wandered in and out of the dive site, which was about 60 feet forward of *Healy*'s bow. The dive area was not cordoned off, as required by the Navy Diving Manual, which is used along with the U.S. Coast Guard Diving Manual. There was no dive log, no time kept at the dive site and the Navy Dive Manual was not at the site, contrary to regulations.

The dive tender responsible for Hill drank one beer before the dive. Another dive tender assigned to conduct equipment checks and clip on Hill's tending line drank three beers. The rule for ship's liberty is two beers per person, but no record was kept of how much alcohol was distributed or who drank it.

Hill made a mistake in telling the four dive tenders the line-pull signals just before the dive. According to three of the tenders, Hill told them that one pull during the descent meant "OK." In fact, one pull during decent by the diver or tender means "stop" according to the Navy Dive Manual. It was an informal brief with no checklist and no assessment of the dive's risk.

Three divers were at the ice's edge at about 1804. All divers wore a single tank with 100 cubic feet of air at standard temperature and pressure, which meant they had no backup SCUBA equipment in the case of an emergency, contrary to Navy dive regulations.

Hill and Duque wore split fins, which are designed for speed and provide minimal thrust. None of the divers wore weight belts, as required, which allow for getting rid of weight in an emergency, and two had more weight than was needed for their body sizes. There was no diving supervisor or standby diver on the surface.

Due to technical problems, the third diver left. Duque complained of cold hands and glove problems, so he and Hill changed the signal for OK from making a circle with the thumb and fingers to a thumbs-up sign.

The dive plan specified that on the first dive, divers would go to 20 feet. Shortly after the divers submerged, the tenders could not see them. As Hill descended, her dive tender gave several single pulls, which he thought was asking Hill if she was OK. He felt a single pull after each of his pulls, which he thought was Hill confirming she was OK.

Hill's tender observed that both divers' lines played out quickly. When he saw her line was close to played out, he stepped on it. About 2 to 3 minutes after the divers submerged, Duque's tender noticed the line sped out forcefully.

At about 1835, the third diver returned, and saw the tenders were concerned. They said there had been no pulls recently.

A senior crewmember nearby recommended the divers be retrieved. At 1845, the tenders began to pull the divers up; when they came into view at 40 feet, both appeared unconscious. Attempts to resuscitate them were unsuccessful.

According to depth gauges, Hill descended to 187 feet and Duque went to about 220 feet. It is likely that both divers lost consciousness before or during the ascent, according to the report. Duque's air tank was depleted and Hill's pressure was so low it was essentially empty.

United States Coast Guard
U.S. Department of Homeland Security

All Hands Messages

Commandant's All Hands – Final Action on CGC HEALY MISHAP

https://www.uscg.mil/history/allen/messages/message6.pdf

To the men and women of the Coast Guard:

On 17 August 2006, we lost two of our shipmates assigned to CGC HEALY, LT Jessica Hill and BM2 Steven Duque, in a tragic diving accident in the Arctic. There are valuable lessons to be learned by all of us regarding leadership, risk management, training and program oversight that apply to all Coast Guard operations. Therefore, I am directing all personnel to read my entire report. To help ensure public access to the report on the Internet, Coast Guard members with access to a CG Standard Workstation should view my report posted on CG Central at: (http://cgcentral.uscg.mil). Anyone without CGSW access can view a copy of the same report online at: [http://www.uscg.mil/foia/uscg_healy.asp].

Consistent with my commitment to the families of LT Hill and BM2 Duque, each family was provided a copy of my report and has been personally briefed by the Coast Guard Chief of Staff, VADM Papp, earlier this week. We once again express our deepest sympathies as the entire Coast Guard continues to mourn the loss of these two dedicated, hard working individuals.

Please keep them, their families and the HEALY crew in your thoughts and prayers. I understand that there is nothing which will make up for the loss of

LT Hill and BM2 Duque. We will honor our lost shipmates by taking timely action, at all levels, to improve our dive program.

In addition to this administrative investigation, a Commandant's Vessel Safety Board has been convened to prevent any similar mishap in the future. Its work is ongoing. The results of that mishap analysis will be disseminated via ALCOAST upon its completion in the coming months.

Concurrent with the public release of this investigation today, the Pacific Area Commander, VADM Wurster, is briefing HEALY crewmembers and the media in the cutter's homeport of Seattle. As the convening authority, VADM Wurster has taken action to hold HEALY's Commanding Officer, Executive Officer and Operations Officer accountable for failing to meet their personal responsibilities surrounding this mishap.

This is a brief summary of what occurred. In the late afternoon hours of 17 August 2006, three Coast Guard divers from HEALY attempted to conduct two, 20-minute cold water familiarization dives at 20-foot depth during an ice liberty stop in the Arctic ice approximately 490 nautical miles north of Barrow, Alaska. After one of the divers exited the water due to equipment malfunction, the other two divers continued the dive in 29- 1 degree Fahrenheit waters. The divers quickly descended to depths far exceeding their planned depth, one diver descending to 187 feet and the other diver descending to at least 220 feet. Once it became evident that too much tending line had paid out to support a 20- foot dive depth, the divers were brought to the water surface. The divers were recovered with no vital signs and were pronounced dead after extensive resuscitative efforts failed. Final autopsies report cause of death for both LT Hill and BM2 Duque as "Asphyxia with pulmonary barotraumas with possible air embolism" (lack of oxygen with severe air pressure damage to the lungs, including possible air bubbles in the circulatory system).

The bottom line is that this dive should have never occurred. The investigation revealed numerous departures from standard Coast Guard policy that should have precluded diving under the circumstances. Had HEALY's Commanding Officer, Executive Officer, Operations Officer and dive team followed policies established in Coast Guard and Navy Diving manuals, they would not have permitted diving operations.

HEALY had only two qualified and current divers that day; this dive evolution required at least three qualified and current divers, and one qualified Dive Supervisor not actually diving. Additionally, the Diver Tenders were not qualified. Despite these problems, the dive plan was approved by the Commanding Officer without a pre-brief, an operational risk assessment or any medical evacuation plan, as required by Coast Guard and Navy policy.

A critical factor in the loss of the divers was that neither diver wore a weight belt, as required by the Navy Diving Manual. Instead, both divers carried

approximately 60 pounds of weight in the pockets of their buoyancy compensation devices (BCD), approximately 2-3 times more weight than normally used by experienced divers in similar cold water and ice dive conditions. The BCD has pockets to carry and, if necessary, jettison weight.

However, LT Hill and BM2 Duque filled not only the weight pockets, but also the equipment pockets of the BCD. Thus, much of the divers' weight was not easily jettisonable. Although LT Hill had some experience diving in the Arctic, this was her first SCUBA dive in the Arctic. This was BM2 Duque's first cold water dive.

Adding to the risk of the operation, the ship was holding "ice liberty" at the same time, and in close proximity to the dive evolution. The ice liberty included "polar bear plunges," football and consumption of both alcoholic and nonalcoholic beverages. Neither LT Hill nor BM2 Duque consumed alcohol prior to diving.

The deaths of LT Hill and BM2 Duque were preventable and resulted from failures at the Service, unit and individual levels. The investigation revealed failures in leadership within the chain of command aboard HEALY, as well as numerous departures from standard Coast Guard policy. Had a proper risk assessment been conducted, this tragedy could have been avoided. As a Service, we failed to exercise sufficient programmatic oversight of the dive program, including failures to adequately staff our dive units and conduct annual dive safety surveys. This mishap further highlighted our need to improve dive expertise in unit dive lockers and address shortfalls in dive program policy, guidance, training and experience. As a result, we will elevate program management on 2 par with other high risk, training-intensive operations such as aviation. A comprehensive list of the corrective actions I have ordered, including those that have been completed, is contained in my report posted online.

We cannot prevent every Coast Guard casualty. Despite the professionalism, bravery, and dedication of our workforce, in rare cases we suffer a serious injury or death in the line of duty. As Coast Guard men and women we accept that risk, but we will not accept preventable loss or injury. This tragedy has prompted us to re-examine our dive program to ensure it is as well managed and safe as such inherently dangerous operations allow. The safe conduct of Coast Guard training is fundamental to Coast Guard readiness. Without it, there can be no successful Mission Execution. When it comes to dangerous operations such as diving, "good enough" is never good enough. We can do better.

We will do better. The sacrifices LT Hill and BM2 Duque made in service to their Nation will never be forgotten. Their loyalty and dedicated service will forever be appreciated by the U.S. Coast Guard.

Admiral Thad Allen 3

S. Hrg. 110-1068

THE FUTURE OF THE COAST GUARD DIVE PROGRAM

https://www.gpo.gov/fdsys/pkg/CHRG-110shrg35992/html/CHRG-110shrg35992.htm
[Senate Hearing 110-1068]
[From the U.S. Government Printing Office]

S. Hrg. 110-1068

THE FUTURE OF THE
COAST GUARD DIVE PROGRAM

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HEARING

before the

SUBCOMMITTEE ON OCEANS, ATMOSPHERE, FISHERIES, AND COAST GUARD

OF THE

COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

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MARCH 28, 2007

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Printed for the use of the Committee on Commerce, Science, and Transportation

U.S. GOVERNMENT PRINTING OFFICE

35-992 WASHINGTON : 2010

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C O N T E N T S

THE FUTURE OF THE COAST GUARD DIVE PROGRAM

WEDNESDAY, MARCH 28, 2007

U.S. Senate,
Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard,
Committee on Commerce, Science, and Transportation,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10 a.m. in room SR-253, Russell Senate Office Building, Hon. Maria

Cantwell, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. MARIA CANTWELL,
U.S. SENATOR FROM WASHINGTON

Senator Cantwell. This Senate Committee on Commerce, Science, and Transportation Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard will come to order. This morning we are holding a hearing on the future of the Coast Guard dive program, and I want to welcome the witnesses that we have before us.

Rear Admiral Justice, who is Assistant Commandant for Response for the U.S. Coast Guard, Rear Admiral Higgins, Director of Health and Safety for the U.S. Coast Guard, and Rear Admiral Tillotson--did I say that right? Tillotson, Director, Deputy Director for the Standing Joint Force Headquarters of the North for U.S. Navy. So, welcome gentlemen.

Thank you very much for being here.

I know I'm going to be joined momentarily by Senator Snowe, and I will--when she comes--allow her to make her opening remarks, and hear from other Committee members, if and when they show up for the hearing, as well.

Thank you all for being here, and I want to thank my colleague, Senator Snowe, for agreeing to this timeframe for this important hearing on the Coast Guard dive program. And again, I thank the witnesses for coming and giving what is important testimony for a very important program within the Coast Guard dive system.

On August 17, 2006, Lieutenant Jessica Hill and Petty Officer Steven Duque lost their lives while conducting a training dive off the polar icebreaker, HEALY. My office has spoken with the families of Lt. Hill and Petty Officer Duque. We shared with them our sadness over their loss, and told them that we believe the death of these brave young people will not be in vain if they result in the needed changes to the Coast Guard dive program, in order to save future lives.

Petty Officer Duque's family would like everyone to know that today is his birthday. While this is not by design, his family feels that it is fitting, given his love for the Coast Guard and the fact that he would do anything to protect his fellow servicemen and servicewomen.

Let us be clear--this tragic incident, and these tragic deaths were preventable. While there is plenty of blame to go around, the honest truth is that the Coast Guard dive program was an accident waiting to happen. We owe it to the young divers who lost their lives, and to their families, to understand the cause behind--or causes behind--this tragedy, and make sure that this never happens again. We owe it to them to make sure that there is real accountability and real change in the program.

Diving is a risky activity, so I want you to know that while diving has been deemed a risky activity, I believe it also has been consistently neglected or ignored within the Coast Guard system.

That people were allowed to consume alcohol so close to a dive operation, and even serve as line tenders for those operations, tells me that the Coast Guard does not put safety first when it comes to this diving program. In diving, safety must be the first consideration. I expect the Coast Guard to convince me today that it will be in the future.

In the Coast Guard, diving is not considered a full-time job, instead it is a collateral duty, and regulated to secondary status. This tells me that the Coast Guard feels diving is not as important as other programs. But, this is dangerous duty, and requires full-time, professional attention. If the Coast Guard feels it needs a dive team aboard polar icebreakers, it needs to be sure that those divers are prepared for the challenges that they will face.

Diving is particularly hazardous in Arctic conditions, and is very risky. I don't understand how we can expect our young men and women to perform their mission safely, when they don't have the time or resources to devote to training, practice and maintenance of equipment. Collateral duty simply won't do in this case.

It is clear from the Commandant's January 10, 2007 final accident report that the Coast Guard's dive program has suffered from a culture of neglect.

For example, the required diving program safety surveys had never happened aboard the HEALY before this incident. The Coast Guard hasn't kept accurate records of its dive program, especially equipment and safety checks, and much of the equipment in the HEALY's dive locker was not functional.

The Dive Program has tripled in size post-9/11, but the number of managers has remained the same, and no additional funding has been requested. Coast Guard divers have little incentive to get advanced training or accumulate experience--two of the biggest factors in safe diving. In fact, the Coast Guard does not have a single Master Diver, and only has one First Class Diver.

It is clear from the HEALY accident that the Coast Guard's program to train divers and other key operational personnel must be improved. The Coast Guard divers are initially trained in a rigorous Navy Dive School, but once they pass their initial training period, they have little chance to maintain or sharpen their skills, unlike Navy Divers.

For example, Coast Guard divers are not required to obtain specialized training for cold water conditions. Expecting a diver trained in the warm waters of Florida, to dive professionally in 29 degree water for the first time on a mission, is simply asking too much.

It is also apparent that the officers aboard the HEALY lacked sufficient knowledge of diving protocols, which would ensure safe operations.

The safety of the Coast Guard dive program will remain a priority of this subcommittee. I understand that the Coast Guard plans to release their report on how they will implement the changes required by their initial review of the accident.

I want all of you to know that we will be watching this

closely, and while the Coast Guard has investigated this incident carefully, and recommended improvements, this subcommittee will continue to conduct oversight on this issue, and offer legislation to improve this program.

I sincerely hope this hearing will shed enough light on the Coast Guard dive program so that we can fix the mistakes of the past, and protect the Coast Guard's present and future divers.

The families of Lt. Hill, and Petty Officer Duque deserve no less. So, again, I want to thank each of you for being here this morning, and for giving your testimony on this important, and very serious issue for this subcommittee.

What we will do this morning is, I think votes have been delayed this morning, but at the same time, I think what we will do is have, you know, as much time as you gentlemen need to express your comments and remarks about this incident. Then Senator Snowe and I will go to rounds of questions, depending on how many other colleagues--we may do 5-minute rounds if we're joined by other people, or if it's just Senator Snowe and I, I might start with longer rounds of questioning.

So, with that, Senator Snowe, I know you've just arrived, but if you would like to make an opening statement before we go to the witnesses.

STATEMENT OF HON. OLYMPIA J. SNOWE,
U.S. SENATOR FROM MAINE

Senator Snowe. Thank you very much, Madame Chair, for calling this hearing this morning to explore the future of the Coast Guard's dive program, and more specifically to review the policies currently being developed to increase oversight of this inherently dangerous specialty of the Service.

We are all aware of the tragic events that claimed the lives of two crewmembers of the Coast Guard icebreaker HEALY on August 17, 2006, and I'd like to express my deepest condolences to the families of Lt. Jessica Hill, and Petty Officer Steven Duque.

While it's inexcusable that such a tragedy had to occur to expose the cracks that had developed in the foundation of the Coast Guard's dive program, in its aftermath, I know that Senator Cantwell and I pledge to do everything in our power to minimize the possibility of such an incident occurring again.

I'd also like to thank Admirals Justice and Higgins for being here today to share with us how the Coast Guard intends to revive this dive training, both for the divers and for shipboard command cadres to ensure that future missions are treated with the same level of caution and gravity as are the Coast Guard's other high-risk missions, such as aviation and rescue swimming.

I'd also like to thank Admiral Tillotson for being here today to discuss how similar operations are handled in the Navy.

The Coast Guard has relied on divers to carry out elements of its mission since 1940, and until last August they experienced only a single fatality, in 1974. However, in a series of events to take on additional homeland security responsibilities following the attacks of September 11, its dive program grew

from a total of five teams to seventeen. There are clear risks inherent in expanding capability, and building experience concurrently, which is what the Coast Guard was compelled to do in this instance.

Experience and oversight are complementary, and as one dissipates, the other must increase. Tragically, in the case of the Coast Guard diving specialty, this did not occur.

While the program expanded significantly, only one additional person was added in an oversight capacity. Naturally, inspections and policy development fell behind in lieu of mission execution.

I've served on this subcommittee for more than 12 years, and during that time I've developed an understanding for the culture under which the Coast Guard operates. When issued a new task--no matter the magnitude--the immediate reaction among servicemen and women of all levels is a rousing ``can do'' spirit. Your service's reluctance to shrink from any task is what makes it so valuable to our Nation.

So I understand how the Coast Guard could increase its dive force by more than 300 percent, and choose to allocate nearly all of that personnel increase to the front-line of our national security, rather than holding some of these assets in reserve to ensure the safety of the divers themselves.

But just as we must protect our Nation's shores, we must also protect those who serve. The responsibility falls on a ship's command cadre--the program managers, the Coast Guard leadership, and ultimately, this Committee, to ensure that the management oversight is in place to keep an experienced, but highly motivated, young diver safe. And also to ensure that oversight is commensurate with a level of risk associated with diving.

I know that the Coast Guard has already initiated this process. It's working with the Navy, as it has done for decades, to develop stronger standards for diver qualifications and tighter enforcement of safety regulations. It is developing a training module for all operation officers, executive officers and commanding officers, to familiarize them with these procedures, and the dangers affiliated with dive missions.

Perhaps most importantly, the Coast Guard is taking a long, hard look--not just at the dive program, but also at the way in which it approaches all high-risk missions, to ensure that similar failings do not lead to further tragedies in the future.

I look forward to all of your testimony here this morning.

Thank you, Madame Chair.

Senator Cantwell. Thank you, Senator Snowe. And again, thank you for working with us and holding this hearing this morning.

Rear Admiral Justice, we'll start with you and move down the line.

STATEMENT OF REAR ADMIRAL WAYNE JUSTICE, ASSISTANT COMMANDANT FOR RESPONSE, U.S. COAST GUARD

Admiral Justice. Thank you. Good morning, good morning, Madame Chair, Senator Snowe.

Yes, our Coast Guard lost two service members during the tragic ice diving mishap aboard HEALY on August 17th. Although we could never recover the

lives of Lt. Hill and Petty Officer Duque, the Coast Guard has honored them, and will continue to do so by taking steps to prevent future diving accidents.

We have conducted diving operations since the forties, we have three primary diving missions: Ports and Waterways, Coastal Security--that's the newer one, Aids to Navigation, and polar icebreaking.

The events of 9/11 and subsequent mandates of the Maritime Transportation Safety Act prompted a significant expansion of the diving program into underwater security missions within our Nation's ports. The Dive Program expanded from 6 to 17 dive-capable units in just 2 years. In the immediate aftermath of the tragedy aboard the HEALY, the Commandant made a commitment for a complete and transparent investigation, regular, face-to-face briefings to the Hill and Duque families, and public release of the investigation, once completed. The administrative investigation was completed and released to the public in January of 2007.

Members of the Committee--the remainder of my statement will focus on the proactive steps the Coast Guard has taken, and the future steps the Coast Guard will take, to ensure this tragedy is never repeated.

Immediately after the deaths on HEALY, dive operations Coast Guard-wide were suspended until each unit had conducted a safety stand-down to review Coast Guard dive policies and procedures. We then inspected all dive units that had not received an inspection within the preceding 12 months. Those inspections revealed a Service dive program that was fundamentally sound, well-documented, and within--with divers properly trained in 15 out of 17 dive units. One of those Units--HEALY itself--was found deficient. HEALY has not yet been cleared to dive, and is still months away from resuming dive operations.

Another shore-based unit was found not ready to dive, and has completed a series of training, equipment, and policy improvements, and has now been re-certified to conduct diving operations.

Last November, POLAR SEA was scheduled to deploy to the Antarctic with a dive team embarked for Operation Deep Freeze 2007. In advance of that deployment, the POLAR SEA successfully completed a rigorous safety inspection, followed by a week of pre-deployment work-up dives, and training provided by Coast Guard personnel.

Additionally, an experienced dive advisor was temporarily assigned to board POLAR SEA for the Commanding Officer to ensure an independent and thorough assessment of any dives undertaking by POLAR SEA during the extended deployment in the ice. I will report that the POLAR SEA successfully completed 26 dives, both in training and for operational needs, without mishap.

