

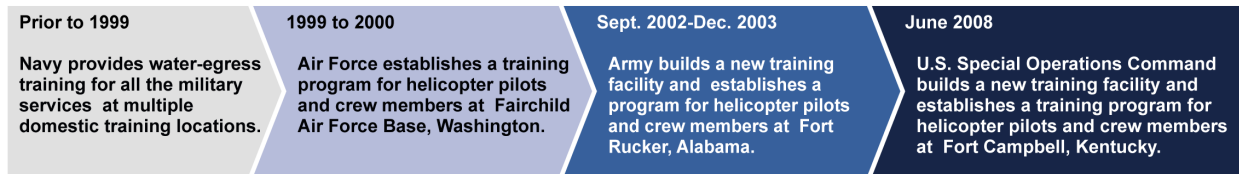
July 14, 2014

Congressional Committees

Military Training: Observations on Efforts to Prepare Personnel to Survive Helicopter Crashes into Water

Although military helicopter water crashes are rare, when they do occur they often result in casualties. From 2003 through 2013, the Department of Defense (DOD) recorded 22 crashes of military helicopters into the water, resulting in 55 fatalities and 22 injuries. Specifically, the Army reported 8 water crashes resulting in 14 fatalities and 7 injuries, the Navy reported 8 crashes resulting in 18 fatalities and 10 injuries, and the Marine Corps reported 6 crashes resulting in 23 fatalities and 5 injuries. Each military service and U.S. Special Operations Command (SOCOM)¹ requires its personnel to complete helicopter water-egress training to teach personnel to escape from helicopters that crash in water. The Army, Navy, Air Force, and SOCOM each operate their own training program.² The Marine Corps requires its pilots and crew members to complete the Navy’s water-egress training. Prior to 1999, the Navy provided training for all the military services, but due to scheduling conflicts and a desire to reduce travel costs, the Army, Air Force, and SOCOM developed their own programs, as shown in figure 1.

Figure 1: Timeline of the Development of Helicopter Water-Egress Training Programs



Source: GAO analysis of Department of Defense (DOD) data. | GAO-14-615R

¹SOCOM provides funding for the Allison Aquatic Training Facility—a helicopter water-egress training facility at Fort Campbell, Kentucky, used to provide training to Army special operations personnel. U.S. Army Special Operations Command is responsible for nonfiscal matters related to operation, training, and sustainment at the facility. For the purposes of our review, we refer to the Allison Aquatic Facility training as SOCOM training.

²Army regulations require water-egress training for all Army personnel flying single-engine aircraft or multiengine aircraft without single-engine capability that conduct overwater operations beyond gliding distance of land, or that perform deck landing operations; however, Army officials told us that all helicopter pilots and crew members receive this training. Army Regulation 95-1, Flight Regulations, section 8-12(f)(3) (Nov. 12, 2008) (AR 95-1). Air Force guidance requires Air Force pilots and flight engineers—among others—to attend water-egress training. Air Force Instruction 16-1301, Survival, Evasion, Resistance, and Escape (SERE) Program, section 2.2.2.3 (Sept. 6, 2006) (AFI 16-1301). Navy guidance requires aeronautically designated personnel to complete water-egress training. Navy officials told us that aeronautically designated personnel include helicopter pilots and crew members. Office of the Chief of Naval Operations Instruction 3710.7U, NATOPS General Flight and Operating Instructions, section 8.4.6 (Mar. 1, 2004) (OPNAVINST 3710.7U).

Report Documentation Page

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The House Report accompanying the National Defense Authorization Act for Fiscal Year 2014³ mandated that GAO assess DOD's helicopter water-egress training. This report (1) identifies any differences and similarities among the military services' and SOCOM's water-egress training programs for helicopter pilots and crew members and (2) assesses whether these training programs have the capacity to meet current and future helicopter water-egress training requirements.

To identify any differences and similarities among the military services' and SOCOM's water-egress training programs, we analyzed military guidance, curriculum documentation, graduation and training data for fiscal year 2009 through fiscal year 2013, and other documents, and determined the key characteristics of each program. We focused our review on domestic water-egress training programs and facilities that trained helicopter pilots and crew members. Consequently, we did not include overseas facilities or facilities operated by the Marine Corps.⁴ We interviewed officials from each of the military services and SOCOM and observed training at their primary water-egress training locations. During these visits we observed the condition of the training facilities and implementation of the training. We sought to determine the costs associated with these training programs, but the services and SOCOM cannot estimate the total cost of their helicopter water-egress programs. Officials told us they were unable to estimate these costs because their programs may be included as part of broader training programs and in some cases funds are not allocated specifically for providing water-egress training.

To assess whether the training programs have the capacity to meet current and future helicopter water-egress training requirements, we collected graduation data for the training programs for fiscal year 2009 through fiscal year 2013.⁵ We then compared the total number of training spaces available for each program with graduation data for fiscal year 2013, the most recent full year of data at the time of our review.⁶ We calculated the number of training spaces by multiplying the number of water-egress classes by the maximum number of students able to participate in each class. We discussed with service and SOCOM officials the overall capacity of their training programs and reviewed existing training contracts. We also collected service and SOCOM future training requirements data for fiscal year 2014 through fiscal year 2018. We assessed the reliability of enrollment, graduation, and training requirements data by reviewing the data for outliers, reviewing documentation where available, and interviewing officials to understand the processes used to collect the data. We determined that the graduation data and training requirements data were reliable for the purposes of our report—that is, to provide context for the approximate number of graduates and training spaces available, and needed, for water-egress training. Finally, we spoke with service and SOCOM officials about the potential effect of consolidating their helicopter water-egress programs.

³H.R. Rep. No. 113-102, at 128-129 (2013).

⁴We excluded the Army's facility in Korea because it has not been operational since September 2013 and is not scheduled to resume training until early 2016. We excluded the Marine Corps' four training facilities because they provide training to ground forces, which is outside the scope of this review.

⁵We collected data starting in fiscal year 2009 because that was the first full year of data that were available for the Army, Navy, Air Force, and SOCOM.

⁶Our review of the services' and SOCOM's enrollment data found them unreliable for our analysis because these data in some cases double-counted students and in other cases did not include students who participated in the water-egress classes while enrolled in other programs. We determined that graduation data provided the most reliable estimate of student throughput for these programs.

We conducted this performance audit from October 2013 to July 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results in Brief

The military services and SOCOM have similar water-egress training programs and similar facilities and equipment, but each organization has specialized training capabilities that it uses to meet specific training needs. For example, Army, Navy, Air Force, and SOCOM training facilities each contain at least one pool and hoists for moving egress simulators.⁷ The services and SOCOM use similar equipment, such as egress simulators, egress trainers, and emergency breathing devices, and similar approaches in their initial water-egress training. Although the programs are similar, some have specialized training capabilities. For example, the Army and SOCOM use helicopter-specific simulators to more closely replicate helicopters flown by their personnel, and SOCOM uses special equipment to simulate difficult environmental conditions, such as wind and waves. Officials also stated that the tasks they require students to complete to graduate from initial training vary by organization. For example, SOCOM requires its students to complete extra repetitions that require students to escape from different exits in the simulator and to practice escaping in different environmental conditions. Additionally, the Navy and Air Force use active-duty personnel as instructors, while the Army and SOCOM use contractors. Finally, the Army, Navy, and SOCOM require students to complete continuation training every 4 years and require students to train in both egress trainers and egress simulators. In contrast, the Air Force requires pilots and crew members to complete continuation training every 3 years, but requires students to train only in egress trainers and not in egress simulators.