The Commandant has directed management and oversight of the Coast Guard dive program be elevated to bring it up to par with other high-risk training-intensive Coast Guard operations. The Coast Guard has increased the seniority of the Program's manager, and will be adding an additional senior enlisted diver to the staff.

Additionally, operational Dive Program managers have already been established in both of our areas--East and West Coast, and in Hawaii--to

better track the readiness, qualification, and training of the dive units in the field.

The Commandant further directed a comprehensive review of the entire diving program, to determine the best way to meet the Coast Guard's requirements for diving services. The first half of this was to validate the Coast Guard's operational requirements for a diving program to accomplish its missions.

Senators, the Coast Guard does require a safe, effective Dive Program to complete its missions. A senior-level review team has been formed, including expert consultants from the Navy, the Army, NOAA and Smithsonian Institute, to evaluate the requirements, management training, structure and policy guidance of the Coast Guard's dive program, and to recommend a way forward. Its final report is expected 1 June of this year.

We anticipate that the review team will recommend structural changes to the Dive Program, including a move away from part-time divers to full-time divers, as well as improved training for divers employed in specific missions, such as polar ice diving.

The Coast Guard dive manual is being revised to include comprehensive policy on cold water diving, to re-emphasize the use of standard operational risk management for planning and conducting Coast Guard dive operations.

Unit commanding officers who are not qualified divers have been given more tools to ensure that the dives are properly planned, conducted, and documented. The Coast Guard has added specific checklists for diving conditions at the ship, near to the ship, or from a small boat. Standards for re-qualification dives have been clarified, the standard relief process for unit Diving Officers have been added to ensure unit Commanding Officers are fully aware of the status of dive teams at their unit.

While we cannot prevent every casualty, the Coast Guard strives to minimize hazards through sound judgment, planning and risk management. Despite the professionalism, bravery and dedication of our workforce, in rare cases, we suffer serious death or injury in the line of duty, as unfortunately, as you noted, we did last weekend up in Seattle.

As Coast Guard men and women, we accept that risk, but we will not accept preventable loss or injury. When it comes to dangerous operations such as diving, ``good enough'' is never good enough.

Across the Coast Guard, we will honor Lt. Hill and Petty Officer Duque through the actions we are taking at all levels to prevent a tragedy such as this from occurring in the future. This concludes my statement, thank you for the opportunity to testify today. I look forward to your questions.

[The prepared statement of Admiral Justice and Admiral Higgins follows:]

Joint Prepared Statement of Rear Admiral Wayne Justice, Assistant Commandant for Response and Rear Admiral Paul Higgins, Director, Health and Safety, U.S. Coast Guard

Good morning Madam Chairwoman and distinguished members of the Committee. This is a joint statement of Rear Admiral Wayne Justice,

Assistant Commandant for Response, and Rear Admiral Paul Higgins, the Director of the Health and Safety Directorate, at U.S. Coast Guard Headquarters. We appear before you today to discuss the Coast Guard's diving program, lessons learned from the accident onboard CGC HEALY, and the steps taken to prevent future diving accidents.

Overview of Diving Program

The Coast Guard has conducted diving operations since the 1940s. Early diving missions included Aids to Navigation (ATON) and Polar Icebreaker Support. Recently, however, the events of September 11 prompted a significant expansion of the CG diving program.

Prior to September 11, there were only 6 dive capable units (3 Pacific-based buoy tenders and 3 polar icebreakers). After September 11, 13 Maritime Safety and Security Teams (MSST) were created, all with a dive capability, to conduct our security mission. Presently, there are 17 units with a designated diving capability (12 MSSTs and 5 cutters).

Diving Missions

The Coast Guard has three primary diving missions. Port, Waterway, and Coastal Security; Aids to Navigation (ATON); and Polar Icebreaker and Science Support.

Port, Waterways, and Coastal Security--Coast Guard port security divers conduct routine and threat-driven underwater operations that include sweeping of piers and vessel hulls to locate, identify, and mark hazardous underwater devices. While public safety divers (those belonging to the police and fire departments) may be available for routine operations, it is likely that they will be unavailable to support underwater port security missions during a crisis.

Aids to Navigation--The Coast Guard uses divers in the Pacific region of Hawaii, Guam, American Samoa, Kwajalein, Midway Island, and Wake Island to service navigation aids that are in shallow water and beyond the reach of a cutter. Divers are the only resource with special techniques and procedures capable of conducting these operations in environmentally sensitive areas, and dive teams can be can be flown to remote locations to provide a more rapid response time than can be provided by cutters.

Polar Icebreaker and Science Support--Divers onboard the polar icebreakers provide damage control and repair capability in remote and harsh environments. Additionally, they conduct dive operations for maintenance, calibration and inspections of hull and running gear. This is particularly important to the Polar-class icebreakers due to the maintenance requirements of their complex variable pitch propulsion system. All polar divers provide science support by collecting biological samples and installing/retrieving scientific equipment.

Diver Training

All Coast Guard divers are collateral duty volunteers who are initially trained at the Naval Diving and Salvage Training Center (NDSTC) in Panama City, Florida and are graduates of either the 17-week Dive Officer course or

6-week SCUBA Diver course. Interested members typically come from junior enlisted to junior officer ranks and must pass stringent medical and physical fitness standards. Approximately 40 Coast Guard members graduate each year from the NDSTC to fill the Service's 102 collateral duty diving positions. Because of this relatively small number of positions, however, a typical diver has one diving duty assignment during his/her career.

Over the past 50 plus years of diving operations, the Coast Guard has had a nearly spotless record. Prior to the HEALY incident on August 17, 2006, the last Coast Guard death associated with dive operations was on April 17, 1974. The diver, a member of the Atlantic Strike Team, died during an incident on the Great Lakes and the cause of death remains unknown.

HEALY Lessons Learned

The incident onboard HEALY highlighted failures at the Service, unit, and individual levels. Mishaps typically involve a chain of errors that if not broken, result in an accident, and that was true in this case.

The investigation revealed a number of major systemic issues that reduced the margin available to guard against human error. The Coast Guard dive program has expanded substantially over the past several years, yet there has not been commensurate growth in oversight and management of that program from a Service--or Headquarters perspective. This is reflected in the fact that HEALY's dive program had not been inspected for compliance with Coast Guard dive safety standards since the ship was placed in service in 1999.

As a result of this tragedy, the Commandant has elevated management and oversight of the Coast Guard dive program to bring it on par with other high-risk, training-intensive Coast Guard operations. We have increased our active oversight by conducting regular, comprehensive site visits to all operational Coast Guard dive units to ensure diving gear is being properly maintained, personnel qualifications are current and standard procedures are understood and exercised. All 17 dive units have been inspected since the HEALY incident. A comprehensive review of the entire diving program is underway to determine the best way to meet the Coast Guard's requirements for diving services. Additionally, the Coast Guard Dive Manual is being revised to include comprehensive policy on cold water diving and the use of Operational Risk Management for planning and conducting Coast Guard dive operations.

Our personnel system needs the capability to track dive training and qualifications--and we need to improve our dive training program. We will ensure those assigned to diving duty receive all the training necessary to safely complete their mission and will indoctrinate command cadre and supervisory personnel by adding a training module to the Commanding Officers' indoctrination course specifically dedicated to diving operations. These courses are being taught at our Command and Operations School at the Leadership and Development Center in New London, CT.

Actions Taken Thus Far

In the wake of the HEALY incident, the Coast Guard has upgraded the

Headquarters Diving Program Manager position from a Lieutenant to a Lieutenant Commander, and has established a senior enlisted assistant manager billet. Additionally, dive program managers have been established at Coast Guard Area and District commands responsible for dive capable units to better track the readiness, qualification, and training status of these units.

In addition, a senior level work group has been formed, including expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institute, to evaluate the requirements, management, and policy guidance of the Coast Guard's diving program and recommend the way forward. Its final report is expected by June 1, 2007.

In an effort to further our understanding of how our international counterparts operate and train, a Coast Guard representative attended the International Polar Diving Workshop in Svalbard, Norway on March 15-22, 2007. This workshop is an international, interdisciplinary assessment of polar diving operations, and served as an excellent baseline against which to measure Coast Guard polar diving policies and procedures.

Immediately following the HEALY incident, a safety inspection was conducted onboard HEALY, and the cutter's dive capabilities were suspended. We also ensured all dive capable units had undergone a Dive Program Safety survey within the previous 12 months. One unit was found to be deficient in its readiness and training and was directed to suspend dive operations. Upon correcting all discrepancies, the unit successfully completed a follow-up inspection and was authorized to resume all diving operations.

The Final Decision on the Commandant's Vessel Safety Board's report is nearly complete.

The normal time-frame for completion of this type of accident investigation and report can be as much as a year or more. For HEALY, this process was accelerated and the results are expected to be released in the next several weeks.

Conclusion

The Coast Guard strives to minimize hazards through sound judgment, planning, and risk management. Despite the professionalism, bravery, and dedication of our workforce, in rare cases we suffer serious injury or death in the line of duty. As Coast Guard men and women we accept that risk, but we will not accept preventable loss or injury. When it comes to dangerous operations such as diving, ``good enough'' is never good enough. Across the Coast Guard, we will honor Lt. Hill and Petty Officer Duque through the actions we are taking at all levels to prevent such a tragedy in the future.

This concludes our statement. Thank you for the opportunity to testify before you today. We will be happy to answer any questions you may have.

Senator Cantwell. Rear Admiral Higgins?

STATEMENT OF REAR ADMIRAL PAUL HIGGINS, DIRECTOR, HEALTH AND SAFETY, U.S. COAST GUARD

Admiral Higgins. Good morning, Madame Chair, Senator Snowe.

Our deepest sympathies remain with the families of Lt. Jessica Hill, and Petty Officer Steve Duque. We are also mourning the loss of Petty Officer Ron Gill, who died while on active duty on Sunday, March 25, 2007.

I'm Rear Admiral Paul Higgins, I currently serve as the Director of Health and Safety at Coast Guard Headquarters here at Washington, D.C. I'm a family physician and a flight surgeon.

The goal of the Coast Guard Safety Program is to eliminate mishaps. We are not--we cannot--eliminate risk from Coast Guard missions. We try to learn our lessons from minor mishaps to prevent more serious mishaps. If a serious mishap does occur, two investigations are immediately convened--an administrative investigation, ordered by the unit commander, and a Safety Mishap Analysis Board. The members of the Mishap Analysis Board collect their information, data and confidentially interview witnesses. They report their findings to the Commandant's Vessel Safety Board, a Board convened by the Chief of Staff of the U.S. Coast Guard. The Commandant's Vessel Safety Board uses expert opinion, and often, outside evaluations to make very detailed recommendations to avoid future mishaps.

That process often takes over a year to complete, and the final decision letter transmitting the HEALY Commandant's Vessel Safety Board recommendations is nearly complete.

The HEALY Commandant's Vessel Safety Board issued interim recommendations on December 18, 2006. Those recommendations were transmitted via the Pacific Area Commander to the Coast Guard POLAR SEA while in transit to Antarctica.

The recommendations specified interim changes, including a Command Advisor who is an experienced ice diver, variable volume dry suit dive training, cold water training dives to Coast Guard and Navy dive standards, and regular time for training for the divers, line handlers and medical staff aboard the POLAR SEA.

The interim recommendations were completed, and the POLAR SEA is about to complete a successful 3-month mission to Antarctica. I believe it's due back to Seattle next week, it's in Hawaii now, is my understanding. On September 18, 2006, Admiral Thad Allen, the Commandant of the Coast Guard ordered a safety stand-down for all Coast Guard operational units. The stand-down required 4 to 5 hours of all-hands safety training, focusing on existing Coast Guard safety policy, crew endurance management, operational risk management, and existing standard operating procedures. In addition, a review of lessons learned from previous mishaps, and reports from recent program inspections was recommended.

Finally, units were directed to complete a web-based survey risk management factor assessment survey. Although the survey was meant to be a simple tool for operational commanders, the results of the surveys were collected and reviewed, and they were briefed to Coast Guard safety professionals March 12 and 13, 2007.

Safety concerns identified by the survey of the safety stand-down, recommended inclusion of safety policy into several operational manuals,

including the trailoring manual, motor vehicles operations manual and others. Additional training was recommended for specific units.

Other general safety improvements released since the safety stand-down of September 18, 2006, include the completion of the confined-space entry program policy, and incorporation of human factors analysis of each Commandant's Vessel Safety Board that allows for systemic identification of root and contributing causes of all mishaps.

Thank you for allowing me the opportunity to discuss our safety program. I'll be available for questions, as well.

Senator Cantwell. Thank you.

Rear Admiral Tillotson?

STATEMENT OF REAR ADMIRAL MICHAEL P. TILLOTSON,

DEPUTY DIRECTOR, STANDING JOINT FORCE HEADQUARTERS

NORTH AMERICAN AEROSPACE DEFENSE COMMAND (NORAD)

Admiral Tillotson. Good morning, Madame Chairwoman. Thank you for inviting me to speak on the Navy's dive program. The Navy is the DOD executive agent for diving. Your Navy dive program is robust and mature. All aspects of the program are continuously reviewed, and updated to meet current and future requirements. Maintaining technical standards for Navy diving serves as the foundation for personnel training, and for the procurement and maintenance of diving systems. Adherence to these technical standards and procedures lead to safe diving practices, and ensures mission accomplishment. Our standards and policies are set forth in the U.S. Navy Diving Manual)--the gold standard for diving.

Oversight is fundamental to ensuring safe and effective diving. Oversight of the Navy's diving program is maintained through periodic diving assessments and diving safety surveys, which assess a diving command's compliance with established Navy safety programs and procedures that are outlined in the Navy Diving Manual.

The Navy recently modified its diving personnel structure, with the implementation of a single enlisted Navy Diving Rating. This now allows the diver to concentrate on his or her primary responsibilities as a diver, and focus all energies on learning, and honing diving skills. This results in a more dedicated, safe and effective force.

The enlisted Navy diving community has a well-defined career path. Diver candidates must pass a rigorous screening process, that includes dive medical evaluations, physical screening, and a higher-than-average score on the Armed Service Aptitude Test.

While at Naval Training Center, Great Lakes, they are given a 7-week preparatory course prior to their transfer to the Dive School down in Panama City, Florida. Dive school begins with a 15-week, Second-Class Diver course. The course trains students in all diving rigs used by the Navy, underwater

tools and techniques, and advanced diving medicine. Attrition during this initial training historically runs about 30 percent.

During their first 2 operational tours, normally 6 years, Navy Divers are expected to complete demanding personal qualification standards, and earn the Diving and Salvage Warfare Specialist designation. Those who qualify return to the Dive School for a 13-week, First-Class Diver course, which stresses dive supervisor responsibilities, mixed gas diving, and advanced salvage skills. A minimum of two more operational tours, and advanced qualifications follow, and usually take 6 more years.

Qualified First-Class Navy Divers can apply for the Master Diver qualification. This entails additional training, and a rigorous performance evaluation. The Navy Master Diver qualification, which normally takes about 14 years to achieve from the time they enter the program, is the pinnacle qualification for the enlisted Navy diver.

Above and beyond formal training requirements, all Navy Divers are required to qualify at each command at all dive watch stations--most significantly as the Diving Supervisor.

In addition to our fleet divers, the Navy also has underwater construction team divers. Their primary missions are to perform in-shore and deep ocean underwater construction and demolition. Candidates for this diver community come from the
Naval Construction Force--the SEABEEs. They have normally completed one tour of duty, and are relatively mature. Their dive training and qualifications are similar to that of our fleet divers.

SEABEE divers can expect repeat tours in one of two underwater construction teams, as well as higher headquarters and training commands.

The Navy also delivers a SCUBA-specific diving course to DOD and inter-agency customers at the Navy Dive School in Panama City, as well as in Pearl Harbor, Hawaii. The majority of students for this program come from the Coast Guard and the Navy submarine force.

The enlisted Navy diving program is very demanding and rewarding. This, coupled with monetary incentives, results in a retention rate that exceeds the Navy's overall averages. Retention for Navy Divers in years 1 through 6 of service average 78 percent. Retention for years 7 through 12 of service is 88 percent. After 12 years, 94 percent choose to remain until retirement-eligible.

On the officer side, Navy diving officers come from two primary sources. From within the enlisted ranks, and direct commissioning. Experienced enlisted Navy Divers have the opportunity to apply for the Chief Warrant Officer, or Limited Duty Diving Officer Programs. The direct accessions, through Officer Commissioning Programs who desire to become Navy Divers, must successfully complete screening and training similar to that of our enlisted dive candidates.

Your Navy diving program follows a rigorous screening, training and qualification regimen, with senior leadership support throughout, which has led to sustained operational readiness.

I appreciate the opportunity to brief the Committee on the Navy dive program. Thank you very much.

[The prepared statement of Rear Admiral Tillotson follows:]

Prepared Statement of Rear Admiral Michael P. Tillotson, Deputy Director, Standing Joint Force Headquarters, North American Aerospace Defense Command

Thank you for inviting me to brief the Committee on the procedures, programs, and processes the Navy has in place for the management and execution of our diving program. I will also discuss the Navy's initial Dive Training Pipeline. As the next Deputy Commander, Naval Expeditionary Combat Command, among other responsibilities, I will be responsible for manning, training and equipping the Navy's operational Diving force.

The Navy dive program is robust and mature. All aspects of the program are continuously reviewed and changes made based on current and future operational requirements. Technical rigor and safe diving practices are a hallmark of the Navy's role within the Department of Defense as the lead service for diving policy, technology and training.

Establishing and maintaining Navy technical standards for diving serves as the foundation for personnel training and for the procurement and maintenance of diving systems. Rigorous adherence to these technical standards and procedures is what leads to safe diving practices and ensures mission accomplishment. The Navy updates those standards through biomedical research that leads to continuous modifications of Navy diving policy which is incorporated into the U.S. Navy Diving Manual and associated publications. The Navy has institutionalized a diving systems certification program that ensures the systems used for Navy diving operations are maintained properly and are not a source of risk to personnel. For portable and personal diving equipment, the Navy publishes a list of acceptable equipment ``authorized for Navy use'' that has been tested at the Navy Experimental Diving Unit to ensure dependable and safe operation.

The operational readiness of diving commands is monitored at the fleet level by a formal assessment program called the Diving Operational Readiness Assessment (DORA) that has the advocacy of all levels of the chain of command. These assessments are conducted periodically on all Navy diving commands and ensure all commands comply with established policies and regulations in the areas of diving program administration, and perational readiness. The diving assessments performed by Fleet Forces Command parallel the operational readiness assessments that are performed on afloat commands to ensure their readiness for deployment. In addition to these command operational assessments, the Naval Safety Center provides periodic Diving Safety Survey (DSS) which assesses a diving command's compliance with established naval safety programs including compliance with U.S. Navy Diving Manual safety provisions. Naval Safety Center assessment results are provided directly to the Commanding Officer of the diving command and serve as a non-punitive feedback mechanism for command self correction.

The Navy recently modified its diving personnel structure with the implementation of a single enlisted Navy Diver rating. The rating change was approved by the Chief of Naval Operations in October 2005. The enlisted rating aligned 19 enlisted source ratings into one and streamlines all aspects of force structure and training into a career continuum. This now allows the Diver to concentrate on his or her primary responsibilities as a Diver and focus all energies on learning and honing diving skill sets thereby allowing for a more dedicated, safe, and effective force.

Navy Divers are trained in all categories of diving, salvage, and underwater ships husbandry missions. Navy Divers also conduct and support a variety of unique mission areas to include open ocean towing, command control and communications, fleet support operations, mobility, non-combat operations, anti-terrorism/force protection, submarine rescue and Naval Special Warfare and Explosive Ordnance Disposal support. Navy Divers are also frequently tasked to participate in coalition support (Theater Engagement Strategy), Civil Disaster operations (post-Hurricane Katrina recovery), and Humanitarian Assistance (tsunami relief in Indonesia). The Navy Diving force provides specially trained, combat ready, highly mobile Divers in support of Amphibious Task Forces, Special Forces, and contingency operations. Contingency operations include emergent littoral, coastal, and blue water salvage, range/waterway clearance, aircraft recovery, Chief of Naval Operations priority projects, riverine operations, and other operations as directed by higher authority. Navy Diving forces are trained to operate in high density, multi-threat environments.