Our analysis found that the military services and SOCOM are meeting their current training needs and have additional training capacity to meet future requirements with their current contracts, facilities, and equipment. According to service and SOCOM officials, they have trained all pilots and crew members requiring training through the end of fiscal year 2013. From fiscal year 2009 through fiscal year 2013, the services and SOCOM trained about 37,500 personnel. Our analysis found that in fiscal year 2013, the services and SOCOM used approximately 40 percent of their available training spots in graduating about 7,000 students. The military services and SOCOM anticipate needing to train about 6,000 pilots and crew members per year through fiscal year 2018. Given current training capacities, which are expected to remain stable, and estimated future requirements, our analysis indicates that the services and SOCOM should be able to meet training requirements through fiscal year 2018, while maintaining additional capacity should requirements unexpectedly increase significantly. Officials agreed with our assessment and stated that their programs can meet estimated training requirements with the contracts, facilities, and equipment already in place. Given the unused capacity we identified, we discussed with service and SOCOM officials the potential for consolidating their programs to reduce costs. Sufficiently detailed cost data were not available for us to quantify any cost savings that might be achieved by consolidation. However, we recognize that any potential savings could be limited if facilities are kept for other training purposes; moreover, any potential savings could be offset by increased travel costs as students

⁷Egress simulators simulate the interior and exterior of a helicopter and are used to teach students how to exit a crashed and submerged helicopter. Egress trainers simulate the interior of a helicopter—including an exit, seatbelt, and window—so that students can practice the steps involved in exiting a submerged helicopter,

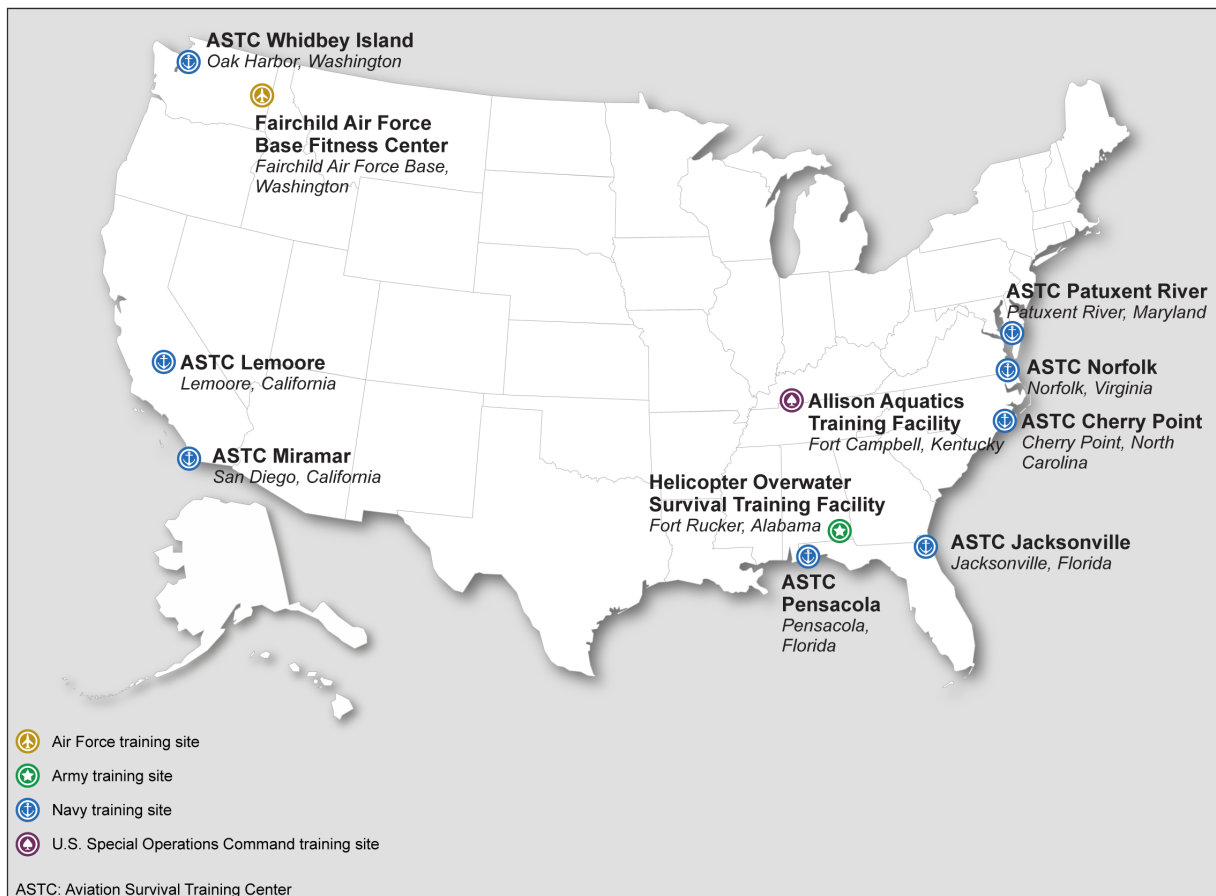
would have to travel to other service facilities. Officials also stated that consolidation could disrupt other training programs. We are not making any recommendations in this report.

The Services and SOCOM Provide Similar Training, but Each Has Specialized Capabilities

Water-Egress Programs Use Similar Facilities, Basic Equipment, and Training Approaches

Military service guidance requires selected helicopter pilots and crew members to complete water-egress training.⁸ To help personnel meet this requirement, the services and SOCOM provide water-egress training at 11 domestic training locations, as shown in figure 2.

Figure 2: Military Service and U.S. Special Operations Command (SOCOM) Domestic Helicopter Water-Egress Training Sites



Source: Department of Defense (DOD) (information); Map Resources (map). | GAO-14-615R

Each facility contains at least one pool and hoists⁹ for moving egress simulators. For detailed information about these training facilities see enclosure I. Additionally, the services and

⁸AR 95-1, section 8-12(f)(3); AFI 16-1301, section 2.2.2.3; OPNAVINST 3710.7U, section 8.4.6.

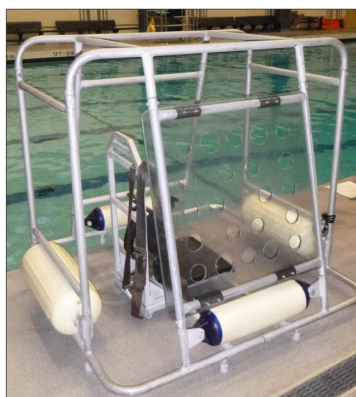
⁹The Army and the Air Force have overhead beam hoists, positioned near the roofs of their facilities, which use a motorized trolley to move egress simulators from one area to another. The Navy and SOCOM use pedestal hoists, attached to their pool decks, which include booms that pivot to move simulators in and out of their pools.

SOCOM use similar basic equipment such as egress simulators, egress trainers, and emergency breathing devices, as shown in figure 3.

Figure 3: Helicopter Water-Egress Training Equipment



Egress simulators simulate the interior and exterior of a helicopter and are used to teach students how to exit a crashed and submerged helicopter. They can be configured differently to simulate different kinds of helicopters by changing where the seats are placed as well as the types of windows and doors used on the simulator.



Egress trainers simulate the interior of a helicopter—including an exit, seatbelt, and window—so that students can practice the steps involved in exiting a submerged helicopter.



Emergency breathing devices are small canisters of compressed air that personnel can use to increase the time they can survive underwater during an emergency.

Source: Survival Systems USA, Inc. (breathing device and simulator photos); GAO (trainer photo); and U.S. Special Operations Command (text). | GAO-14-615R

The services' and SOCOM's initial water-egress training courses use a similar approach to training. Officials stated that the services and SOCOM use an iterative approach in their initial water-egress training course, whereby each step builds on the previous step. In general, the programs include the following activities:

- *Classroom training*—to cover topics such as the hazards of overwater flight, the use of emergency breathing devices, medical risks of using compressed air underwater, physiological and psychological factors associated with water-egress, and safe methods of exiting from a helicopter underwater.
- *Swim test*—to be administered before the practical exercises in the pool to assess students' abilities to swim, tread water, and float.
- *Emergency breathing device training*—to teach students how to clear regulators on compressed-air bottles and breathe underwater.
- *Egress trainer exercises*—to familiarize students in shallow water with the steps involved in exiting a submerged helicopter and with the experience of being upside-down and underwater.
- *Egress simulator exercises*—to teach students how to escape from a submerged helicopter while coping with the disorientation resulting from being turned upside-down. Students must practice escaping both while holding their breath and while using emergency breathing devices.