The enlisted Navy Diving community has a well-defined career path. The Navy has an aggressive recruiting program for divers that is designed to draw in individuals with a high probability of success. Potential accessions into our program are required to pass a rigorous screening process that includes a thorough dive medical evaluation, physical screening test and a higher than average score on the Armed Services Vocational Aptitude (ASVAB) test. Once accepted as a student, the enlisted Sailor begins training at the Center for Explosive Ordnance Disposal and Diving Detachment Great Lakes. This is a seven-week preparatory course that delivers knowledge, skills and abilities in fundamentals of diving, cardio pulmonary resuscitation, small arms qualifications, and basic shipboard engineering. The course also stresses the physical preparation for dive training by focusing on aquatic adaptability, cardio vascular conditioning, and strength improvement. Upon successful completion students are transferred to Naval Diving and Salvage Training Center, Panama City, Florida. NDSTC, as we refer to it, delivers 17 different courses of instruction totaling 74 convenings per year. Annual throughput averages 1,450 students. It trains all military Divers (with the exception of Army Special Forces and SEALs), foreign national students, and Department of Defense and other Federal agency civilians. While some of the training is similar regardless of service, for example Self Contained Underwater Breathing Apparatus or SCUBA, each service is trained to its unique requirements. However all procedures and policies at the school as well as at the operational commands are governed by the U.S. Navy Diving Manual.

The initial course in the Navy fleet diver training continuum is ``Second Class Diver.'' The 15-week Second Class Diver course trains students in all diving rigs used by the Navy, underwater cutting and welding, underwater pneumatic tools, salvage, basic demolitions, and more advanced diving medicine and physics. The attrition in this initial training pipeline historically runs 30 percent. (This course touches briefly on cold water diving operations in the class room only. Practical cold and extreme cold water diving training and certifications occur at the operational command level.) Upon completion, the Sailor is classified as a Navy Diver and sent to an operational unit. During his or her first two operational tours, normally 6 years, the Navy Diver is expected to complete demanding personal qualifications standards and earn the Diving and Salvage Warfare Specialist designation. Navy Divers are required to re-qualify Diving and Salvage Warfare Specialist at each subsequent command throughout their career, ensuring all team members are fully qualified in the specific mission area of the command. Those who qualify and complete the prerequisites are sent to formal advanced First Class Diving training at the Naval Diving and Salvage Training Center. This 13-week course stresses supervisory, mixed gas diving, and advance salvage skills. A minimum of two operational tours and advanced qualifications follow and nominally take six more years. At this stage in a Navy Diver's career, and with the recommendation of the commanding officer, qualified Navy Divers who meet the demanding prerequisites have the opportunity to attain the Master Diver qualification through another rigorous formal school and performance evaluation at the Naval Diving and Salvage Training Center. Few Navy Divers become Master Divers. This course is arguably the hardest diving course the Navy offers and has a failure rate of 50 percent. The Navy Master Diver qualification is the pinnacle qualification for the enlisted Navy Diver and represents the community's senior enlisted leadership. Master Divers are operators. But more than that, they are intimately involved in every facet of the Navy diving mission. They manage, supervise, conduct long range deliberate planning, assess, inspect, train, and participate in the requirements generations process. Becoming a Navy Master Diver takes an average of 14 years.

The Underwater Construction Team, or UCT, Divers are another distinct Navy diving community. The primary missions of the UCT is to provide inshore and deep ocean underwater construction and demolition capabilities to the Navy, Marine Corps, and other forces in joint military operations, provide battle-damage repair, inspection and engineering reconnaissance to ocean, waterfront, river and bridge facilities, provide hydrographic reconnaissance to support amphibious operations and subsequent combat support ashore, and provide ocean bottom surveys for site selection of underwater facilities. These missions include conducting defensive operations as required by the deployment environment and operations in every extreme, from the desert to the Arctic Circle. The secondary missions of a UCT are to conduct disaster recovery, humanitarian assistance and civic action operations. Accessions into this community primarily come from the fleet Navy Mobile Construction Battalions. Sailors/SEABEES who have completed at least one tour with the Naval Construction Force (SEABEEs) and

have earned their SEABEE Combat Warfare (SCW) qualification become eligible for dive training. Basic and advance Diver Training is delivered at the Naval Diving and Salvage Training Center. Like other diving students, they are trained in the Diving Fundamentals (physics, physiology) and SCUBA. Their training also includes unique SEABEE tools, tactics, techniques, and procedures with an emphasis on underwater construction and demolition procedures. SEABEE Divers can expect repeat tours in one of two Underwater Construction Teams as well as higher headquarter and training commands. SEABEE Divers return for 24 weeks of advanced training after completing personal qualification standards and are recommended by the commanding officers. They are also afforded the opportunity to qualify as a UCT Master Underwater Construction Diver through the formal Navy Master Diver qualification process followed by Fleet Divers.

The Navy delivers SCUBA-only specific diving training to various customers at the Naval Diving and Salvage Training Center in Panama City, FL and Pearl Harbor, HI. The majority of the students come from the Coast Guard and the Navy's submarine force. The Navy's submarine force maintains an organic SCUBA capability in its submarines. The SCUBA diving mission is a collateral duty for the submarine divers.

Their primary dive missions are: security hull inspections; emergency voyage assessments; and minor repairs.

As a result of overall manning of 76 percent, combined with the high risk nature of Navy Diving operations and the significant investment in training, the Navy Diving community offers significant monetary incentives for its Sailors. New recruits who chose to be Navy Divers receive an enlistment bonus of $35,000 upon successful completion of the initial training.

Additionally, based on their qualification levels, Navy Divers receive diving pay up to $340 per month and demolition duty pay of $150 per month and special duty assignment pay up to $375 per month. Selective reenlistment bonuses up to $45,000 are offered through 16 years of service if they chose to reenlist. The enlisted Navy Diving program is very demanding and rewarding. This coupled with monetary incentives results in a retention rate that exceeds the Navy's overall averages. Retention for the first-term Navy Divers, years one through six, is 78 percent. Second term, or years seven through twelve, retention is 88 percent. After that 94 percent chose to remain until retirement eligible.

On the officer side, Navy Diving officers come from two primary sources, direct commissioning and from within the enlisted ranks. Direct commission officers who desire to become Navy Divers must successfully complete a screening process similar to that of the enlisted person. The only difference being there is no requirement to take the Armed Services Vocational Aptitude test I discussed earlier. Several officer communities have qualified Divers and follow their own career paths and qualifications. Their training mirrors enlisted training. Experienced enlisted Navy Divers also have the opportunity to apply for the Chief Warrant or Limited Duty Diving Officer programs.

In summary, the Navy diving program is robust, mature and operationally effective. The Navy diving program follows a rigorous screening, training, and qualification regimen, with senior leadership support, which has led to exceptional operational readiness and an enduring safety record.

Senator Cantwell. Thank you, Rear Admiral Tillotson, thank you--all of you--for your testimony. And I look forward to this round of questioning.

Senator Snowe, I'm going to start, and I may go a little longer than 5 minutes at the beginning, and we can take it from there.

Rear Admiral Tillotson, I'd like to start with you. You described the Navy program, which is the primary source of training for the Coast Guard diving program, is that correct?

Admiral Tillotson. Yes, ma'am.

The SCUBA school is the program for their enlisted divers, it's a 6-week course, and their officer divers go through the Officer Basic Diving Officer Course, which is 13-weeks long.

Senator Cantwell. And after they've graduated from your program, what is your contact with them after that?

Admiral Tillotson. We have very little contact with the Coast Guard divers, after they've graduated from our program.

Senator Cantwell. And what if you had very little contact with your graduates after they left? Would you call that a sufficient system?

Admiral Tillotson. Ma'am, what we do with ours is when they get to their commands, there is a hierarchy within--a hierarchy of support and oversight--within the command level. And as I stated, they will go back to a more advanced dive training after a few operational tours, normally 6 years--so they've been in the program, they've gone through dive school, they've been in the program for about 6 years, and then they return to Dive School. During that 6-year period, they are assigned to a unit that has First Class Divers, those with about 8-12 years of experience, and----

Senator Cantwell. So, a mentoring can take place, is that right?
Admiral Tillotson. Yes, ma'am.

Senator Cantwell. And, I'm sorry, I didn't mean to interrupt.

Admiral Tillotson. The mentoring can take place, and they are assigned, they will have a diving officer, and during that period of time, while assigned to a unit, those units will undergo operational inspections, as well as dive safety survey inspections.

Senator Cantwell. And then they come back to you for continued upgrade and skills and certification?

Admiral Tillotson. Yes, ma'am. Over time they will return to school for additional qualifications.

Senator Cantwell. Are you familiar with what the Coast Guard does with your graduates after they leave the dive program on similar mentoring and upgrading of skills? Are you familiar?

Admiral Tillotson. No, ma'am. I am not aware of their procedures, and I cannot comment on that.

Senator Cantwell. OK, on the Navy process of the dive program and deployment of those trained individuals. Is the Navy--I'm assuming, because I've seen a copy of the Navy Dive Manual, maybe we have one here in the hearing room, if someone could just hold it up, since I've seen a copy of that--I'm assuming that this Navy Diving Manual is something that many people in the Navy are familiar with, is that correct?

Admiral Tillotson. Yes, ma'am, we're very familiar with it. We have it in the immediate vicinity, or on every Navy Dive Station, because of the volume of information that's in it hyperbaric treatments.

Senator Cantwell. And would the Commanding Officer of such vessels--if they were not dive-trained themselves--be aware of dive training requirements? Is that a requirement in the Navy?

Admiral Tillotson. Yes, ma'am, what we do is we provide our non-dive qualified Commanding Officers an abbreviated course when they're going through prospective Commanding Officer training on the hazards of diving.

Senator Cantwell. Are they supposed to know and report on whether sufficient conditions exist for diving to take place? Are they supposed to give the authority and OK for Navy dives to occur?

Admiral Tillotson. Yes, ma'am, they are.

Senator Cantwell. Based on this manual and based on----

Admiral Tillotson. Yes, ma'am, they are.

Senator Cantwell. So, who on Navy vessels are required to be familiar with the Navy dive procedures and under what conditions diving can take place? Who, on Navy vessels are required to know that?

Admiral Tillotson. The Diving Officer would report through, most likely, the Operations Officer, and the Operations Officer would be briefed on the dive operation. He would also brief the Executive Officer, and the Commanding Officer prior to conducting any dive operations.

Senator Cantwell. So, all three of those individuals would be involved and would be responsible for knowledge about the Dive Program, and whether diving can take place.

Admiral Tillotson. Yes, ma'am.

Senator Cantwell. And are you satisfied that the culture within the Navy on the Dive Program is sufficient? I don't know the history of Navy incidents of fatalities or other accidents in this regard.

Admiral Tillotson. The Navy diving program--and any dive program, like you stated in your opening statement--is a high-risk evolution. Especially when we introduce the elements that we're normally diving in when it comes to Navy dives. The conditions can turn poor very rapidly. The ability and oversight for anyone on the dive station to stop a dive adds to the safety of these dives.

Senator Cantwell. When you say ``anyone'' meaning--what do you mean by ``anyone?''

Admiral Tillotson. Any diver can stand up at any time and say that he does not feel safe to dive in the conditions in which they are diving. It is inherent and it is--we stress that throughout their training this is not a hierarchical situation where only the senior man can stop the operation. If a junior person is not comfortable in performing the dive, he has the ability to stand up and say, ``This is not safe.'' And, it should bring a halt to dive operations, and basically cause a huddle for everybody to take a look at what the situations are, and re-evaluate whether they need to, or should, complete the dive.

Senator Cantwell. So, Admiral Tillotson, how would you rank the Navy culture, then, as it relates to the Dive Program?

Admiral Tillotson. The Navy's culture when it comes to any high-risk evolution is always to err on the side of safety.

Senator Cantwell. So, on a scale of, you know, A being a flying-color passing grade, and F being failing, what would you
give the Navy?

Admiral Tillotson. I would have to give the Navy, somewhere--B, B +. There are individuals who sometimes feel like they have to complete any mission at any cost. It is the ``can do'' attitude of all Service members when

asked to do a mission, to try to complete the mission, if possible. So, I would give us--I would give the Navy a B+.

Senator Cantwell. OK, thank you.

Rear Admiral Justice--have you submitted any changes to budget requests to help you in the upgrade of what you think the Navy--of the dive program within the Coast Guard should be?

Admiral Justice. No, ma'am. Not in the 2008 cycle.

Senator Cantwell. And, why not?

Admiral Justice. We will be--Admiral Allen has chosen to attend to this internally, meaning, we're re-programming from within for this budget cycle. We are going to do--not do something else--and take resources from within to attend to these immediate fixes for the dive program.

Senator Cantwell. Has someone come up with an estimate of what they think needs to be re-programmed into the dive program to give the proper oversight and management of the program?

Admiral Justice. I don't have that answer. I can't exactly tell you the dollar figure. We'll get that for you. [The information referred to follows:]

To date. the Coast Guard has upgraded the Headquarters Diving Program Manager billet from a Lieutenant (0-3) to a Lieutenant Commander (0-4), established a Headquarters senior enlisted assistant manager billet. and created collateral duty dive program managers at Coast Guard Area and District commands responsible for better tracking the status of dive units. All these billets have been reprogrammed from within the Coast Guard base to implement changes in oversight and management for the CG Dive Program, so no new costs have been incurred.

Following the HEALY investigation, the Coast Guard formed a senior level work group, including expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institute, to evaluate the requirements, management, and policy guidance of the Coast Guard diving program and to recommend a way forward. Its final report is expected by June 1, 2007. Among the issues being considered are:

1. Sending all CG divers through the Navy's Second Class Diver course (or its equivalent);

2. Establishing regional dive lockers manned with primary duty divers; and

3. Establishing a 3-tier dive unit inspection system.

Further resource requirements may emerge following the results of this working group.

Senator Cantwell. But you think some re-programming has occurred?

Admiral Justice. Absolutely. We've already taken, moved people, we've taken some dollars from some places and attended to some training and more inspections, and the things that I've outlined that I happen to talk about again, we've done that already, from within our base.

Senator Cantwell. Yes, I'd like you to talk about that more, because obviously that's one of the concerns that I have is, to what degree is the Coast Guard taking this issue in the largest context? To me, it's a system failure, in many aspects.

I know you talk about a Service-level failure, and a Unit-level failure, but to me--when I compare the two Dive Program processes between the Coast Guard and the Navy--you have two different cultures. I don't know where you would be on a scale of A to F for the Coast Guard program. Would you care to give a grade to what the Coast Guard dive program has been able to carry out so far?

Admiral Justice. I would say, prior to the date of the HEALY's accident, we were very low-grade. I will also say, since then, that we have taken some immediate steps, and I would give us a--from a preparedness and ready to do our mission, B range now--but that's coming from a D or an F.

Senator Cantwell. You think from August of last year to now you've gone from, say an F or a D, to a B?

Admiral Justice. Yes, ma'am.

Senator Cantwell. In a very short period of time?

Admiral Justice. Absolutely. And I say that because most importantly, we have done the inspections, checked our qualifications, got these people out there and confirmed their equipment, confirmed their ability to maintain the standards that they were trained with, and we've checked that and we're moving forward with that.

Senator Cantwell. Well, if you don't have the same system of mentoring and training and returning to the accreditation system to upgrade their skills, and companionship diving with mentor-seniors on very difficult dives, how would you achieve that in such a short time period?

Admiral Justice. I'd like to differentiate between the type of diving that the Navy Divers do and the type of diving we do. It's a--from a difficulty scale--with the exception of the ice diving--if you set the ice diving aside--if you talk

about what our ports, security, and safety people do, which is basic pier sweeps and hull sweeps of vessels, and we talk about what our Aids to Navigation people do, as far as checking the bases of some our Aids to Navigation out in the Pacific, that type of diving nowhere, in no way, compares to the complexity of some of the sophisticated and intricate diving that's done with the Navy. I just would kind of like to make that comparison.

Senator Cantwell. You're saying the Coast Guard isn't as technical or sophisticated, is that what you're saying?

Admiral Justice. The dives are not as technical or sophisticated. The amount of training, the sophistication of the dives are not--compared to some of the extraordinary things that the Navy Divers do. Thus, our level of required training--the 6-week SCUBA diving course--it meets our requirements for the type of diving that we do.

So, what we've done is made sure that our people have, obviously, been through that course, and then the requirements--and ma'am, that manual you've got right by your left hand there, is part of our requirements, I mean, we--as applicable, we use that manual as well, in addition to the Coast Guard manual, to make sure that, that we're maintaining our qualifications. And again, like I said----

Senator Cantwell. So, I'm hearing two different things, and I want to--I also want to give my colleague, I've taken about 10 minutes, I want to give my colleague a chance--but you seem to be saying two different things. You're saying, ``Well, I--within a short span of time, almost 6 months we've turned this around, but we also think that the training that is currently underway is sufficient training.'' And, so that sounds to me inconsistent.

I do want to ask before I turn it over to her, and I'll let you comment on that, is--in this incident with the HEALY, why did the dive even take place, if part of the dive requirement is that there must be four dive individuals participating in the dive? And, it was clear, from the beginning, that there were not four individuals. So, why is it that the Executive Officer, the Operations Officer, and the Commander all didn't know right away that no dive could take place? Why wasn't it known by everybody in the Coast Guard system that the HEALY would be incapable of exercising any dives, if four dive individuals are required, and the HEALY didn't have four dive individuals?

Admiral Justice. I'll answer that question. The HEALY sailed with four divers when she left the pier. One of the divers suddenly left the ship and was not onboard. You're absolutely right--that dive should not have taken place, should not have been condoned by the Commanding Officer, Executive Officer, or the Diving Officer. It should not have happened. It did, unfortunately, and with tragic consequences.

Senator Cantwell. Well, why wasn't it known, system-wide, within the Coast Guard that immediately, when that fourth individual left the vessel--I mean, there was reference in your report to the fact that a dive was going to take place at a future time, for that vessel at that harbor. And that the day of the incident, there was a request to have such dive training that day, in advance of the Dutch Harbor stop. Why wouldn't it have been known system-wide within the Coast Guard that no dive could have taken place on the HEALY? Why--as soon as that dive officer left, that was it for all HEALY dive activity for the remainder of their deployment on this mission.

Admiral Justice. Yes, ma'am, and just like you articulated, you are absolutely right. At that point our system didn't monitor it. It didn't watch that. Our system--we had a system in place, the Commanding Officer of the ship had a responsibility to execute that system, and it was not done.

But, you are right, above that we did not know, we didn't have a method by which we monitored how many divers were onboard, we left it up to the unit to manage that. And that was wrong.

Senator Cantwell. Nor did the Commanding Officer say, ``There will be no more dives on the rest of this mission.''

Admiral Justice. That's correct, he did not either, yes, ma'am.

Senator Cantwell. Senator Snowe, would you like to?

Senator Snowe. Admiral Justice, tell me, does the Coast Guard follow every provision within the Navy Diving Manual?

Admiral Justice. As applicable, yes, ma'am.

Senator Snowe. As applicable. Obviously there were a lot of deviations, then, in this instance, in this tragic accident, which in many ways, I think, was an indication that there must have been some kind of culture that didn't create an ingrained system about diving and the procedures. I mean, it occurred to me in reading the Coast Guard's report that was replete with so many tragic failures across the board, that there was just no ingrained process.

And, I was wondering, in a dive, is a commanding officer required to be present for that specific dive?

Admiral Justice. No, ma'am. He's not required to be present, right there, no. But, he is absolutely required to OK the dive, to give it a blessing.

Senator Snowe. Yes, and it seems to be very casual in the approval process along the way. I mean, for example, the Operations Officer indicated that a verbal briefing wasn't necessary, is that required in the Diving Manual?

Admiral Justice. Yes, ma'am.

Senator Snowe. It is, so that was something that didn't happen as well. So, there aren't many deviations from the Navy Diving Manual, at least in so far where it's applicable, is that correct?

Admiral Justice. That's correct, yes ma'am.

Senator Snowe. In this instance, probably most, if all activities were deviations from the manual? In what happened on that day?

Admiral Justice. Yes, ma'am. Tragically so.

Senator Snowe. Tragically so.

The Diver Tenders, the three that were overseeing that process, were not trained for that specifically? I assume that that's a different requirement in the manual?

Admiral Justice. Yes. I don't think they were all not trained, I think at least one of them was trained. But, yes ma'am, they weren't adequately trained, and they--given the condition of the situation that they were in, they should not have been doing it. Meaning, they had also been to the party—

--

Senator Snowe. Right.

Admiral Justice. They should not have been doing it.

Senator Snowe. OK.

How many mishaps has the Coast Guard had, with respect to diving? Do you keep a record of all of the mishaps that have occurred over a period of time? I mean, I think in order to compare?

Admiral Justice. Ma'am, all I----

Senator Snowe. Do you keep track of them?

Admiral Justice. Yes, we do. Admiral Higgins does not have that specific--his office tracks that, I don't have that with us, other than that we mentioned, only that one death has happened in the 50 years.

Senator Snowe. Yes, but even if it didn't result in a death----

Admiral Justice. Right.