Training Programs Have Specialized Capabilities to Meet Specific Training Needs

Although the services and SOCOM operate similar training programs, they also have specialized training capabilities such as different equipment, different types of instructors, and different graduation requirements for initial water-egress training and continuation training. The services and SOCOM use specialized tools such as simulators that replicate the helicopters flown by their personnel and equipment to mimic difficult environmental conditions. For example, the Army's AH-64 Apache simulator allows students to practice jettisoning the helicopter's canopy during egress. SOCOM's H-6 Little Bird simulator allows students to sit in

realistic flying positions, including seats on the side of the helicopter. SOCOM uses equipment that simulates environmental conditions students could encounter during a helicopter crash, such as strong winds, rain, and waves.¹⁰ SOCOM officials stated that simulating environmental conditions enhances the realism of their training. For photographs of these pieces of equipment and more information on their capabilities, see enclosure II.

Service and SOCOM officials stated that they obtained instructors with the expertise needed to teach water-egress classes from different sources. The Navy and the Air Force use active-duty personnel from the Naval Survival Training Institute and the Air Force Survival, Evasion, Resistance, and Escape school as water-egress instructors. Army and SOCOM officials stated they did not have personnel with the needed skills to teach water-egress classes, and thus contracted with an outside company to obtain this expertise.

The tasks the services and SOCOM require students to complete to graduate from initial water-egress training and continuation training vary by organization. The Air Force requires its students to complete four repetitions on the egress simulator, including repetitions in which students hold their breath, use compressed air, and wear blackout goggles. SOCOM requires its students to complete eight repetitions. In the additional repetitions, students are required to escape through a door or window on the opposite side of the trainer, and to escape under simulated environmental conditions—tasks that are not required by the Air Force.¹¹ The services and SOCOM offer water-survival training that covers topics such as survival swimming formations, the use of life rafts, and helicopter rescue, but the Army and the Navy require their students to complete that training to graduate from initial water-egress training. Table 1 shows the graduation requirements for each service’s and SOCOM’s initial water-egress course.

Table 1: Differences between Initial Water-Egress Courses

Characteristic	Army	Navy ^a	Air Force	U.S. Special Operations Command (SOCOM)
Course duration (Hours)	8	13.75 to 14.25	9	15.9
Number of egress trainer repetitions	4	2	4	5
Number of egress simulator repetitions	7	5	4	8
Water-survival training requirement?	Yes	Yes	No ^b	No ^c

Source: GAO analysis of military service and SOCOM data. | GAO-14-615R

^aThe Navy trains Marine Corps pilots and crew members through its water egress training program.

^bThe Air Force teaches water survival in a separate course.

^cStudents in SOCOM’s initial training course participate in water survival training but do not have to pass it to complete the course.

The services and SOCOM also require students to complete continuation training at different times and to complete different tasks during training. For example, the Air Force requires its students to complete continuation training every 3 years, while the Army, Navy, and SOCOM require their students to complete the training every 4 years. Additionally, the Army, Navy, and SOCOM programs all include classroom training, emergency breathing device training, and training on an egress trainer and egress simulator; the Air Force requires students to complete training in the classroom and with emergency breathing devices and egress trainers but it does not require students to complete continuation training on an egress simulator. Air Force officials

¹⁰This equipment includes items such as wave generators, heavy-duty fans to simulate high winds, strobe lights to simulate lightning, water spray and injection systems to simulate rain, speakers to replicate combat sounds, and searchlights.