Senator Snowe.--do you have mishaps? For example, the United States Navy, at least insofar as our statistics, shows that there were 40,000 dives per year since 1970, with 27 fatalities. But what I'm looking for is accident per number of dives. Is there a possibility of getting that number? What is the mishap rate? I mean, do you have mishaps?

Admiral Justice. Yes, we do, ma'am.

Senator Snowe. And they are recorded?

Admiral Justice. Yes, ma'am.

Senator Snowe. Who do they go to, to you, Admiral Higgins?

Admiral Higgins. Yes, Senator, they come to me.

Senator Snowe. They do, so to your knowledge, have there been, you know, mishaps along the way?

Admiral Higgins. Yes, Senator, there have. We have, in fact, even HEALY has had some, what we call Class C mishaps, which might be something like an uncontrolled ascent, where the diver comes up too quickly under the ice, and we do have some reports of those.

Now, there obviously are mishaps that don't get reported, and one of the things we've found from the investigations was that there may have been other mishaps on the HEALY, much less serious, but still that were not reported.

Senator Snowe. In that 6 months under this command, at the time the Commanding Officer--wasn't he just in place on the HEALY for 6 months, or so? Yes?

Admiral Higgins. Yes.

Senator Snowe. OK, so it would have been in that period of time? Or was it longer than that?

Admiral Higgins. Ma'am, I don't believe so. I think that the dives, the minor dive mishaps that were reported were approximately a year before.

Senator Snowe. A year before.

Admiral Higgins. Yes, and I can get you those details, I can take that for the record, and we can report those. [The information referred to follows:]

In 2005, HEALY's dive team experienced three uncontrolled ascents and one uncontrolled descent while using dry suits and surface supplied equipment. Below is a brief description of each of these incidents:

Uncontrolled Ascents:

-- On 29 June 2005, two divers had an uncontrolled ascent using dry suits and surface supplied equipment. Both divers were uninjured and reported loss of situational awareness as the cause. This mishap was not reported.

-- On 11 July 2005, a diver had an uncontrolled ascent and suffered a ``sinus squeeze'' causing a nose bleed. The diver reported loss of situational awareness as the cause. A mishap was reported.

Uncontrolled Descent: In July 2005, a diver reported an uncontrolled descent caused by an inability to adequately inflate his dry suit after passing 20 ft in depth. He made repeated verbal commands to the top side personnel to stop paying out line and stop his descent. The diver was about to activate his emergency weight release when the dive tender stopped letting out line, halting the diver's descent around 60 ft. This mishap was not reported.

Risk is inherent in all Coast Guard operations, but proper risk management, systematic oversight and professional training minimizes the potential for mishaps. In the wake of the HEALY incident, and to improve Dive Program oversight, the Coast Guard took the following immediate actions:

Upgraded the Headquarters Diving Program Manager billet from a Lieutenant (O-3) to a Lieutenant Commander (O-4).

Established a Headquarters senior enlisted assistant manager billet.

Established dive program managers at all Coast Guard Area and District commands responsible for tracking the status of dive units.

Additionally, the Coast Guard formed a senior-level work group with expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institute. This group will evaluate the requirements, management and policy guidance of the Coast Guard's diving program and recommend improvements. The group's final report is expected by June 1, 2007. Improvements being considered include (but not limited to):

Sending all CG divers through the Navy's Second Class Diver course (or its equivalent).

Establishing regional dive lockers with primary duty divers and allowances for special duty assignment pay similar to DOD counterparts.

To improve the leadership and command cadre understanding of the dive program, a dive program brief was added to the Coast Guard's Command and Operations School. This training includes all prospective commanding officers and executive officers that will have responsibility for dive units. The dive portion of this training will provide a baseline knowledge of diving policies and procedures, which in turn will allow them to make appropriate decisions for diver deployments as well as provide oversight of dive planning and operational risk management.

Senator Snowe. It just appears that, obviously--I don't know, it just doesn't seem that the system flags, a deficiency in the process. And, I'm just wondering, and I want to compare with the Navy, Admiral Tillotson--is this a collateral responsibility on the part of Navy Divers? Or is this their only specific responsibility? Because it's collateral in the Coast Guard, correct? Yes. And in the Navy?

Admiral Tillotson. Senator Snowe, our primary divers are Primary Duty Divers. In Naval Special Warfare, Explosive Ordnance Disposal, Fleet Divers, and SEABEE Divers, it's a primary responsibility.

We do have on our submarines, collateral duty divers. Their roles are very limited, and they are on there because of the amount of independent steaming that our submarines do, and the fact that we may not be able to get a full-time dive team to them, we may use the embarked divers to do emergency hull inspections, or very minor repairs, if they get a line fouled in the screw, but primarily, the Navy uses divers that do this as a living.

Senator Snowe. Is it a problem that it's a collateral responsibility? That it's not their primary focus? I know they like to do periodic training, do they?

Admiral Justice. Yes, Ma'am.

Senator Snowe. Admiral Justice, do you see that as a problem? Or, is it just--there was a lack of supervision, oversight, and failures across the system?

Admiral Justice. We're looking at that.

Senator Snowe. Are you?

Admiral Justice. We're looking at that, that's part of that----

Senator Snowe. I was just wondering.

Admiral Justice.--that's part of that comprehensive study, and that we have outside people looking at it as well as we are, and we're looking for those recommendations, and I would not be surprised at all if it's found--the word collateral is a negative term----

Senator Snowe. Right.

Admiral Justice. If it's found that we need to be full-time, then yes, ma'am, we'll take those recommendations.

Senator Snowe. Well, are they required to do more dive training during the hiatus? Because obviously it's irregular. And, so if it's just an adjunct to their many responsibilities, obviously you can get lax, whatever can happen. I mean, it's just like anything.

Admiral Justice. Yes, ma'am, you're correct.

Senator Snowe. And it just requires being always in the mode, and I think that's very difficult to do. So, that's something you're evaluating?

Admiral Justice. Yes, ma'am, absolutely. The question of the required maintenance dives that have to be done--are they enough? Are they being done? There's an oversight piece, and there's also an internal--the divers themselves, making sure they're doing it.

And so, you're right on, and we've got to look at that and do better with it.

Senator Snowe. Well, I'm sure the Committee would be interested in having information about the number of dives the Coast Guard does, and how many mishaps have occurred per number of dives? I think that would help us to evaluate and give a benchmark in terms of the kinds of changes that are going to take place.

Another example is, why were there not additional oversight personnel assigned, given the fact that the diving teams increased 300 percent since September 11?

Admiral Justice. It's--no excuse, ma'am.

Senator Snowe. No, OK.

Admiral Justice. But there has been since, there has been since.

Senator Snowe. How many?

Admiral Justice. There have been three, four more people assigned since, and there are more to come.

Senator Snowe. How many do you need per diving team? What would be the ratio?

Admiral Justice. I can't answer that question.

Senator Snowe. OK, does the Navy, Admiral Tillotson, have a ratio?

Admiral Tillotson. Ma'am, there's no solid ratio, we have, of that pinnacle-level career diver, Master Diver, we have 98 of those in the United States Navy. As far as Master EOD divers, we have 303 of those in the Navy for a force of about 1,700. So, we have no solid ratio, it is those that achieve that master level qualification that are put into positions to supervise operations, based upon the qualification.

Senator Snowe. Well, Admiral Justice, I think that would be very important for us to have a response from you with respect to how many additional personnel the Coast Guard really believes it requires, in addition to the ones that you've already assigned. I think that's going to be critical.

Admiral Justice. Yes, ma'am.
[The information referred to follows:]

The Coast Guard dive program is governed by the Coast Guard Diving Policies and Procedures Manual (COMDTINST M3150.1B). The manual is being revised and updated with an anticipated completion date of August 1, 2007. The Coast Guard can provide a copy once completed.

Senator Snowe. One other question--on the Commanding Officer and the command cadre--do they get very specific training? I mean, do they get totally immersed in the training of the diving program, so that they understand it fully? That when they hear there's a diving mission underway on the ship, they understand that and what that means--are they totally familiar?

Admiral Justice. They were not, they are now.

Senator Snowe. I know they weren't on the HEALY, but would that have been the standard? Among all officers, generally speaking, because they hadn't had the appropriate training?

Admiral Justice. It is now.

Senator Snowe. It is now.

Admiral Justice. OK.

Senator Snowe. But it wasn't before.

Admiral Justice. It was not before. Remembering, how few ships we--I mean, we, it's five ships that have divers. And, you're absolutely right, they did not have the appropriate, in-depth work-up to truly appreciate what they were doing.

Senator Snowe. Well, it seems to me that any Commanding Officer, not only should they have the training, no matter what, but second, when they are about to take over and take command of a ship, that command cadre ought to be fully briefed, and immersed in a training program prior to assuming the command of the ship.

Admiral Justice. Yes, ma'am.

Senator Snowe. Thank you.

Senator Cantwell. Thank you, Senator Snowe. And I appreciate your attention and commitment to this issue, because I think we do have a lot of oversight work to continue here.

Admiral Justice, to go back to the specifics of the Coast Guard HEALY investigation, and the information that was provided--I'm looking at something that was provided on January 12, 2007, about the results of the investigation. And in that, it talks about the punishment for those who were involved in the incident on the HEALY. Obviously there has been quite a bit of news and information from the Coast Guard investigation about how other activities were happening at the same time as the dive, that some of the tenders had actually consumed alcohol, that there was an atmosphere almost, of which, those who are participating in an ice break activity, recreational activity were also in the dive area, and so--leading to some confusion.

Your Coast Guard report talked about the punitive letter of reprimand and the forfeiture of salary--I think that was, the forfeitures were later suspended--but it talked about the commissioned, for a Commissioned Officer--I'm reading now from the Report, ``For a Commissioned Officer the punitive letters have a significant career impact, and trigger other administrative processes.''

Admiral Justice. Yes, ma'am.

Senator Cantwell. How do you define significant?

Admiral Justice. There is nothing worse you can do to an officer than that, other than a court martial, from a punishment of that nature. And the Operational Commander, Admiral Worster, who held the mast and chose that

punishment, effectively terminated the potential for promotion for these officers. And, being a many-time promoted officer, and a career ship-driver, and--that's very meaningful, and very devastating.

Senator Cantwell. Where is the Executive Officer and the Operational Officer from the HEALY today?

Admiral Justice. As we speak, they are still on HEALY for a couple of more months. They are transferring this summer, and the ship has just finished a significant overhaul in the shipyard, where their expertise was needed, and utilized, and they will be onboard for the transition, for the release, and they'll be departing this summer.

Senator Cantwell. How is it that the Coast Guard's initial report, saying that these punitive letters have significant career impacts, and then the Executive Officer and Operational Officer are still in the same command as the time of the incident?

Admiral Justice. Again, I'll stand by the Operational Commander who made that decision. Admiral Worster, when he held the mast, and chose to relieve the Commanding Officer and leave the Executive Officer and the Ops Officer onboard, with those letters that was his fitting punishment.

Again, when it comes to promotions, when it comes to further assignments of more responsibility, or any upward mobility, those letters have significant, and impacting results.

Senator Cantwell. What kind of message does that send throughout the Coast Guard community, if the individuals are still involved in the same deployment of the HEALY?

Admiral Justice. It sends the signal, ma'am, that the Operational Commander felt like they've done--these were superior officers who had done superior work, however, they did make a significant mistake, and they've been held accountable for it. The ship needed their services, which they've been asked to, and they've offered, and then they will be moved on.

Senator Cantwell. Well, and not to focus too much on these two individuals, because to me, this has been a system-wide failure. It is a cultural issue within the Coast Guard about the level of difficulty involved in this activity, and the importance of creating a culture within the Coast Guard of zero tolerance from deviation of process and procedure. But, I also believe that there is not sufficient training.

But, before I get to that--tell me about the recordkeeping?

Because the Coast Guard recordkeeping--you've had the Dive Program for over 50 years now. And so, but for 50 years we haven't really had the proper records and equipment, safety checks, so on and so forth.

Admiral Justice. Ma'am, I wouldn't say that. I would not say that.

Senator Cantwell. OK, what would you say?

Admiral Justice. I would say that the Coast Guard over 50 years has had a program that has been sufficient, and efficient and done the job, and had an inspection program that inspected and found that the people who were doing the job competent and qualified, that the job had gotten done competently, and in a qualified manner. However, I will also say that there was a--that there has been a lack of focus, and a loss of focus on the mission, and because of that, we had these unacceptable results.

I just would rather not damn the program for 50 years over this. But, I will say, absolutely in the recent past, we've proven that we needed to do better.

Senator Cantwell. Well, I have found in my own personal experience of management, when you want to correct a problem you have a common agreement with what the problem is.

Admiral Justice. Yes, ma'am.

Senator Cantwell. And when you don't have common agreement with what the problem is, chances are you're not going to have corrective results.

And so, what I'm trying to understand is, under the current Coast Guard regulations, the Coast Guard is required to maintain a dive reporting system, personnel and command dive logs, and none of these were carried out aboard the HEALY, which is another reason why the exact amount of time the divers were in the water was not known. In addition to these requirements, the operational risk assessment, the ORM, must be conducted before each dive, the ORM assesses the factors, environmental conditions, the vessel status and location, access to emergency medical care that, you know, all of these things, and an ORM was not conducted before the dive aboard the HEALY.

So, to me, the Coast Guard lacks the records of the Dive Program, and highlights the fact that when staff asked for a brief history of the Coast Guard dive program, the Coast Guard could not provide this on paper, and had to create, basically a three-page bullet outline from scratch.

So, the fact that those things didn't exist in a document, and weren't shared, and weren't part of the command of the vessel, says to me that you don't have good reporting requirements. So, maybe you're saying at some

point in time--I don't know, when did the Coast Guard take over diving program Safety Surveys from the Navy?

Admiral Justice. It was in the late nineties. We couldn't get the exact date. I looked, I couldn't find the exact date, but in the late nineties.

Senator Cantwell. So, perhaps you're saying that at some other point in time the Coast Guard might have kept sufficient recordkeeping and reporting, but these are all regulations under the Coast Guard, and they weren't being met.

Admiral Justice. Yes, ma'am. I'm agreeing with you, yes. And again, as we noted, is the resulting tragedy. That said----

Senator Cantwell. I guess I'm amazed that you wouldn't call that a very big system failure with reporting and requirements. Because if all of those things were, again, implemented in a system--just for example, I would assume, not being a diver, you know, myself, but some of my staff are professional divers which helped in preparation for the hearing--I would assume that part of the reason why you keep track of these dive logs and reporting and information is because--in this case--and again, I'm just piecing together information, that when you keep a log and the person on the scene is keeping a log, knowing that a dive is only supposed to last for a certain amount of time, that the fact that these individuals were down for much longer than what the normal dive was originally anticipated, somebody might have known that there was a problem earlier in the situation.

Who knows whether that would have helped in the survival of these two individuals, but nonetheless, a systematic approach to diving was not being carried out. And I would assume that the Coast Guard would assume that that was a major--not only failure in this instance, but a failure of the entire reporting system of the Coast Guard and the fact that when we asked for information, you had to create something that was as--has been described by my staff--as three-page bullet outline, as opposed to actual logs and records.

Admiral Justice. I'll acquiesce to that, ma'am. Yes.

Senator Cantwell. OK, so let's turn to training. You said that you've improved the--in this process--improved in training. Have you implemented a new system for specific qualifications for cold water dives?

Admiral Justice. Yes, ma'am. Well, again and what we've done--I'll use our example of the POLAR SEA--is that we've made sure that the procedures that were made to be, were followed. We made sure that the proper level of training that was needed, if that meant going back for specific training with the Navy was needed, that that had been done. We made sure that the oversight person at the Commanding Officer level, as well as at the Dive

Officer level, was--they were qualified. And we made sure that they did proper practice dives, we made sure that they were ready to sail when they did sail.

Senator Cantwell. That's not my question. I'm asking you, are there specific--have you changed the specific qualifications for training and requirement for cold water dives at this point? Have you taken assessment of the current program and said, ``We don't have enough training necessary for cold water dives in the current Coast Guard system?''

Admiral Justice. Yes, I would say, yes.

Senator Cantwell. Yes, that's just what you--so have you implemented something? Has the Coast Guard implemented new qualifications?

Admiral Justice. I don't want to get caught up in the--we've recognized them, we've updated our diving manual--we haven't officially re-promulgated it, so the correct answer would be ``no'' however, we understand the procedures that have to be done, they will be changed officially, and in the meantime, we've made sure that practically, that the divers who were asked to go do that, were ready to go.

Senator Cantwell. The reason why I'm confused here, is because I think there are no specific qualifications or training requirements at this point. Up until this HEALY incident, for cold water dives. So, what I'm asking is, did you create something in the last several months and have them implemented, or are you referring to the fact that you just went back and said, ``Follow the procedures that are in the manual.'' So, I'm trying to get at the essence of what the Coast Guard needs to implement for a cold water program.

Admiral Justice. We're making sure that our dive manual is updated to properly reflect the--the requirements, the training needed, to do a cold water dive. We're going to implement that.

Senator Cantwell. And, can we get a copy?

Admiral Justice. Yes, ma'am.

Senator Cantwell. Can you get me a copy of that?

Admiral Justice. Yes.

[The information referred to follows:]

The Coast Guard formed a senior-level work group with expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institute. This group will evaluate the requirements, management and policy guidance of the Coast Guard's diving

program and recommend improvements. The group's final report is expected by June 1, 2007. Improvements being considered include (but are not limited to):

Sending all CG divers through the Navy's Second Class Diver course (or its equivalent).

Establishing regional dive lockers with primary duty divers and allowances for special duty assignment pay similar to DOD counterparts.

The Coast Guard is also establishing a pre-deployment dive system that will be implemented prior to polar deployments (cold water diving operations). These dives will consist of a series of increasingly complex dives starting with dry suit dives, followed by cold water dives, and culminating in cold water, confined overhead dives. These dives will be supervised by an experienced polar diver.

Additionally, the Coast Guard initiated a Front End Analysis to examine current dive program training objectives and performance requirements and to compare those to the training provided by the Navy, NOAA and the Smithsonian Institute.

Senator Cantwell. And what new training would a Coast Guard diver be subjected to? What new training? Not the reading of a manual, but what new training?

Admiral Justice. I don't have the specific answer to that. I'd rather give you the exact, specific answer. And I don't have that.

Senator Cantwell. But you think that exists today.

Admiral Justice. Absolutely.

Senator Cantwell. You think there's an outline.

Admiral Justice. Absolutely.

Senator Cantwell. Along with how much money you're going to spend on this.

Admiral Justice. Yes, ma'am.

Senator Cantwell. OK.

Admiral Justice. I do.

Senator Cantwell. OK.

Admiral Tillotson, does the Navy have any involvement in cold water diving activities?

Admiral Tillotson. Senator, Chapter 11 of the U.S. Navy Diving Manual addressed cold water diving. There is no specific training at the Navy Dive School for cold water diving. When it comes to units being assigned missions that would involve cold water diving, local instructions and best practices by the unit would dictate that they would do work-up dives, that they would check out their equipment, that they would do those things that are outlined at any Dive Station, normal safe procedures, to do prior to conducting those operations.

So, we have the Navy Dive Manual Chapter 11, and we have additional local instructions that each individual unit would have for conducting dive operations in specific situations, which would include diving under ice. The SEABEEs also have an instruction on diving under ice.

Senator Cantwell. And are those, so as it relates to the Navy diving program and training, are there specific training missions during their accreditation in cold water dives?

Admiral Tillotson. The procedures that have been followed for diving in cold water is normally, first to--especially with the equipment--get familiar with the equipment. Cold water diving involves dry suits, and we normally will have our divers dive in warm water in their dive suit to ensure proper fit, to ensure proper functioning, to get their weight adjusted correctly, their added weight that they need to do. Once they've done that in a controlled environment of a pool, we will take them into the open ocean, and do that again, because of the density of salt water, there will be minor differences.

We then take them up to a cold water area, where they will do work-up dives in cold water, so that they understand how that affects their mobility, how it affects their ability to use their hands, and those will all take--they will do a series of work-up dives, and all divers that are going to be working under the ice, will have done work-up dives in both their gear, as well as in cold water, prior to being put on a dive underneath the ice. And that is our normal procedure.

Senator Cantwell. So, in this instance, by comparison to the Navy requirements and training, Lt. Hill--who had never done a SCUBA cold water dive, would not be, have been permitted to dive without a work--without proper training? Or Petty Officer Duque--who had never done a cold water dive at all--would not have been permitted to dive under Navy requirements?

Admiral Tillotson. No, ma'am, they would have not made that dive, if they were on a Navy Dive Station.

Senator Cantwell. Admiral Justice, did you want to comment

on that?

Admiral Justice. Yes, ma'am. I absolutely agree.