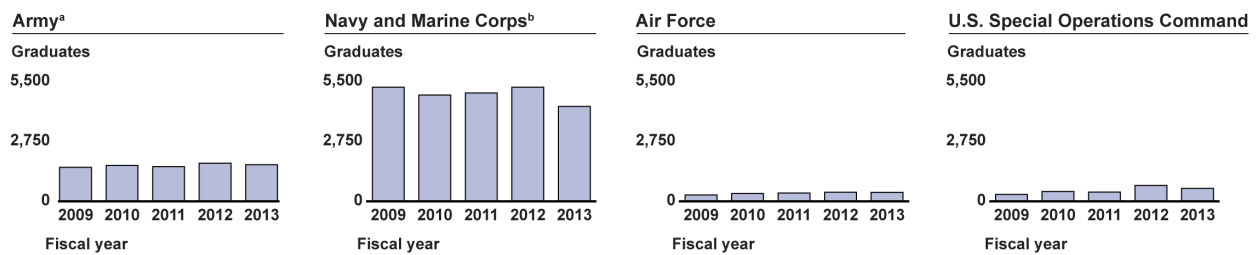
¹¹Air Force students may complete a repetition involving escape from an exit on the other side of the simulator, but they are not required to do so as part of the Air Force’s initial water-egress training course.

told us that they deliver continuation training at the unit level utilizing an egress trainer rather than at Fairchild Air Force Base where the Air Force’s egress simulator is located.

Water-Egress Training Programs Have Capacity to Meet Current Needs and Future Requirements with Current Contracts, Facilities, and Equipment

On the basis of our analysis, the military services and SOCOM are meeting their current training needs and have additional training capacity to meet future requirements with their current contracts, facilities, and equipment. According to service and SOCOM officials, they have trained all pilots and crew members requiring training through the end of fiscal year 2013. From fiscal year 2009 through fiscal year 2013, the services and SOCOM trained about 37,500 personnel. These included required pilots and crew members as well as personnel expected to be helicopter passengers.¹² For example, in fiscal year 2013, the Navy trained 2,842 helicopter pilots and crew members required to receive the training, and it provided helicopter water-egress training to 1,514 other personnel. Figure 4 shows the number of graduates from each training program from fiscal year 2009 through 2013.

Figure 4: Number of Graduates by Military Service and Fiscal Year for Classes Involving a Water-Egress Simulator



Source: GAO analysis of service and U.S. Special Operations Command data. | GAO-14-615R

^aThis figure counts graduates from the Army’s initial helicopter water-egress class and recertification class, but does not account for students that completed repetitions in an egress simulator as part of other training programs.

^bThis figure counts graduates from the Navy’s indoctrination and refresher helicopter water-egress classes, but does not account for students that completed repetitions in an egress simulator as part of other training programs.

Our analysis found that the services and SOCOM have a number of unfilled training spaces in their water-egress classes, showing that these programs have enough spots to meet both current training needs and estimated future requirements. For example, in fiscal year 2013, the services and SOCOM graduated about 7,000 students, or about 40 percent of the services’ and SOCOM’s available training spots.¹³ The military services and SOCOM anticipate needing to train about 6,000 pilots and crew members per year through fiscal year 2018. Given current training capacities, which are expected to remain stable, and estimated future requirements, the services and SOCOM should be able to meet training requirements through fiscal year 2018, while maintaining additional capacity should requirements unexpectedly increase significantly.

¹²Service officials told us that their programs will train personnel other than pilots or crew members as required by unit commanders and the combatant commands. These personnel may include ground forces or high-ranking officials.

¹³We calculated the services’ and SOCOM’s training capacity by counting the number of times courses requiring students to use a water-egress simulator were offered in a given year and then multiplying that number by the maximum number of students who can enroll in the class. For example, in fiscal year 2013 the Army completed 243 initial and recertification classes, which can train up to 20 students per session. Consequently, the Army was able to train up to 4,860 students; however, it graduated 1,680 students, or about 35 percent of its maximum capacity for that year.

Officials agreed with our assessment and stated that their programs can meet estimated training requirements with the contracts, facilities, and equipment already in place. Additionally, service and SOCOM officials stated that because their programs currently have unused capacity they have the ability to absorb additional training volume if the demand for helicopter water-egress training were to unexpectedly increase.

Given the unused capacity we identified, we discussed with service and SOCOM officials the potential for consolidating these programs to improve efficiency and reduce costs. Sufficiently detailed cost data were not available for us to quantify any cost savings that might be achieved by consolidation. However, we recognize that any potential savings would be limited if the services and SOCOM needed to maintain their training facilities for other purposes, and any potential consolidation savings could be offset by increased travel costs as students traveled to other facilities. Officials stated that consolidation would not result in significant cost savings and could disrupt other training programs. Specifically, officials stated that the services and SOCOM would incur increased costs as a result of consolidation because students would have to travel to receive training, thereby incurring transportation, hotel, and per diem expenses. Additionally, officials stated that consolidation is unlikely to reduce facility costs because in many cases the services and SOCOM offer multiple training programs at the same location, which would prevent them from closing facilities. Finally, officials said that because they operate separate training programs, they can achieve efficiencies by including water-egress training as part of other, longer training programs. Consequently, if they were to consolidate their programs it could disrupt these other programs.

Agency Comments

We provided a draft of this report to DOD for review and comment. DOD did not provide written comments to include in the report. Additionally, the services provided technical comments, which we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees and to the Secretary of Defense. In addition, this report is also available at no charge on the GAO website at <http://www.gao.gov>.

Should you or your staff have any questions, please contact me at (404) 679-1816 or pendletonj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report were Michael Ferren, Assistant Director; James Ashley; Tobias Gillett; Sharon Reid; Amie Steele; Sabrina Streagle; Cheryl Weissman; and Alex Winograd.



John H. Pendleton
Director, Defense Capabilities and Management

Enclosures – 2

List of Committees

The Honorable Carl Levin
Chairman
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Ranking Member
Committee on Armed Services
United States Senate

The Honorable Richard J. Durbin
Chairman
The Honorable Thad Cochran
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

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Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Rodney Frelinghuysen
Chairman
The Honorable Pete Visclosky
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Enclosure I: Water-Egress Training Facility Characteristics

The military service and U.S. Special Operations Command (SOCOM) water-egress training facilities serve similar purposes but vary based on age, pool size, and the types of hoists used to lift training simulators into and out of the pools. The facilities each contain at least one pool ranging in size from 816 square feet to 4,685 square feet; have either an overhead beam or a pedestal-style hoist;¹⁴ and range in age from 2 to 50 years old. The Air Force’s water-egress training program shares its pool with Fairchild Air Force Base’s Morale, Welfare, and Recreation program.¹⁵ The other services and SOCOM maintain facilities dedicated to training. Table 2 describes the water-egress training facilities operated by the military services and SOCOM.

Table 2: Helicopter Water-Egress Training Facilities Operated by the Military Services and U.S. Special Operations Command (SOCOM)

Location	Age of pool facility (years)	Pool size (square feet)	Pool shared with base?	Hoist type
Army				
Fort Rucker, Alabama	12 ^a	1,200	No	Overhead beam
Air Force				
Fairchild Air Force Base, Washington	2	4036.5	Yes	Overhead beam, bridge crane
Navy^b				
Pensacola, Florida	12	4,538.5	No ^d	Pedestal-style
Cherry Point, North Carolina	12	4,500		
Jacksonville, Florida	32	4,100		
Lemoore, California	24/26 ^c	846/1,706 ^c		
San Diego, California	33/50 ^c	816/3,454 ^c		
Norfolk, Virginia	11	4,685		
Patuxent River, Maryland	10	4,538		
Oak Harbor, Washington	10	4,685		
SOCOM				
Fort Campbell, Kentucky	6 ^a	1500	No	Pedestal-style

Source: GAO analysis of military service and U.S. Special Operations Command data. | GAO-14-615R

^aThe Army and SOCOM provided the month and year that their facilities were built, so we have rounded the ages of these to the nearest year. The Navy and Air Force provided the ages of their facilities in years.