Senator Cantwell. And again, why wasn't, why wasn't that known by all involved?

With the assignment of the HEALY in its ice breaking capacity and region assignment, the chances of diving in anything less than cold water are not great, so why wouldn't it have been known, system-wide, that none of those individuals had received the proper level of training to do a dive of that nature, if in fact, they had never previously done a cold water, unless, in this instance, the Coast Guard was deviating from the Navy manual?

Admiral Justice. Ma'am, I wasn't going to get specific. Specifically, Lt. Hill had done a cold water dive, and specifically, this was a work-up dive. This was supposed to be a one of a--as Admiral Tillotson mentioned--a test, a non-threatening, non-operational, a cold water dive. This was going to be a cold water dive.

Senator Cantwell. I'm not an expert on diving, but my understanding is Lt. Hill had never done a SCUBA cold water dive. So, now she was undertaking for the first time, with SCUBA equipment, a cold water dive, without supervision of anyone else, including taking along another individual, who had no cold water dive experience, or work-up. So, I don't know where the supervision was, for Lt. Hill, of experience of someone else, because I think from what Admiral Tillotson is saying, is that individual would have practiced--am I correct?--would have practiced a full SCUBA dive with the oversight of individuals who had accomplished similar tasks, is that correct?

Admiral Tillotson. Yes, ma'am, under our procedures, the individuals would have conducted a series of work-up dives prior to conducting an under-ice dive.

Senator Cantwell. Thank you. Senator Snowe, did you?

Senator Snowe. Yes, just a follow-up question on that point; Lt. Hill was the diving supervisor, so she wasn't able--as I understand it from the report--to be both diving and supervising concurrently, is that correct?

Admiral Tillotson. You can't, that's right, you cannot.

Senator Snowe. So, it's clear the Commanding Officer in all of these instances was totally unfamiliar with all of the established procedures for a diving mission.

Admiral Justice. Yes, ma'am. Not totally, but he was definitely not, not--he was unfamiliar, yes ma'am.

Senator Snowe. Pretty much, totally.

Admiral Justice. Yes, ma'am.

Senator Snowe. For the result to be this tragedy. I mean, it just seems to me he was totally out of the loop. Sort of peripheral to the whole event.

Admiral Justice. Yes, ma'am.

Senator Snowe. And also the equipment. I was stunned by these lines. ``Two hundred feet of line had been paid out for the divers. But the exact amount of line that was paid is unknown as the lines are not marked at 10-foot intervals, as is recommended by the Navy Diving Manual.'' And then it talks about the tanks and everything else, I mean, what are the established procedures for equipment, are they reviewed?

Admiral Justice. Yes, ma'am.

Senator Snowe. So why wouldn't these lines be marked, why wouldn't there just be standard equipment, that would be automatically marked. Why were these lines even on the boat if they are not marked? I mean, they're used specifically for diving, and diving only?

Admiral Justice. Just one of the many, many failures of the equipment and the decision making on scene there. I agree, and you're right and that's one of the--many of these issues that we've made sure that we've gone back and done the proper inspections and checked the equipment, and now we're--to make sure that this doesn't happen again.

Senator Snowe. Well, if one of the diving tenders--you mentioned one of the dive attendants was trained, or was trained for this specific responsibility, is that correct? Out of the three, one was trained? Why weren't they aware of the fact that that amount of line was moving down?

Admiral Justice. From my understanding of the reading of the investigation, that person--in the middle of the dive--walked away from the scene, he was distracted for some reason, and when he came back, noticed that there was a problem. So, again, another one of the many problems.

Senator Snowe. Are they allowed to leave the scene of the dive?

Admiral Justice. Well, there were two people there, and he was the third one. The answer is no, ma'am.

Senator Snowe. Wow, it is stunning, to be honest with you. I mean, really stunning that so much could have gone so wrong.

Admiral Justice. Yes, ma'am.

Senator Snowe. And it ultimately resulted in the loss of two lives. It's across the board, that's why it's so fundamental and structural that I wonder if the whole program needs a total overhaul. I mean, from beginning to end. It sounds like that to me.

Frankly, it sounds like it's a program that got established many years ago, and nobody's gone back to review it or do anything with it, and it's just been incidental to the Coast Guard's responsibilities, and that's how it was viewed, and that's how it was dealt with. And not with, I think, the level of prudence that it required.

Admiral Justice. Ma'am, I will not say that it is indicative of the entire program, but I will say that we absolutely are going back through the entire program, inside and out, top and bottom, to make sure that problems were corrected, and I will assure you both Madame Chair, and Senator Snowe, that we are going to do everything in our ability to make sure it doesn't happen again.

Senator Snowe. Thank you.

Admiral Justice. Yes, ma'am.

Senator Cantwell. Thank you, Senator Snowe. A couple of more questions, gentlemen. Currently there are only four management personnel to oversee the 16 dive units nationwide, and this was talked about in the Coast Guard management review of the incident. Obviously, this hasn't changed since 9/11, and yet the size of the program has tripled. What are you doing in this period of adjustment on oversight, and why--maybe you should start there, tell me what has happened on this, management billets, oversight of the dive operations, nationwide?

Admiral Justice. Yes, ma'am. We're upgrading the oversight in our headquarters, we're also adding an enlisted, a senior enlisted person with dive experience, to our headquarters program. We have added--we've already added an Atlantic Area, a Pacific Area, and out in Hawaii, oversight personnel to be full-time dive people to be monitoring the programs. And then, as well, of course, as you mentioned, we have the three people who reside at the Navy Dive School, and those people who are to monitor our people going through the program, but they are also part of our inspection program, and when we inspect our units annually, when we inspect them annually, they will be part of--they will bring that wonderful expertise that the Navy provides them to the field, to make sure that we have the highest level of inspections that we can.

Senator Cantwell. So, you're taking the four-management team operation, and you're doubling that? Is that what you're doing?

Admiral Justice. Yes, ma'am.

Senator Cantwell. So, you'll have four individuals based at Coast Guard headquarters and four individuals spread across regions?

Admiral Justice. Two at headquarters, three in the regions, and three more at the school.

Senator Cantwell. With current personnel. Total of how many management operations.

Admiral Justice. That would be seven, ma'am.

Senator Cantwell. OK, so we went, we go from four to seven.

Admiral Justice. Yes, ma'am.

Senator Cantwell. And do we think that's--do you believe that that's sufficient given the number of dive operations and the problems with logs and manuals and management and operations? Because part of it is, you know, dive units, and then you have the operation in and of itself. And creating a system-wide approach to security and safety.

Admiral Justice. Yes, ma'am. Don't get me wrong, as we have our comprehensive report done in June, if the oversight numbers don't appear to be right, we may not stay, last up like we are right now. We may choose to, instead of having 100 collateral duty divers, maybe we'll go to 50 full-time divers, in a regional setting or some different way of doing it. But however they--whatever they recommend and whatever decision we take to move forward, we will make sure that we've got the appropriate number, the amount of oversight to monitor the program.

Senator Cantwell. I'm sure the interest and commitment is there, but I want to, what I want to understand is the level of cultural change within the Coast Guard. So, if you could provide the Committee with what you think the requirements and job responsibilities of those seven individuals are, that would be helpful.

Admiral Justice. Yes, ma'am.

Senator Cantwell. Why wasn't this kind of management oversight of the program increased after 9/11 as the responsibilities and the number of dive units increased?

Admiral Justice. It should have, should have been.

Senator Cantwell. You don't know a reason why it didn't?

Admiral Justice. I do not know.

Senator Cantwell. Admiral Higgins, would you have a comment on this, given your safety and oversight responsibilities?

Admiral Higgins. Given the, some of the highly technical programs in the Coast Guard like aviation and diving, we do not have safety professionals doing those inspections. Those inspections are done by the programs, because of the highly technical nature for things like firefighting, which is on every ship, or firefighting equipment, Coast Guard safety professionals would perform those duties.

But these specific duties--although we track the mishaps, and we also track our recommendations, so when the Commandant's Vessel Safety Board is finally released, in its final decision letter, we do track those commendations, so we go back on a regular basis and make sure that the recommendations that the Chief of Staff signed, actually have been implemented. So, they may be policy changes, they may be personnel changes, they may be training changes, but we do have a regular program to go back and track all of those official recommendations to make sure that they have been implemented. And we intend to do that with this as well.

Senator Cantwell. And, is your responsibility to make those recommendations, or to carry out the implementation of these regulations?

Admiral Higgins. The Commandant's Vessel Safety Board works for me, as the Director of Health and Safety, but the actual signature is by the Chief of Staff of the Coast Guard who is senior to both of us, so he is ordering those changes which is good, that it's a senior person ordering those changes.

Senator Cantwell. So, does your office order changes as well?

Admiral Higgins. Yes, Senator, we can. So, some of the changes that have already been made, actually, by Admiral Pelkowski, some of the very obvious changes have already been made to the Coast Guard Dive Manual, some of those were just announced last week, in an ALCOAST that has been released, and we've made some of the start changes, the extra personnel and some of the checklist issues that we must change immediately.

The rest of the recommendations will come out later, some of those will be in the safety manual, others will be in operational manuals.

Senator Cantwell. Can we get a copy, Admiral Higgins, of the recommendations that you've made, specifically, through your office to the Commandant, or to others for system changes?

Admiral Higgins. The final decision letter is really what that is. And, it's not--unfortunately, it's not complete yet. The process is going along. But the final decision letter will be that vehicle.

Senator Cantwell. Can we just get any recommendations that you have made to the Commandant about safety changes, up until this point in time, and then we'll look forward to your final letter?

Admiral Higgins. For the Dive Program?

Senator Cantwell. Yes.

Admiral Higgins. Yes.

Senator Cantwell. Thank you. Now, no one has mentioned, so far about the skill level of the dive team, and keeping skilled divers in the Coast Guard.

Is there an issue with that? The professionalism? You know, incentive programs, compensation, things of that nature?

Admiral Higgins. It's a challenge, yes ma'am. We have extra pay, we have an incentive program to compensate for the extra duties required. It is a challenge, it's a small program, and we, we have to keep up, we have to find people, and make sure we get them trained, and get them going there, so it's a challenge, yes, ma'am.

Senator Cantwell. Has that been identified? I didn't see that in the initial--I might have missed it--I didn't see that in the initial report.

Admiral Higgins. It's--being as small as the Coast Guard is, and many--this is a situation that parallels some of our other missions, small technical sort of things, it's a challenge to find and recruit people from within our ranks to do that. It's an ongoing challenge, it hasn't changed, it's an ongoing challenge for the service that we're working to meet, and we're meeting. We have, our collateral duty dive billets are filled, we have enough people signed up to do it. But, it's an ongoing evolution.

Senator Cantwell. Again, Admiral Justice, I know you're speaking here on behalf of the entire Coast Guard, so my questions, obviously are pointed to you, but I'm asking the entire Coast Guard system, so thank you for your answers, but again, one of the things that I'm trying to assess here, because I believe that there is a cultural failure here within the Dive Program, and its importance as it relates to security, so in fixing that, I want to understand whether the Coast Guard understands what the problems and challenges are, and are articulating those. So, I will look for comments in the Coast Guard documentation about the professionalism of the dive men and women that are part of the Coast Guard and want incentives.

Admiral Tillotson, is this a challenge within the Navy? Do you have the personnel, do you have the proper incentives?

Admiral Tillotson. We believe that we have an incentive program throughout the Navy that helps us to retain--recruit and retain individuals for this duty. Our retention rates are extremely high, we attribute that to--partly to our incentive programs, and partly to the quality of individuals we get in the beginning, and their job satisfaction. However, the Navy does continue to have problems--and I won't say it's a major problem--but recruiting the right people. As I said earlier, we have 30 percent attrition through the initial dive phase.

Currently, Navy Divers are about 76 percent manned. Our accessions come from both within the fleet--which is a large pool to choose from, compared to the Coast Guard, and from our fleet recruiter, or our recruiters that are recruiting men and women out of high school, and recruiting individuals off the street.

So, we have a very aggressive program of recruiting, we have a very aggressive program, or a very large program of incentives, re-enlistment bonuses, special duty assignment pays, to----

Senator Cantwell. Specifically for the dives----

Admiral Tillotson. Specifically for diving communities, yes, ma'am.

Senator Cantwell. So, the Navy has identified that as a challenge, to keep the skill level that you need. The investment you've already made in training them, then obviously keeping that, and you've assigned specific incentives to that program.

Admiral Tillotson. Yes, ma'am, we have.

Senator Cantwell. And, that's similar to the Coast Guard?

Admiral Justice. It's similar, ma'am, but it's not as comprehensive, because we don't have a specific rate for divers, that you can start as a junior person and stay in it for a career, we don't have that progression. We just have a need--I call it a low-end need for divers--so people come into the program, they spend their time and then they move on. So, it's a little different. But it's a flatter set up than the comprehensive, long-term Navy program.

Senator Cantwell. Well, if you can, again, provide that documentation to the Committee for our review, that would be appreciated.

Admiral Justice. Yes, ma'am.

[The information referred to follows:]

There are now eight positions providing Coast Guard dive program management. Seven positions are currently filled; the eighth will be filled by 15 July 2007. The positions and responsibilities are:

1. Dive Program Manager (2 positions). The Dive Program Manager (DPM) and Assistant Manager are assigned to CG Headquarters and have the following responsibilities:

a. Develop and promulgate Coast Guard diving policy.

b. Identify, plan and budget for specific diving needs with responsible Program Managers.

c. Authorize establishment of diving duty billets and units, and periodically review the diving duty allowances.

d. Direct and advise operational units on matters of proper diving procedures and training.

e. Assist operational units in locating and obtaining diving and salvage services.

f. Review all Coast Guard diving accidents and casualties, and initiate appropriate corrective action.

g. Authorize diving pay to personnel in excess of unit allowance of divers at any operational diving unit.

h. Liaison with other Federal, state and local agencies and civilian groups on matters affecting Coast Guard diving.

i. Participate in annual diving unit safety survey inspections and refresher training.

j. Provide input to Coast Guard Personnel Command to facilitate the assignment of divers and diver candidates to diving units.

k. Request training quotas, manage funding, and conduct task and training analysis for the determination of training, personnel and equipment needs.

2. Dive Program Technical Manager/CG Liaison Office (3 positions). The Technical Manager and two enlisted personnel (chief petty officer and first class petty officer) comprise the Coast Guard Liaison Office (CGLO) at the Naval Diving and Salvage Training Center (NDSTC). The CGLO has the following responsibilities:

a. Provide administrative support to Coast Guard students

training at the NDSTC.

b. Provide recommendations and technical support to Coast Guard Headquarters for establishing policies and procedures for the Coast Guard diving program.

c. Provide guidance and support on diving issues to non-diving units.

d. Provide guidance and technical support to Coast Guard diving units.

e. Provide administrative and technical support for conducting the diving equipment program at Coast Guard diving units.

f. Coordinate, through Coast Guard Headquarters, the standardization, distribution, maintenance and use of equipment in the Coast Guard diving program.

g. Provide annual refresher training to Coast Guard units with divers.

h. Develop and administer Coast Guard-specific training.

i. Review and process all diver application packages and provide information on qualified candidates to Coast Guard Headquarters.

3. At Coast Guard Area and District Commands (3 personnel): The Coast Guard Atlantic Area Command, Pacific Area Command, and Fourteenth Coast Guard District have designated dive program oversight billets. These positions are responsible for tracking the readiness, qualification and training status of their dive units and act as liaisons between dive units and units requesting CG diving support.

4. Of these eight positions, four were added in the aftermath of the HEALY mishap, one new position at Coast Guard Headquarters and three in the Area and District commands.

Senator Cantwell. Either Admiral Higgins or Admiral Justice--did the Coast Guard contemplate an independent review of the HEALY situation? Did the Coast Guard talk about getting an outside third party to review the incident of the HEALY?

Admiral Higgins. We brought outside parties like Navy, NOAA and other organizations in to actually work with our Commandant Vessel Safety Board. We have, at this point, not looked for a complete outside review. The safety

process is not yet complete, and that could be easily discussed with the Chief of Staff.

Senator Cantwell. Do you think that, Admiral Higgins, that would be helpful?

Admiral Higgins. We got outstanding cooperation from many people in the Federal Government, especially from the Navy, also from NOAA and from the National Science Foundation, the Smithsonian Institution. We brought in the best experts, and they gave us terrific advice on how we should change the program.

Certainly we've made some beginning changes, and I think some of the things that Admiral Tillotson was talking about on how to get an ice diver ready to ice dive is really exactly what we did for the POLAR SEA. That, we put them in those variable volume suits in warm water at dockside where it was a controlled environment, and we took 13 dives to get those people ready before they broke ice in Antarctica.

I think we've got an excellent opinion so far, we certainly haven't fixed everything, although I think our plan is sound to do that. Certainly, if we un--if anything else gets uncovered, it might be worth asking for an outside look, but we've had such terrific help so far, I'm not sure at this point that it's necessary, Senator.

Senator Cantwell. Do you think in the case of fatalities that there should be outside investigations?

Admiral Higgins. We do--I'm also the Health Director of the Coast Guard. On the health side, we actually have an accrediting firm come to all of our clinics, an outside organization, it's actually a non-profit organization that comes, so we do have a third-party look at our health, at what we provide for healthcare.

On the safety side, we have trained safety professionals, some of whom spend an entire career as safety professionals in the Coast Guard, we do internal investigations, they take a long time because they're so thorough, I think we do a good job. My answer to you is, the safety program, I think, does a good job of internally doing that, we have the professionals, we have the capability of doing those internally. When we need help, we either contract or ask one of the other Services to help us.

Senator Cantwell. Thank you, I'm--I guess I would have to disagree with you, Admiral, in this case, that I think--I think the Coast Guard probably deserves a failing grade for where the Dive Program was. I don't believe that it is up to a B standard, given some of the details that have come out in the hearing this morning, as it relates to the cold water program, and specifications, as it relates to what's transpired with the officers and the

communication, and a variety of things, as it relates to details about training and dollars and oversight.

But that's something the Committee will look at, but that's the way we can encourage, or require the Coast Guard to implement a system. Because I think, anytime you're dealing with so many men and women, it has to be a system-wide culture to adhere to the criteria of safety and precaution. And, obviously in this case, you could point to many, many things--not one thing, but many, many things that went wrong as it related to the HEALY, where any one of the number of things, that if someone had ingrained in them culturally, that this was part of the safety regime, may have obviously prevented this incident.

Let me turn just for a second, because it's hard not to, given the subject of this hearing, I know it's not the subject of this hearing, but we just in the last several days have had an incident again in the Pacific Northwest as it relates to a Fast Response Boat, one of the Defenders, that we appreciate very much, the work that the Coast Guard does on the Defenders in supporting the Washington State Ferry System.

I'll just point out for those who don't know, that the Washington State Ferry System carries more passengers on an annual basis than Amtrak. So, as we look at terrorist threat, and security regimes for our transportation infrastructure, it's a very popular transportation infrastructure for the Northwest. So, we very much appreciate what the Coast Guard is doing in working with the FBI, and Washington State patrol, and various other individuals on the security of our maritime transportation system.

Given that, it's very distressing to hear of another Coast Guard fatality in a basic operation of the Coast Guard. So, I don't know, Admiral Higgins or Admiral Justice--do you have any comments on this most recent incident that happened--I believe it was Sunday--Sunday off Vashon Island in Puget Sound?

Admiral Justice. Yes, ma'am, I will give that a go. Again, of course, how distressing it is and how unfortunate and how sorry we are for the family.

That Ports and Coastal Water Security System--those people work for the, our Marine--MSSTs, our Safety and Security Teams--they're there to do exactly what you're talking about, which is to provide escorts for those ferries in a, in a port security manner. And, you can be assured again, as Admiral Higgins will echo, that we will do an investigation, understand the--we appreciate the safety parameters that, what happened there and why that individual unfortunately ejected from the boat, and we will make sure that we do what we can that it doesn't happen again.

The work on the water, at high speeds, you know, is dangerous, and our people--because they're out there every day, but we think we have a--we

actually we know of the issue, and we're looking at the problem, and we'll work to resolve it.

Senator Cantwell. Are these individuals required to wear safety gear, safety harnesses, or what have you?

Admiral Justice. No. No, in the situation that he was in at the time, no. But, that's a great question, and we're going to look at that and determine, maybe they should be, and maybe we will.

Senator Cantwell. Have their been other incidents of accidents or fatalities related to these vessels and this type of activity?

Admiral Higgins. Senator, I don't believe we've had a fatality with the MSSTs. We have investigated several, less serious, accidents, including one from MSST Anchorage, where the boat rolled over during a turn. We've also done preliminary investigations on other members who have been--either fell overboard or been ejected during a turn, especially in the waves.

We have had these boats--very few of them before--we have had a lot of them in the last 5 to 6 years. Prior to that, some of the boats they replaced were much slower. And, there is a learning curve, not only for our people, but for our training and for the equipment, and we're still, I believe, in that learning curve. We've had hundreds of thousands of operating hours of these boats over the last several years, our actually--man overboard and ejection rate is coming down, but we still have incidents where people are knocked or thrown off these boats, and we are very carefully studying the issue of a harness. And I've been working our folks--and Admiral Justice's folks--have been working on that very carefully, and we've been working on that for some months now.

Senator Cantwell. Well, it sounds as if this is something you've had prior knowledge about and challenge, and I guess my concern is that it'll take a fatality to get the Coast Guard's attention as it relates to the safety procedures. I don't want to have another hearing on this incident and then hear, ``Well, we're working on this, and we're working--'' I would assume that, in this kind of instance, having both the HEALY and now this Defender incident, that the Coast Guard would do a, you know, bottom-up and top-down review of all safety procedures, and whether those safety procedures are well-ingrained into the workforce of the Coast Guard, and how they are being adhered to from every individual. Since every individual is responsible not only for the safety of their vessel, but for the safety of their own lives.

And, I would assume that that's something that the Coast Guard--no, I'm not going to assume, I want the Coast Guard to tell me----

Admiral Higgins. Admiral Allen did order a safety stand-down on September 18th, I discussed that briefly in my opening statement, and we

are still working on all of the data that has been produced from that safety stand-down. But, there was mandatory training, there was a safety stand-down by all operational units, and all-hands training for everyone in the Coast Guard. We are collecting the data from that, and are still working with that with our safety professionals.

Senator Cantwell. Well, again, I know it's not the focus of this hearing--go ahead, Admiral Justice.

Admiral Justice. Ma'am, I'll just echo what Admiral Higgins said, but be a little more specific. You are absolutely right. As we've grown, our port security mission, as we do things with the helicopters and our Marine Safety and Security Teams, we dropped out of helicopters and we do different things with boats and we arm them and we man them and we know we have to look closer, as we're moving forward with these missions, the safety side of it, and--and you're absolutely right, we need to look at every facet of it, and this issue--I mean, it's been brought to our attention, it's been looked at, there's a solution there, it's not going to take 6 months to get it solved, it just happened, the investigation is going to happen, I want to get the details, I don't want to get caught up in--but, I'm here to tell you that that's a soluble problem, and we need to be looking at all of those things that we're hearing from the field, and that we know are a concern, and we're working to address them, aggressively, and as safely as possible.

Senator Cantwell. Well, what I would like is to solve the security issues and security regimes before we have another incident. And so, I would appreciate, Admiral Higgins, if you can get me what the stand-down security measure that was implemented by the Commandant, how that intersected with this previously known problem with the Defenders, and what was being done during this time period to communicate the problem, and perhaps to alleviate this incident.

Gentlemen, thank you for your testimony and your answering questions today, this committee is going to continue to be diligent about this issue. When I came into office in 2001 and had the unfortunate circumstances of having a wild land fire situation in Washington State in which four individuals lost their lives, for several years, working on the Oversight Committee, we did our responsibility to look at the safety and security of firefighting, and the lack of security in these systems with young men and women with very little training coming into that system.

My only point is to say that I was diligent in that situation, and I will be diligent in this situation. If I'm the only member, I appreciate Senator Snowe being here, and I think my colleagues from all over the country will be very interested in this issue. But it is our responsibility as the oversight, the legislative oversight for the Coast Guard to make sure that these deaths were not in vain, and that we do implement the safety regimes that all of those individuals coming to work for the Coast Guard will have confidence in,

and will provide--not only for the Nation's security, but he security of these individuals. So, again, and Admiral Tillotson, thank you for being here, we'll look forward to continuing to communicate with the Navy on these issues.

Gentlemen, thank you very much, the hearing is adjourned.
[Whereupon, at 11:42 p.m., the hearing was adjourned.]

A P P E N D I X

Prepared Statement of Hon. Daniel K. Inouye, U.S. Senator from Hawaii

My condolences go out to the families and friends of the two Coast Guard divers who lost their lives in the tragic accident that occurred aboard the HEALY icebreaker in August 2006. Our purpose at this hearing today is to make sure the Coast Guard has taken every step necessary to ensure a tragedy like the HEALY incident never happens again.

To that end, the Coast Guard must strengthen the management and safety of its dive program.

The Coast Guard's dive program began during the 1940s and is a vital component of many of the Coast Guard's missions today. Over time, the program has expanded from performing ship husbandry and search and recovery to assisting Maritime Safety and Security Teams, tending buoys for Aids to Navigation, and lending scientific support to science teams operating aboard the polar icebreakers. In recent history, the number of operational Coast Guard dive teams has tripled from six to sixteen since the events of September 11, 2001.

Unfortunately the manner in which the Coast Guard has been managing the dive program does not reflect its growing importance to the agency. The investigative report for the HEALY incident, which was released in January 2007, found that the main cause for the accident was that the HEALY crew did not follow any standard operating procedures. There is no excuse for this absolute failure to follow, and enforce, such procedures.

Protocols are put in place specifically to ensure the safety of everyone involved and to minimize unnecessary risk. In addition, divers and support crew need adequate training in such a dangerous activity.

The HEALY incident should be a constant reminder of the need for protocols and the training to follow them.

My concern is that this lesson has not been learned. No additional funding has been requested for this program since the events of 9/11, even though the number of dive teams tripled. Although the Coast Guard has indicated that it is strengthening the management and safety of the program, the Fiscal Year 2008 budget provides no funding for the dive program, much less

for implementing the reforms. Starving the dive program of funding sends the message that the Coast Guard has not taken the HEALY incident seriously.

I look forward to the Admiral's testimony on the Coast Guard's efforts to address the inadequacies with its dive program and how Congress can help to ensure the dive program operates under the best management and safety protocols possible.

I thank the witnesses for their testimony and look forward to working with you on this important issue.

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Response to Written Questions Submitted by Hon. Daniel K. Inouye to
Rear Admiral Wayne Justice

Question 1. How does the Coast Guard plan to ensure that more stringent safety standards and reporting requirements will be upheld long after the memory of this tragedy is fresh in our minds?

What specific actions are being taken to ensure that members of the command cadre maintain that degree of respect within their crew once a vessel has departed port?

Answer. Immediately following the HEALY incident, a safety inspection was conducted onboard HEALY, and the cutter's dive capabilities were suspended. Further, all dive capable units have undergone a Dive Program Safety Survey (DPSS) within the previous 12 months, as of January 12, 2007. One unit was found to be deficient in its readiness and training and was directed to suspend dive operations. Upon correcting all discrepancies, the unit successfully completed a follow-up inspection and was authorized to resume all diving operations. In the future, a DPSS--an inspection of all records, logs and equipment--will be conducted on an annual basis for every Coast Guard unit with a Dive Team.

As part of the Mishap Investigation, the Commandant of the Coast Guard required a thorough review of the Dive Program and ordered a safety stand-down from operations. This stand-down included a questionnaire/survey with an overall risk assessment of each unit. This survey will be used as a baseline for future Safety Stand Down surveys.

The survey, and accompanying risk assessment and crew endurance management tools will also be refined to be more mission and platform specific, following the highly successful aviation risk management model.

In the wake of the HEALY incident, and to improve Dive Program oversight, the Coast Guard took the following immediate actions:

Upgraded the Headquarters Diving Program Manager billet from a Lieutenant (O-3) to a Lieutenant Commander (O-4).

Established a Headquarters senior enlisted assistant manager billet.

Established dive program managers at all Coast Guard Area and District commands responsible for tracking the status of dive units.

Additionally, the Coast Guard formed a senior-level work group with expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institution. This group will evaluate the requirements, management and policy guidance of the Coast Guard's diving program and recommend improvements. The group's final report is expected by June 1, 2007.

Improvements being considered include (but not limited to):

Sending all CG divers through the Navy's Second Class Diver course (or its equivalent).

Establishing regional dive lockers with primary duty divers and allowances for special duty assignment pay similar to DOD counterparts.

To improve the leadership and command cadre understanding of the dive program, a dive program brief was added to the Coast Guard's Command and Operations School. This training includes all prospective commanding officers and executive officers that will have responsibility for dive units. The dive portion of this training will provide a baseline knowledge of diving policies and procedures, which in turn will allow them to make appropriate decisions for diver deployments as well as provide oversight of dive planning and operational risk management.

Question 2. What specific plans does the Coast Guard have for ensuring that current members of its dive program maintain their certification for diving while they are on deployment?

How do those plans incorporate members of the command cadre, to ensure that they allow dive managers the resources and time to maintain their certifications once they are deployed?

Is the Coast Guard implementing additional training for those divers that may conduct cold&ter dive missions?

Who is being consulted as these plans are being developed, and how is the Coast Guard evaluating the data it collects in order to develop these plans?

Answer. The Coast Guard has upgraded the Headquarters Diving Program Manager billet from a Lieutenant (O-3) to a Lieutenant Commander (O-4), established a senior enlisted assistant manager billet, and established dive program managers at Coast Guard Area and District commands responsible for better tracking the status of dive units.

Multiple diving opportunities are available throughout deployments for divers to maintain their certifications. Commanding Officers are responsible for providing adequate time during deployments for divers to complete required recertification dives and diver training.

Presently, Coast Guard Headquarters is in the initial stages of developing a centralized computer reporting system for individual dive logs based on the best practices of DOD and other Federal agency dive reporting standards. With this centralized dive log system, program managers would be able to track diver qualifications and training to prompt deployed units to complete required recertification dives and diver training.

To improve the leadership and command cadre understanding of the dive program, a dive program brief was added to the Coast Guard's Command and Operations School. This training includes all prospective commanding officers and executive officers that will have responsibility for dive units. The dive portion of this training will provide a baseline knowledge of diving policies and procedures, which in turn will allow them to make appropriate decisions for diver deployments, as well as provide oversight of dive planning and operational risk management.

Yes, the Coast Guard is establishing a pre-deployment dive system that will be implemented prior to polar deployments. These dives will consist of a series of increasingly complex dives starting with dry suit dives, followed by cold water dives, and culminating in cold water, confined overhead dives. These dives will be supervised by an experienced polar diver.

The Coast Guard is working with the top four Government dive programs in the United States: the U.S. Navy, U.S. Army, NOAA, and the Smithsonian Institution. The Coast Guard has established a diving work group to collect and assess the various program requirements provided by these dive programs. The findings of the work group will be used to improve the Coast Guard diving program.

Question 3. In the existing operational risk assessments, how does the Coast Guard weigh the various factors that might contribute to the risk of a specific dive mission?

Is the Coast Guard planning to change its process of operational risk assessments that are required prior to each dive mission? If so, how?

As part of this plan, does the Coast Guard plan to change the way in which it weighs different risk factors in these operational risk assessments?

Answer. The risk assessment model requires a review of six different elements (each are equally weighted):

Supervision assesses the qualifications of the supervisor and whether or not he or she is actually supervising or is required to be actively engaged in the hands-on part of the operation.

Planning assesses how much information is available, how clear it is, and how much time is available to plan the evolution or evaluate the situation.

Crew and Watchstander Selection assesses the experience of the persons performing the specific event or evolution, and if individuals are replaced during the event or evolution, the experience of the new team member's experience.

Crew and Watchstander Fitness assesses the team member's physical and mental state, which is generally a function of how much rest they've had, but may include other factors that contribute to fatigue.

Environment assesses all factors affecting the personnel or resource performance including time of day, lighting, atmospheric and oceanic conditions, chemical hazards, and proximity to other external and geographic hazards and barriers.

Event or Evolution Complexity assesses both the time and resources required to conduct the evolution, the proficiency of the team, how long environmental factors are expected remain stable, and the level of coordination needed to conduct the evolution.

No, but additional emphasis has been placed on conducting risk assessments. Further, to improve the leadership and command cadre understanding of the dive program, a dive program brief was added to the Coast Guard's Command and Operations School. This training includes all prospective commanding officers and executive officers that will have responsibility for dive units. The dive portion of this training will provide a baseline knowledge of diving policies and procedures which in turn will allow them to make appropriate decisions for diver deployments as well as provide oversight of dive planning and operational risk management.

No, the Coast Guard does not intend on changing the method way these factors are weighed.

Question 4. How is the Coast Guard implementing a plan to increase the quantity and quality of personnel in its dive program?

How does the Coast Guard plan to increase the incentives it provides to ensure that those individuals earning certification as a diver are retained in the dive program?

Answer. The Coast Guard formed a senior-level work group with expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institution. This group will evaluate the requirements, management and policy guidance of the Coast Guard's diving program and recommend improvements. The group's final report is expected by June 1, 2007.

Improvements being considered include (but not limited to):

Sending all CG divers through the Navy's Second Class Diver course (or its equivalent).

Establishing regional dive lockers with primary duty divers and allowances for special duty assignment pay similar to DOD counterparts.

Question 5. Does the Coast Guard plan to change the Diving Program Safety Surveys it conducts of its dive teams? If so, how?
Will these changes require an increase in the resources the Coast Guard needs to complete these safety surveys? If so, how?

How does the Coast Guard plan to meet these increased resource demands?

Answer. Yes, the Diving Program Safety Surveys (DPSS) have been updated and they include recent policy changes established by an ALCOAST message released March 22, 2007. This message re-emphasized, clarified, and/or updated Coast Guard diving policies and procedures. A senior level work group has been formed, including expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institution, to evaluate the requirements, management and policy guidance of the Coast Guard's diving program and recommend improvements. The group's final report is expected by June 1, 2007. Issues being considered include (but not limited to) establishment of a 3-tier dive unit inspection system to be executed by personnel from the soon to be commissioned Deployable Operations Group (annually w/USN participation), Naval Diving and Salvage Training Center Coast Guard Liaison Office and Coast Guard Headquarters (annually), and each dive unit (semi-annually).

The Coast Guard already upgraded the Headquarters Diving Program Manager billet from a Lieutenant (O-3) to a Lieutenant Commander (O-4), established a Headquarters senior enlisted assistant manager billet, and established dive program managers at Coast Guard Area and District commands responsible for better tracking the status of dive units.

All of the billets were reprogrammed from existing billets.

Question 6. Is the Coast Guard planning to increase the number of management personnel that have oversight responsibility of the dive program?

What are some of the costs and benefit factors the Coast Guard is evaluating to make the final determination of how best to develop its internal oversight of the dive program?

Answer. The Coast Guard upgraded the Headquarters Diving Program Manager billet from a Lieutenant (O-3) to a Lieutenant Commander (O-4), established a Headquarters senior enlisted assistant manager billet, and established dive program managers at Coast Guard Area and District commands responsible for better tracking the status of dive units.

A senior level work group was formed, including expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institution, to evaluate the requirements, management, and policy guidance of the Coast Guard's diving program and recommend the way forward. Its final report is expected by June 1, 2007. Issues being considered include (but are not limited to) sending all CG divers through the Navy's Second Class Diver course (or its equivalent), establishing regional dive lockers manned with primary duty divers, allowances for special duty assignment pay similar to DOD counterparts, and establishment of a 3-tier dive unit inspection system to be executed by personnel from the soon to be commissioned Deployable Operations Group (annually w/USN participation), Naval Diving and Salvage Training Center Coast Guard Liaison Office and Coast Guard Headquarters (annually), and each dive unit (semi-annually).

Question 7. How does the Coast Guard plan to increase the rigor in its process of recordkeeping and reporting?

Likewise, how is the Coast Guard going to ensure that those records and reports are monitored and maintained in a manner consistent with the Coast Guard Dive Manual?

Answer. A senior level work group has been formed, including expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institution, to evaluate the

requirements, management, and policy guidance of the Coast Guard's diving program and recommend the way forward. Its final report is expected by June 1, 2007. The work group is evaluating recordkeeping methods and reporting requirements utilized by DOD and Federal agencies.

Part of the annual Diving Program Safety Surveys (DPSS) includes a review of all administrative dive logs and maintenance records. These surveys may change depending on the recommendations of the work group.

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Response to Written Questions Submitted by Hon. Daniel K. Inouye to Rear Admiral Paul Higgins

Question 1. What steps are being taken by the Coast Guard to examine its training program, and assess if its training program for general certification is adequate?

Given the increased risk inherit with diving in cold water environments, do you plan to implement a specific training program for cold water divers?

How will the Coast Guard determine what qualifications are necessary for cold water dives?

Answer. A senior level work group has been formed, including expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institute, to evaluate the requirements, management, and policy guidance of the Coast Guard's diving program and recommend the way forward. Its final report is expected by June 1, 2007. Issues being considered include (but not limited to) sending all Coast Guard divers through the Navy's Second Class Diver course (or its equivalent), establishing regional dive lockers manned with primary duty divers, and allowances for special duty assignment pay similar to DOD counterparts. The Coast Guard has funded and initiated a Front End Analysis to examine current training objectives and performance requirements from program managers and to compare those to the training provided by the Navy, NOAA and the Smithsonian Institute.

Yes. The Coast Guard is establishing a pre-deployment dive system that will be implemented prior to polar deployments. These dives will consist of a series of increasingly complex dives starting with dry suit dives, followed by cold water dives, and culminating in cold water, confined overhead dives. These dives will be supervised by an experienced polar diver.

In an effort to further our understanding of how our international counterparts operate and train, a Coast Guard representative attended the International Polar Diving Workshop in Svalbard, Norway on March 15-22, 2007. This workshop was an international, interdisciplinary assessment of polar diving operations, and served as an excellent baseline against which to

measure Coast Guard polar diving policies and procedures. Also, the Coast Guard convened a cold water diving conference April 18-19, 2007 to develop cold water/ice diving policy in addition to the U.S. Navy policy. The information and knowledge gained from this conference will be incorporated into the next revision of the Coast Guard Diving Policies and Procedures Manual.

Question 2. How does the Coast Guard plan to ensure that an Operational Risk Assessment is completed before each dive?

Rear Admiral, will you be increasing the number of factors assessed before each dive? If not, why not?

In the existing Operational Risk Assessments, how does the Coast Guard weigh the various factors that might contribute to the risk of a specific dive mission?

Answer. Every dive team has been directed to conduct an Operational Risk Management Assessment during the planning of every dive mission, and to continually reassess the risk throughout mission execution.

Documentation of the assessments is to be retained at the unit for 60 days following mission completion. Compliance will be confirmed during the unit's annual Diving Program Safety Survey.

We are not planning to add to the number of factors assessed before each dive. The current Operational Risk Management models are proven, systematic methods of managing risk when conducted in accordance with established protocols. They enable an operational unit to operate within the constraints of an envelope of safety, and allow a high level of flexibility within the risk management framework. They enable any unit or team member to quickly recognize and notify other team members of a change in any of the factors and make adjustments to reduce the risk.

The risk assessment model requires a review of six different elements (each are equally weighted):

Supervision, which assesses the qualifications of the supervisor and whether or not he or she is actually supervising or is required to be actively engaged in the hands-on part of the operation.

Planning, which assesses how much information is available, how clear it is, and how much time is available to plan the evolution or evaluate the situation.

Crew and Watchstander Selection, which assesses the experience of the persons performing the specific event or evolution, and if individuals are replaced during the event or

evolution, the experience of the new team member's experience.

Crew and Watchstander Fitness, assesses the team member's physical and mental state, which is generally a function of how much rest they've had, but may include other factors that contribute to fatigue.

Environment, assesses all factors affecting the personnel or resource performance including time of day, lighting, atmospheric and oceanic conditions, chemical hazards, and proximity to other external and geographic hazards and barriers.

Event or Evolution Complexity, assesses both the time and resources required to conduct the evolution, the proficiency of the team, how long environmental factors are expected remain stable, and the level of coordination needed to conduct the evolution.

Question 3. Ensuring that the Coast Guard is able to both recruit and retain the quality and quantity of personnel to its dive program is essential for the building a successful and reliable program.

How does the Coast Guard plan to increase incentives to recruit and retain the divers necessary to complete its dive mission?

Answer. The Coast Guard formed a senior level work group, including expert consultants from the U.S. Navy, U.S. Army, National Oceanographic and Atmospheric Administration, and Smithsonian Institute, to evaluate the requirements, management, and policy guidance of the Coast Guard's diving program and recommend the way forward. Its final report is expected by June 1, 2007. Issues being considered include sending all CG divers through the Navy's Second Class Diver course (or its equivalent), establishing regional dive lockers manned with primary duty divers, and allowances for special duty assignment pay similar to DOD counterparts.

Question 4. About how many years were the Diving Program Safety Surveys not conducted within the Coast Guard?

Why is this?

If you did not have enough personnel to carry out these vital surveys, why did you not ask for more funding? More importantly, why did you not cancel the dives if the Coast Guard knew there was a good chance they were putting their divers in jeopardy?

Answer. Diving Program Safety Surveys (DPSS) have been required since the 1970s. U.S. Navy conducted DPSS for CG diving units until the mid 1990s. Coast Guard diving program management staff took over DPSS.

At some point in the late 1990s, DPSS visits stopped. This was due to a loss of organizational focus regarding the dive program. In 2004, the DPSS was re-established by the Coast Guard Headquarters Diving Program Manager.

Given the dive program's excellent safety record prior to the HEALY mishap, the Coast Guard did not recognize a need to increase oversight of the dive program and maintenance of service-wide standards.

Question 5. In the FY 2008 president's budget request you have asked for $13 million dollars to build a new pool for training rescue swimmers.

Do you have any plans to use this pool for dive training?

Why not?

Answer. No. The Naval Diving and Salvage Training Center (NDSTC) in Panama City, Florida conducts dive training for all services and has the necessary training facilities and staff to train Coast Guard divers. Additionally, NDSTC began construction of a new pool in March 2007 that will have greater diver training capabilities than existing facilities. Rescue swimmer training is conducted at Elizabeth City, North Carolina; this training is not co-located with any Coast Guard diving units.

Question 6. How is the Coast Guard making sure that the proper records are being kept for the dive program from here on out?

Besides the fact that safety inspections were not carried out for many years, why is there a lack of personal and command dive logs?

Aren't these a requirement after each dive is completed?

Answer. Individual dive logs and maintenance records have always been required and have been mostly well maintained at the individual diver and dive unit level. These are checked and verified during the Diving Program Safety Surveys (DPSS).

The Coast Guard Headquarters level records of DPSS results, past FY budgets, and diving mishaps were incomplete and have been reconstructed with limited success. Presently, Coast Guard Headquarters is in the initial stages of developing a centralized computer reporting system for individual dive logs based on the best practices of DOD and other Federal agency dive reporting standards.

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Response to Written Questions Submitted by Hon. Daniel K. Inouye to
Rear Admiral Michael P. Tillotson

Qualifications and Training

Question 1. Is the Coast Guard system of maintaining diver qualifications, following initial certification, rigorous enough to adequately minimize risks?

Answer. At the Coast Guard's request, the Navy has advised the Coast Guard Headquarters leadership since the accident and provided them with complete information on how the Navy manages its diving program. The Navy has committed to continue to advise the Coast Guard on alternatives as they restructure their program including actively offering the USCG the same diving oversight techniques that the Navy uses on itself.

The formal Coast Guard requirements for requalification do not significantly differ from the Navy. The primary difference between the Navy and the Coast Guard is the cadre of senior, experienced Navy Divers, especially our senior enlisted Master Divers, who continuously mentor junior sailors and manage our diving mission risks. During the transition to a restructured Coast Guard diving program including more experienced diving community leadership, there are advantages for the Coast Guard to use targeted Navy experience to assure rigorous safety standards are maintained at their diving commands.

Other advantageous Navy processes that ensure rigorous adherence to established safe diving practices include operational readiness and Navy Safety Center assessments of diving commands. The Coast Guard might consider requesting these assessments from the Navy until they can establish their own processes. The operational readiness of diving commands is monitored at the Fleet level by a formal assessment program that has the advocacy of all levels of the chain of command. These assessments are conducted periodically on all Navy Diving commands and ensure all commands comply with established policies and regulations in the areas of diving program administration, and operational readiness.

The diving assessments performed by Fleet Forces Command parallel the operational readiness assessments that are performed on afloat commands to ensure their readiness for deployment. In addition to these command operational assessments, the Naval Safety Center provides periodic assessments of diving command's compliance with established Naval Safety programs including compliance with U.S. Navy Diving Manual safety provisions. Naval Safety Center assessment results are provided directly to the Commanding Officer of the diving command and serve as a non-punitive feedback mechanism for command self correction.

Question 2. What experience do you have with cold-water diving?

Answer. Selected Navy Dive Teams have significant experience in cold-weather diving operations. Cold-water and/or ice diving performed by the USN can be categorized in two ways:

a. Dive Teams working in homeports that experience regular water temperatures below 37 degrees (e.g., Submarine Base New London Connecticut and Portsmouth Naval Shipyard), have well established and practiced techniques for dealing with low surface and water temperatures. Divers assigned to these areas are practiced in these techniques and operate under the close control of experienced Master Divers. Accordingly, their level of proficiency in their specific diving area remains high and the need for extensive Fleet-wide cold-water/ice diving training is low.

b. Dive Teams that deploy to remote sites to conduct cold-water and/or ice diving invest significant time preparing for this mission. The training will generally consist of specialized equipment (e.g., dry-suits, heavy gloves, cold water air systems, and emergency procedures unique to ice diving). The preparation will begin prior to deploying to the ice mission area. Upon arrival, the dive site will be prepared in accordance with developed procedures. The combination of pre-deployment training and dive site preparations adds weeks to an ice diving operation.

Question 3. What are some of the additional risk factors that divers face when making a cold-water dive?

Answer. Additional cold water diving risk factors include:

Diving with unfamiliar equipment.
Difficulty manipulating equipment with extremities.
Control of buoyancy.

The U.S. Navy Diving Manual identifies the following risk elements in its planning guidelines for cold water diving:

Planning Guidelines. The following special planning considerations relate to diving under/near ice cover or in water at or below a temperature of 37+F:

The task and requirement for ice diving should be reviewed to ascertain that it is operationally essential.

Environmental conditions such as ice thickness, water depth, temperature, wind velocity, current, visibility, and light conditions should be determined.

Ideally, a reconnaissance of the proposed dive site is performed by the Diving Supervisor or a person with ice-covered r cold water diving experience.

The type of dive equipment chosen must be suited for the operation.

Logistical planning must include transportation, ancillary equipment, provisioning, fuel, tools, clothing and bedding, medical evacuation procedures, communications, etc.

Question 4. Did you have more formal cold-water training in order to be certified for cold-water dives?

Answer. Since ice/cold water diving is not a routine tasking, in-depth training is conducted at the unit level to ensure all team members are familiar with the special procedural, equipment and emergency procedures for ice diving prior to any operation.

Specific training points--(not all inclusive):

Prior to the use of variable volume dry suits and hot water suits in cold and ice-covered waters, divers must be trained in their use and be thoroughly familiar with the operation of these suits.

Personnel Considerations. The supervisor of the dive must ensure that all personnel required to make the dive have been properly trained in ice diving techniques and are physically fit. No diver may be allowed to make the dive if, in the opinion of the Diving Supervisor, the diver is suffering from the psychological stress of an ice dive (anxiety, claustrophobia, or recklessness).

Divers must practice buddy breathing prior to the operation because of the increased possibility that buddy breathing will be required. Proficiency in the process will minimize loss of valuable time during an emergency. Using approved cold water scuba equipment will minimize or eliminate freeze-up problems. (This means during work-ups and in cold water at the site).

Tending the Diver. The lifeline is to be held by the tender at all times. As an additional safety measure during ice diving, the end of the lifeline must be secured to a stationary object to prevent it from falling into the entry hole should it be dropped by the tender. It is recommended that the lifeline be marked at 10-foot intervals to allow the tender and Diving Supervisor to estimate the diver's position. However, the diver's radial position can only be roughly estimated. The dive

team must be thoroughly familiar with the procedures for lifeline tending in U.S. Navy dive manual Chapter 8. Tending line sensitivity and awareness of the diver's position by tenders may be difficult with the added factors of lifeline drag on subsurface ice formations, line drag over the lip of the under-ice hole, tending through heavy mittens, and the lack of surface bubbles.

Operational Risk Assessments

Question 5. What are some of the more critical variables the Navy evaluates when it assesses the risk of a proposed dive missions?

Answer. The U.S. Navy Diving Manual identifies the following elements of Operational Risk Management (ORM) when planning a diving mission:

General Planning and ORM Process. A successful diving mission is the direct outcome of careful, thorough planning. The nature of each operation determines the scope of the planning effort, but certain general considerations apply to every operation.

Bottom Time. Bottom time is always at a premium. Developing measures to conserve bottom time or increase diver effectiveness is critical for success.

Preplanning. An operation that is delayed due to unanticipated problems may fail. Preplanning the use of the time available to accomplish specific objectives is a prerequisite to success.

Equipment. Selecting the correct equipment for the job is critical to success.

Environmental Conditions. Diving operational planners must plan for safely mitigating extreme environmental conditions. Personnel and support facility safety shall be given the highest priority.

Diver Protection. It is critical to protect divers from shipping hazards, temperature extremes, and dangerous pollution during all operations.

Emergency Assistance. It is critical to coordinate emergency assistance from outside sources before the operation begins.

Weather. Because diving operations are weather dependent, dive planning shall allow for worst-case scenarios.

Concept of ORM:

ORM is a decision making tool used by people at all levels to increase operational effectiveness by: anticipating hazards and reducing the potential for loss and, thereby, increasing the probability of successful mission; increases our ability to make informed decisions by providing the best baseline of knowledge and experience available; and minimizes risks to acceptable levels, commensurate with mission accomplishment. The amount of risk we will take in war is much greater than that we should be willing to take in peace, but the process is the same. Applying the ORM process will reduce mishaps, lower costs, and provide for more efficient use of resources.

Question 6. What roles do the Command Officers, Dive Managers, and Members of the Dive Team play as these assessments are being conducted?

Answer. The U.S. Navy Diving Manual lists the following roles for the Commanding Officer, Diving Supervisors and Dive Team Members:

Commanding Officer. The ultimate responsibility for the safe and successful conduct of all diving operations rests with the Commanding Officer. The Commanding Officer's responsibilities for diving operations are defined and the provisions of U.S. Navy Regulations and other fleet, force, or command regulations confirm specific authority.

To ensure diving operations are efficiently conducted, the Commanding Officer delegates appropriate authority to selected members of the command who, with subordinate personnel, make up the diving team.

Command Diving Officer. The Command Diving Officer's primary responsibility is the safe conduct of all diving operations within the command. The Command Diving Officer will become thoroughly familiar with all command diving techniques and have a detailed knowledge of all applicable regulations and is responsible for all operational and administrative duties associated with the command diving program. The Command Diving Officer is designated in writing by the Commanding Officer and must be a qualified diver. In the absence of a commissioned officer or a Master Diver, a senior enlisted diving supervisor may be assigned as the Command Diving Officer.

On submarines the senior qualified diver may be assigned Command Diving Officer.

Master Diver. The Master Diver is the most qualified person to supervise air and mixed-gas dives (using SCUBA and surface supplied diving equipment) and recompression treatments. He is directly responsible to the Commanding Officer, via the Diving Officer, for the safe conduct of all phases of diving operations. The Master Diver manages preventive and corrective maintenance on diving equipment, support systems, salvage machinery, handling systems, and submarine rescue equipment. The Master Diver, who also ensures that divers are trained in emergency procedures, conducts

training and re-qualification of divers attached to the command. The Master Diver recommends to the Commanding Officer, via the Diving Officer, which enlisted divers are qualified to serve as Diving Supervisors. The Master Diver oversees the efforts of the Diving Supervisor and provides advice and technical expertise. If circumstances warrant, the Master Diver shall relieve the Diving Supervisor and assume control of the dive station. In the absence of a Diving Officer, the Master Diver can assume the duties and responsibilities of the Diving Officer.

Diving Supervisor. While the Master Diver is in charge of the overall diving operation, the Diving Supervisor is in charge of the actual diving operation for a particular dive or series of dives. Diving operations shall not be conducted without the presence of the Diving Supervisor. The Diving upervisor has the authority and responsibility to discontinue diving operations in the event of unsafe diving conditions.

Diving Personnel. While working, the diver shall keep topside personnel informed of conditions on the bottom, progress of the task, and of any developing problems that may indicate the need for changes to the plan or a call for assistance from other divers. To ensure safe conduct of the dive, the diver shall always obey a signal from the surface and repeat all commands when using voice communications. The diver is responsible for the diving gear worn and shall ensure that it is complete and in good repair.

Diver Tender. The tender is the surface member of the diving team who works closely with the diver on the bottom. At the start of a dive, the tender checks the diver's equipment and topside air supply for proper operation and dresses the diver. Once the diver is in the water, the tender constantly tends the lines to eliminate excess slack or tension (certain UWSH tasking may preclude this requirement, e.g., working in submarine ballast tanks, shaft lamination, dry habitat welding, etc.). The tender exchanges line-pull signals with the diver, keeps the Diving Supervisor informed of the line-pull signals and amount of diving hose/tending line over the side and remains alert for any signs of an emergency.

Question 7. How does the Navy weigh various risk factors as part of its risk assessments?

Answer. The U.S. Navy Diving Manual lists the following process in performing Operational Risk Management (ORM) for diving operations:

The five step process is:

1. Identify Hazards--Begin with an outline or chart of the major steps in the operation (operational analysis). Next, conduct a Preliminary Hazard Analysis by listing all of the hazards associated with each step in the operational analysis along with possible causes for those hazards.

2. Assess Hazards--For each hazard identified, determine the associated degree of risk in terms of probability and severity.

Although not required, the use of a matrix may be helpful in assessing hazards.

3. Make Risk Decisions--First, develop risk control options. Start with the most serious risk first and select controls that will reduce the risk to a minimum consistent with mission accomplishment. With selected controls in place, decide if the benefit of the operation outweighs the risk. If risk outweighs benefit or if assistance is required to implement controls, communicate with higher authority in the chain of command.

4. Implement Controls--The following measures can be used to eliminate hazards or reduce the degree of risk. These are listed by order of preference:

Administrative Controls--Controls that reduce risks through specific administrative actions, such as:

Providing suitable warnings, markings, placards, signs, and notices. Establishing written policies, programs, instructions and standard operating procedures (SOP).

Training personnel to recognize hazards and take appropriate precautionary measures.

Limiting the exposure to hazard (either by reducing the number or personnel/assets or the length of time they are exposed).

Engineering Controls--Controls that use engineering methods to reduce risks by design, material selection or substitution when technically or economically-feasible.

Personal Protective Equipment--Serves as a barrier between personnel and hazard. It should be used when other controls do not reduce the hazard to an acceptable level.

5. Supervise--conduct follow-up evaluations of the controls to ensure they remain in place and have the desired effect. Monitor for changes, which may require further ORM. Take corrective action when necessary.

Incentives

Question 8. What incentives could the Coast Guard provide to increase the quality of its program?

Answer. U.S. Navy Divers, both officers and enlisted, receive the incentive of diving duty pay. In order to be eligible for the pay members must be designated divers, be assigned to diving duty under competent orders, and maintain their qualifications for diving.

Enlisted U.S. Navy Divers may also receive Special Duty Assignment Pay (SDAP). These divers maybe entitled to SDAP if they are performing duties in a billet which has been designated as extremely difficult or involving an unusual degree of responsibility in a military skill.

Qualified Master Divers receive special Proficiently Pay (PROPAY) which is an added incentive to obtain Master Diver qualifications and stay with in the dive program.

Management Billets

Question 9. What is the ratio of Navy dive management to Navy Divers? In your opinion, is the current ratio of 1 Coast Guard manager for 4 dive teams adequate?

Answer. Dive team manning, both in numbers and experience level will vary depending on dive mission. The U.S. Navy Diving Manual defines minimum manning levels for each diving technique. These minimums and the application of ORM determine the level of operational oversight and are listed in the following table extracted from the Navy Diving Manual:

Minimum Manning Levels for Air Diving

	Open circuit SCUBA Operations		Surface-Supplied Operations
	Single Diver	Buddy Pair	
Diving Supervisor	1	1	1
Comms and Logs	(a)	(a)	(a)
Console Operator			(a)
Diver	1	2	1
Standby Diver	1	1	1
Diver Tender (b, c)	1 (b)		1 (b)
Standby Diver Tender	(c)	(c)	1
Total	4 (d)	4	5 (e)

WARNING--These are the minimum personnel levels required. ORM may require these personnel levels be increased so the diving operations can be conducted safely. See Paragraph 6-1.1 and 6-9.1

(a) Diving Supervisor may perform/assign Comms/Logs or Console Operator positions as necessary or required by the system/operations/mission.

(b) See paragraph 6-8.8.5.2 for Tender Qualifications.

(c) If the standby diver is deployed, the Diving Supervisor shall tend the standby diver.

(d) The diver will be tended or have a witness float attached, see paragraph 7-3.1.7. A tender is required when the diver does not have free access to the surface, see paragraph 7-8.2 for further guidance. During mission essential open circuit SCUBA operations, minimum-manning level may be reduced to three qualified divers at the Diving Supervisor's discretion.

(e) Although five is the minimum number of personnel for the MKIII and Extreme Lightweight Dive System (XLDS) operations, six or more is highly recommended based on mission requirements and ORM.

Question 10. What operational benefits could be derived from increasing the number of management personnel in the Coast Guard's dive program?

Answer. Increasing the number of management personnel in the Coast Guard's dive program would address the most significant difference between the Navy and Coast Guard Diving Programs: the cadre of senior, experienced Navy Divers, especially our senior enlisted Master Divers, who continuously mentor junior sailors and manage our diving mission risks. The ``human capital'' represented by the Navy's senior enlisted diving leadership ensure that Navy diving is completed in accordance with diving policy and that the material condition of the diving systems are maintained in accordance with certification standards. Time will be required for the Coast Guard to grow this experience, but establishing and funding the management personnel (senior enlisted divers) to oversee the waterfront execution of Coast Guard diving represents a central, constructive action that would lead to safer, less riskier Coast Guard diving operations.

Question 11. What is the approximate per capita budget for the Navy dive program?

Answer. Approximately $13M in annual funding for the Navy diving program provides for diving program management, centrally managed diving equipment acquisition, diving system safety certification, diving system lifecycle and configuration management, diving policy and procedure management, major diving system procurement and procedural testing, diving equipment and biomedical research to support 1,228 authorized FY06 enlisted Navy Diver rating authorized billets ($10,600/diver). This ratio only accounts for the authorized billets in the Navy Diving rating. Many other enlisted ratings are also divers and are the beneficiaries of the Navy diving program including SEAL, EOD technicians, SEABEE divers, etc. The ratio also does not include all U.S. Naval Officers who are Navy Divers. Inclusion of these additional officer and enlisted authorized diving billets in the ratio would dramatically reduce the cost per diver ratio. (The authorized SEAL and EOD ratings alone outnumber the Navy Diver rating.)

This funding ratio does not include the costs associated with: the Naval Safety Center's diving safety surveys, Fleet Operational

Readiness assessments performed on diving commands, the Center for EOD and Diving's formal diver training courses, nor the mission specific training, equipment and research for the Underwater Construction Teams (UCT), the Explosive Ordnance Disposal (EOD) Teams or the Special Warfare (SEAL) Teams. These costs are part of the general Navy safety, training, UCT, EOD and SEAL mission funding.

CG report: Healy officer's carelessness killed her, fellow diver

http://www.militarytimes.com/story/military/archives/2013/03/20/cg-report-healy-officer-s-carelessness-killed-her-fellow-diver/78532886/
March 20, 2013

"WE'RE DIVING!!!!!!!!!" an enthusiastic Lt. Jessica Hill wrote to an unknown recipient in an e-mail Aug. 17, 2006 — the date that would mark her death.

The Coast Guard lieutenant dashed off the note after receiving approval from senior officers on the icebreaker Healy to conduct a cold-water familiarization dive with two other divers, even though she — the only trained dive officer and supervisor on the ship — did not have the required complement of personnel required for the exercise.

The Coast Guard released a report Wednesday detailing the factors that led to the deaths of Hill, 31, of St. Augustine, Fla., and Boatswain's Mate 2nd Class Stephen Duque, 26, of Miami, a year ago in the icy waters of the Arctic Ocean. It also spells out measures that must be taken with the Coast Guard's dive program to help guarantee that a similar tragedy never again occurs.

But in the most damning assessment of the accident released to date, it also analyzes how decisions that day by the command cadre — especially Hill — contributed significantly to the mishap.

Unlike previously released reports that detailed the events leading up to the accident and describing it in detail, the report lists "causal" factors that contributed to the accident. It reveals factors that, if they weren't present, "would most likely have broken the chain of errors and the mishap would not have occurred" — and the "contributory factors," which, by themselves wouldn't have caused the accident but influenced its progression.

Many of the causal errors point to poor decision-making on behalf of the command, including Hill herself.

For example, according to the report, Hill, as senior dive officer and dive supervisor aboard the ship, embarked on a dive operation in which she failed

to mandate the use of a redundant scuba system, as required by Navy regulations.

She used excessive weight to avoid an uncontrolled ascent, and encouraged Duque to the same. This is dangerous because it can cause decompression sickness, commonly known as the bends.

Before the dive, Hill and Duque packed on nearly 60 pounds of weight, including steel tanks, that couldn't easily be jettisoned in an emergency.

Hill, along with the command cadre — including the commanding, executive and operations officers — failed to conduct a required risk assessment of the exercise, the report states. She also failed to call off the dive when the crew encountered equipment malfunctions and failures, and she alone told the command cadre that the "dive was within regulations," even though, according to Navy regulations, the team would have needed at least four qualified divers to conduct the exercise.

"The [dive officer] told the commanding officer that the dive was within regulations when it was not, and the CO, who was responsible for the safe conduct of all dive operations, lacked familiarity with the dive procedures and approved the plan," the report says.

Hill and Duque died when they entered 29-degree water, intending to conduct two 20-minute exercises at depths of 20 feet. Minutes into the exercise, Duque plunged to 220 feet below the surface, while Hill sank to 189 feet below.

It is thought that Duque lacked the manual dexterity and the expertise to control buoyancy by inflating or deflating the air in his dry suit. He had also experienced some seepage around his gloves, causing his hands to become so cold that he could not make proper hand signals or operate his equipment well.

The divers planned to travel only to depths of 20 feet. But in the unexpected event that they descended to 33 feet — which they did — they would have experienced a loss of buoyancy, because air volume compresses at that level and provides less buoyancy. Divers wearing excessive weight would have to counteract the loss by adding air to their suits or jettisoning weight.

The pair's added weights were zipped in to their dry suit pockets, making it impossible for them to drop them.

Tenders observing the dive failed to understand that the two had dropped to greater-than-planned depths until it was too late. Hill and Duque ran out of air, likely became unconscious, and then suffered barotraumas — ruptured lungs — as they were pulled to the surface.

The Coast Guard has released numerous documents related to the accident, and in January, it issued the details of the administrative investigation into the accident. The most recent memo, signed by chief of staff Vice Adm. Robert Papp, also includes recommendations for the Coast Guard's dive program if a study team determines that the program should remain organic to the service.

The detailed analysis released Wednesday blames "impulsive" decision-making and the divers' sense of bravado as main factors that led to the accident.

According to the report, such causal factors were:

* "The dive officer [Hill] created an unsafe situation ? because during preparation for the dive, the officer's confidence projected in a way that others did not continue to question the officer's responses regarding the required number of divers and the use of weights in pockets that did not allow for jettison."

* "The dive officer demonstrated overconfidence when [she] did not engage in the required safety practices ... Diver 1 (Duque) and Diver 2 (a third diver whose equipment failed, canceling her participation) mirrored the overconfidence of the dive officer by proceeding with the dive without questioning whether it should have taken place."

* "'Get-Home-It is' / 'Get-There-It is' — the dive officer saw this as the only opportunity to do an ice dive. Once in the water, the divers were reluctant to cancel the dive operation even though [Duque] had a loss of manual dexterity and Diver 2 had to leave the dive side."

According to Navy regulations, there should have been at least four divers to conduct the exercise — two in the water, one on standby and a dive supervisor.

The Navy Dive Manual and Coast Guard regulations require risk assessments and preparation before any dive exercise. If they'd been followed, the checks and procedures would have halted the exercise before it started. For example, the Healy, which deployed that summer with a complement of four divers, only had three onboard that day because one was serving temporary duty elsewhere. Its dive locker was in a state of disarray, lacking proper equipment, safety paperwork, checklists and inspections. And the command cadre approved Hill's dive plan in 30 minutes that day, without the required risk assessments and checkout procedures.

The actions of Duque and other crew members also contributed to the accident, the report states. According to eyewitness reports, Duque arrived at the dive site at the appointed time, but as he waited for the other divers

who were delayed, he lay down on the ice — an action prohibited by the Navy dive manual because it can cause heat loss and equipment failure.

Also, the dive tenders — the personnel who monitored the divers' tethers — were inexperienced. They received a cursory informational briefing from Hill about their duties, and at least one of them drank a beer during ice liberty prior to assisting with the dive.

The casual disregard for procedures led to failure up and down the chain of command, reports have concluded.

"The Healy command cadre also created an unsafe situation by not ensuring all sonar were secured, and in conducting ice liberty with alcohol and allowing a polar bear swim at the same time in very close proximity to the dive," the memo states.

The report's recommendations on the Coast Guard's dive program will be implemented once a study team completes its analysis of the program requirements, management and policies.

"It is imperative that we honor the memories of our fallen shipmates by diligently implementing the corrective actions directed in the final decision letter," Papp wrote in a Coast Guard-wide message Wednesday.

Immediately following the accident, the Coast Guard instituted a number of changes in its dive program. It conducted a safety standdown and inspections of all dive units, held training for divers who deployed last year on the icebreaker Polar Sea, and developed a dive training module for commanders at the Prospective Commanding Officer and Executive Officer Afloat Course and elsewhere.

According to Lt. j.g. Alexander Buchler, the Polar Sea's dive officer, the changes have influenced all members of the crew, at least on his ship.

"The big change that I have observed is a widespread increase in awareness and education of non-diving Coast Guard members on the dangers and risks associated with diving," Buchler wrote in an e-mail during the Polar Sea's deployment for Operation Deep Freeze earlier this year.

"Diving is always a high-risk mission, and this program has received the appropriate level of attention and support from all levels of the Coast Guard," he said. "Every aspect of the Polar Sea's dive program has been extensively reviewed by outside parties and evaluated for safety."

Related reading and multimedia

*** Story:** CG report calls for better dive training
* Gallery: Photos from the official Coast Guard investigation
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* Story: Incident raises questions about future of diving missions
* Story: Admiral's mast punishes three
* Story: Investigation's findings
* On the Web: Official Coast Guard investigation documents

Always Ready

http://www.alertdiver.com/US-Coast-Guard-Diving-Program
By David Helvarg © *Alert Diver* — Q1 Winter 2016
The U.S. Coast Guard Diving Program

"My umbilical is stuck," MK1 Michael Pearsall reports.

"Primary banks going down," DV1 Geri Cabrera says from where she's monitoring her fellow diver's air, communications and depth on the XLDS (Extreme Lightweight Diving System).

We're on a Coast Guard pier in Alameda, Calif. It's a hot, clear day, and we can see his bubbles about 30 yards out.

MK1 Michael Pearsall enters the water for a training dive in Alameda, Calif., using the extreme lightweight diving system (XLDS).

"I'm having a hard time breathing. I need some air," Pearsall says.

"Tell the diver to go to EGS," directs team supervisor DV1 Adonis Kazouris, referring to the emergency gas system. Cabrera relays the message. Pearsall switches to the EGS scuba tank on his back instead of the rack of tanks on the pier that has been supplying him air through a quarter-inch umbilical.

"Can you get the umbilical untangled?" Kazouris asks Pearsall.

"No, negative," he replies.

The team's second diver proceeds over a muddy gray bottom through murky, 5-foot-visibility water and reports, "I've found a leak in the umbilical. Unfouling it now."

"Thanks, buddy," Pearsall responds into the mic of his MK-20 full-face mask, prompting some wry grins from his seven topside teammates.

Soon line handlers lift the two divers to the surface. "Divers on surface,"

Kazouris calls out.

"Divers on surface," a topside chorus repeats. The two divers climb up a swaying 15-foot rope-and-wood Jacob's ladder that's been secured to the pier a short distance behind the Coast Guard cutter *Stratton*.

I'm with a "fly-away team" from the U.S. Coast Guard's Regional Dive Locker West (RDLW), based in San Diego, and working out of a trailer full of tanks, weights, a compressor, safety lines and more.

Between maintenance dives underneath the 418-foot *Stratton*, they're doing what Coast Guard personnel always do between operations: train fiercely, in this case with various emergency scenarios such as loss of air supply, injury, entanglement and decompression sickness (DCS). They're working to qualify a couple of dive supervisors on the new XLDS. These drills are based on their primary missions: aids to navigation, polar operations and PWCS (ports, waterways and coastal security).

Examples of this work include helping to rescue the 207-foot Australian fishing vessel *Antarctic Chieftain* after it got stuck in Antarctic ice last winter, securing Manhattan's rivers when Pope Francis visited New York in September and helping recover debris and bodies from a Coast Guard helicopter crash that killed four of their fellow service members off Mobile, Ala., in 2012. In March 2016 they will head to the Arctic Ocean to train with Navy divers on an ice floe off Prudhoe Bay, Alaska, where a growing range of threats and challenges are emerging from the declining sea ice.

As part of their polar mission training, they do a lot of ship inspections and repairs for the fleet. Yesterday they inspected the *Stratton*'s hull, props and bow thruster (using a hand-held Outland video system so the ship's engineer could see what they saw), and they plugged a discharge port so a leak in the engine room could be worked on. This afternoon they'll put another patch over a sea chest (intake reservoir) so additional maintenance can be carried out inside the hull.

One of the dives lasted for an hour and 55 minutes, which is why they're using a surface-supplied air system — so they don't have to pull divers out of the water to switch tanks.

"These guys are beautiful for us," notes the *Stratton*'s commanding officer Captain Nathan Moore. "If we'd called in a commercial dive team we'd be at their mercy."

The two unplanned patches probably would have cost about $10,000. In August 2015 the RDLW sent eight divers to Juneau, Alaska, to work on eight ships gathered for the annual buoy tender roundup. (Along with law enforcement and search and rescue, the Coast Guard also maintains the nation's navigational lights and buoys).

When I began writing my book *Rescue Warriors: The U.S. Coast Guard, America's Forgotten Heroes*, I was surprised that these service personnel seemed more comfortable on and above the water than below it. They had a rescue swimmer program that grew out of a helicopter rescue tragedy in 1983, but no dive program.

The service has had hardhat and scuba divers since World War II, but until recently diving was considered volunteer or collateral duty and comprised shallow-water repair work from three Pacific buoy tenders and hull inspections of polar icebreakers. After 9/11 the number of Coast Guard armed responders skyrocketed. The Maritime Transportation Security Act of 2002 created Maritime Safety and Security Teams (MSSTs) in major ports, and these teams included scuba divers doing underwater security sweeps. Still, even as it expanded from four to 12 units, diving remained a collateral duty, with most divers selecting and maintaining their own gear. Then on Aug. 17, 2006, a tragic safety failure occurred.

That day Lt. Jessica Hill and Boatswain's Mate Steven Duque died on a training dive below arctic ice during an "ice liberty" on the Coast Guard cutter *Healy* about 500 miles north of Barrow, Alaska. They were undertrained and overweighted, each carrying 60 pounds of weight in the pockets of their BCDs — about twice the recommended amount. Their low-

pressure inflator hoses were not connected to their BCDs. They rapidly dropped down nearly 220 feet, where they ran out of air and asphyxiated. Their line handlers were nondiver volunteers who had no idea what was going on. The internal Coast Guard investigation that followed revealed a cascade of safety breaches, including that their gear had not been inspected in more than four years.

"The *Healy* incident flipped our entire leadership on its ear," says Ken Andersen, now chief of subsurface capabilities for the Coast Guard. Recognizing that diving had to be "elevated on par with other high-risk, training-intensive operations such as aviation," the service decided to professionalize it, establishing permanent dive lockers in California (RDLW) and Virginia (Regional Dive Locker East) in 2008 and a third more recently in Hawaii (Regional Dive Locker Pacific). Training, gear and inspections were standardized. The lockers will soon have 71 rated members. The Coast Guard officially established a diver rating, and the first class of certified Coast Guard divers was recognized in April 2015.

Those already on duty spend more than 200 days a year deployed on missions. To carry these out they've acquired and trained on remotely operated VideoRay subs; metal detectors; hand-held, mask-mounted and towed side-scan sonar systems; and hydraulic tools, including underwater chainsaws. They use surface-supplied systems, Kirby Morgan helmets and scuba units. They hope to have their own hyperbaric chamber within five years; for now they deploy to sea with Navy medical crews and chambers or else depend on shore-based facilities.

New recruits go through a one-week screening at the enlisted training center in Cape May, N.J., where they put in a lot of pool time. Next they get acquainted with the lockers and are then sent to the Naval Diving and Salvage Training Center (NDSTC) in Panama City, Fla. There they undergo the Navy's five-month Second Class Diver Course (see "Year of the Military Diver," *Alert Diver*, Summer 2015). Some will later return for the three-month First Class Diver Course, which focuses on dive medicine and mission planning. Toward the end of the Second Class course, instead of Navy underwater explosives training, the Coast Guard divers undergo specialized training in light salvage, drysuit operations and polar diving.

The Coast Guard runs the armed services' only ice-diving school for two weeks each winter at a National Oceanic and Atmospheric Administration (NOAA) facility in Seattle, Wash. After some emergency ascent training in a tower tank, the trainees head 370 miles north to Lac des Roches, British Columbia, where they chop a hole in the lake ice and head below each morning. They lay out wagon-wheel designs in the snow around the hole in case a diver loses an umbilical and needs surface markers to find his or her way back. The patterns stand out dramatically on the ice as long as it's a sunny day.

As part of its training agreement with the Navy, the Coast Guard assigns six full-time trainers to NDSTC. Another seven work at the "dunker" at the Rescue Swimmer school in Elizabeth City, N.C. Dunkers are mock-ups of helicopter or small-boat interiors that drop and capsize in a pool (often in simulated darkness and storm waves) to train aviators and sailors to escape from a water crash.

Other interesting jobs done by Coast Guard divers include habitat surveys of endangered sea grasses and corals off Florida to see if navigation buoys need to be moved and post-Hurricane Sandy underwater inspections of newly created hazards to navigation. Poststorm assessments such as that, along with oil and chemical spills, have gotten program managers focused on developing contaminated-water diving capability for the lockers.
Back in Alameda, Pearsall complains to Geri Cabrera and the others, "This gray muck really clouds up," as he scrapes the mud off his dive boots, which he used to walk across the not really contaminated but certainly not pristine bottom of Alameda Bay.

DV1 Geri Cabrera and Chief Petty Officer Lucas Spencer monitor a diver using the XLDS.

One of only two women in the program, Cabrera, who grew up in Guam, is a pretty typical Coast Guard diver. "In 2007 I was asked, 'Can you do pull-ups?' 'Yeah, I can do pull-ups,' I said; I guess that's the issue they had with women," Cabrera says. "So I qualified and began diving with MSST Honolulu while also driving a 25-foot tactical boat because diving was still collateral duty. Later I dived the Pacific off the buoy tender *Sequoia* and then came to San Diego before moving on to Operation Deep Freeze [aboard the Coast Guard icebreaker *Polar Star*] for five months to McMurdo Station. So I've dived on untouched corals in the Pacific and in cold Antarctic waters. I have had the best of both worlds while getting to help people. I'd say my career's been blessed."

Now the recreational diving community stands to benefit from the Coast Guard's growing interest in diving. Since the Coast Guard investigates all maritime accidents, the dive program recently wrote a guide to help nondiving investigators better understand the factors that contribute to diver injuries and fatalities. Having themselves emerged out of a deadly incident, the dive lockers are seriously committed to putting safety first while also living their service's motto: ***Semper paratus — Always ready.***

Diving in: A new chapter at the top of the world

http://coastguard.dodlive.mil/2017/08/diving-in-a-new-chapter-at-the-top-of-the-world/

August 17, 2017 Posted by Diana Sherbs - Written by Petty Officer 2nd Class Meredith Manning

Coast Guard Petty Officer 2nd Class Adam Harris, a member of a joint Coast Guard-Navy dive team deployed aboard Coast Guard Cutter Healy, holds a Coast Guard ensign during a cold water ice dive off a Healy small boat in the Arctic, July 29, 2017. The joint dive team successfully completed the first shipboard Coast Guard dive operations in the Arctic in 11 years.
U.S. Coast Guard photo by Petty Officer 1st Class David Bradbury.

Arctic fog filled the air, adding moisture to the icy temperatures that bit at exposed skin and cut through layers of clothing. The small 36-foot aluminum Coast Guard boat was filled with people from bow to stern as the coxswain butted it up against a large ice floe. The crew launched grappling hooks over the side and tugged on their lines, causing the sharp edges to claw themselves into the ice anchoring the boat in place.

"All non-essential personnel please move to the stern," piped a small, athletic woman in a black dry suit.

A few crew members and bystanders slipped to the back of the boat, but a large portion of the people stayed in place. She addressed them as she read from a small booklet and jotted notes as they checked their equipment. This was the first time divers would enter Arctic waters from a Coast Guard vessel since a tragic accident took two military divers' lives in 2006.

Coast Guard Petty Officer 1st Class Brendon Ballard enters the water from a Coast Guard Cutter Healy small boat during a cold water ice dive in the Arctic, July 30, 2017. Divers are the Coast Guard's primary resource for the service's subsurface capabilities and perform a full spectrum of Coast Guard missions; including underwater inspections and maintenance on icebreakers and other cutters, surveying critically endangered species habitats and providing underwater searching capabilities for search and rescue operations.
U.S. Coast Guard photo by Petty Officer 2nd Class Meredith Manning.

The divers on the small boat were part of a joint United States military dive team, consisting of six Coast Guard divers and six Navy divers, deployed to

During the patrol, the team conducted cold wCoast Guard Cutter Healy to support the 2017 Coast Guard Research and Development Center Arctic patrol.ater ice dive operations from both the small boat and a dive platform that was lowered from the Healy. A total of 18 dives were performed with a maximum depth of 38 feet and subsurface time of 18 minutes.

The team's operations marked the culmination of specialized oversight, training and proficiency since the loss of Lt. Jessica Hill and Petty Officer 2nd Class Steven Duque. Since the accident, the Coast Guard has implemented a dive rating, required advanced military dive training and developed a military ice diving course available to all branches.

"The aftermath of the deaths of Jessica Hill and Steven Duque breathed life into a new Coast Guard dive program and diver rating," said Capt. Greg Tlapa, commanding officer of the Coast Guard Cutter Healy. "This summer

was a great milestone towards restoring, not only Healy's full dive capabilities, but cold water ice dive capabilities for the entire U.S. military operating in the Arctic."

Coast Guard Petty Officer 1st Class David Bradbury, a member of a joint Coast Guard-Navy dive team deployed aboard Coast Guard Cutter Healy, enters the water from a small boat during a cold water ice dive in the Arctic, July 30, 2017. The success of the dive operations during their deployment increased the Coast Guard's mission capabilities in both the Arctic and the Antarctic.
U.S. Coast Guard photo by Petty Officer 2nd Class Meredith Manning.

As the only U.S. military surface vessel that deploys to the ice-covered waters of the Arctic, the reintegration of diving on the Healy assures year-round access for national security, sovereign presence and increased maritime domain awareness in the region.

The dive team also trained with a Navy recompression chamber that was brought onboard the cutter. For the dives performed during this deployment, access to a recompression chamber within six hours is mandatory. Due to the remoteness of the Arctic, having a chamber onboard during the mission was essential.

"The locations where we were diving were outside of our capabilities," said Petty Officer 1st Class Geri Cabrera, a Coast Guard dive supervisor, referring to the distance from the nearest recompression chamber. "It was through our partnership with the Navy dive team that this mission was possible."

The chamber serves as a lifeline and a training platform for the divers. During the deployment they worked through scenarios using the chamber, trained on operating the chamber and completed chamber familiarity drawings.

Although the chamber was available and required in proximity, the divers successfully completed dive operations during the deployment without incident.

During the last dive of the mission, Tlapa addressed the crew as they stood in formation, a small sea of red winter coats, on the fantail of the cutter.

A life ring is mounted on a rail aboard Coast Guard Cutter Healy while transiting through ice floe in the Arctic Ocean during its annual Arctic patrol in support of scientific research and Polar exploration, July 31, 2107. The Coast Guard's leadership role in providing a continued Arctic presence is essential to national security, maritime domain awareness, freedom of navigation, U.S. sovereign interests and scientific research. U.S. Coast Guard photo by Senior Chief Petty Officer Rachel Polish.

"Lt. Hill and Petty Officer Duque were taken from this world 11 years ago, but their spirit lives on in the hearts of loved ones and with the restoration of dive operations to the Healy. In their memory, we stand united as one ship, one crew, and one family. We honor them each time we pause to evaluate risk before a dangerous operation and we honor them by reintroducing dive operations to the Arctic."

Two divers were lowered on a platform into the icy Arctic waters. A Coast Guardsman played taps on his trumpet as the divers swam out far enough for the crew to watch them disappear in the vast ocean as ice floes surrounded the cutter. The fog that hung in the air of the first dive has long since lifted and the sun peaked through the overcast sky. Just beneath the surface, the divers released a weighted plaque, honoring their brother and sister whose loss paved the way to this moment.