^bThe Navy trains Marine Corps pilots and crew members through its water-egress training program.

^cThe Navy’s Lemoore and San Diego locations each contain two pool facilities.

^dThe Navy’s pools are owned by the Naval Survival Training Institute and are used to provide other water-survival courses in addition to water egress.

¹⁴Overhead beam hoists are positioned near the roofs of facilities and use a motorized trolley to move egress simulators from one area to another. Pedestal hoists are attached to the pool decks and include booms that pivot to move simulators in and out of the pool.

¹⁵The Morale, Welfare, and Recreation program provides food, fitness, lodging, recreation, and other services to Air Force personnel.

Enclosure II: Specialized Water-Egress Training Equipment

The military services and U.S. Special Operations Command (SOCOM) use a common set of equipment when providing their required helicopter water-egress training, as well as specialized equipment adapted to their individual training requirements, including emergency breathing devices, egress trainers, and egress simulators. Table 3 shows the specialized training equipment the services and SOCOM have also acquired, to meet their organizational training requirements.

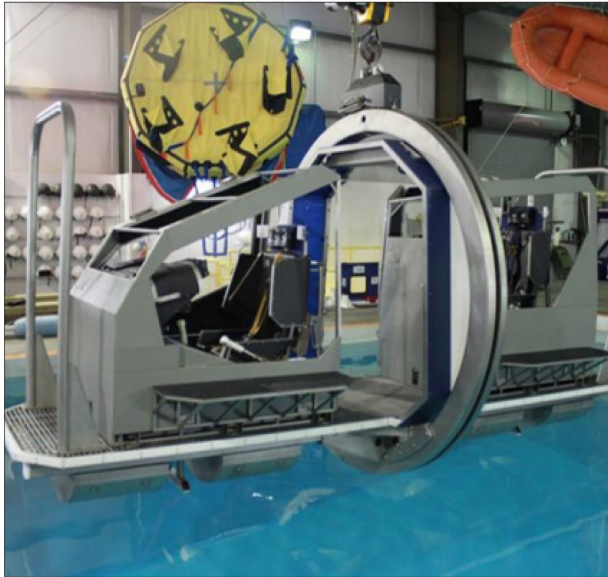
Table 3: Specialized Military Service and U.S. Special Operations Command (SOCOM) Helicopter Water-Egress Training Equipment

Organization	Equipment	Purpose
Army	AH-64 Apache Simulator	Simulator designed to replicate an AH-64 Apache helicopter and intended to train Apache pilots and crew on a replica of their specific helicopter.
Air Force	Environmental conditions simulation equipment	Equipment that simulates conditions such as waves, wind, rain, thunder, lightning, and combat sounds and intended to provide more realistic water-egress and water-survival training.
Navy	Problem-Solving Trainer	Device consisting of a structure containing a hatch, handles that will open the hatch, metal reference bars, and a lap belt that is intended to train students to operate exit release handles underwater and develop their confidence in operating underwater.
	Customized Egress Trainer	Egress trainer that can be configured to match specific aircraft and that permits operation of exit release handles during egress training.
SOCOM	H-6 Little Bird Egress Simulator	Simulator designed to replicate the H-6 Little Bird helicopter and intended to enable students to train on a replica of their specific helicopter.
	Environmental conditions simulation equipment	Equipment that simulates conditions such as waves, wind, rain, thunder, lightning, and combat sounds and intended to provide more realistic water-egress and water-survival training.

Source: GAO analysis of military service and U.S. Special Operations Command data. | GAO-14-615R

Figures 5 through 7 portray the specialized equipment employed by the military services and SOCOM.

Figure 5: AH-64 Apache Modular Egress Training Simulator and H-6 Little Bird Modular Egress Training Simulator



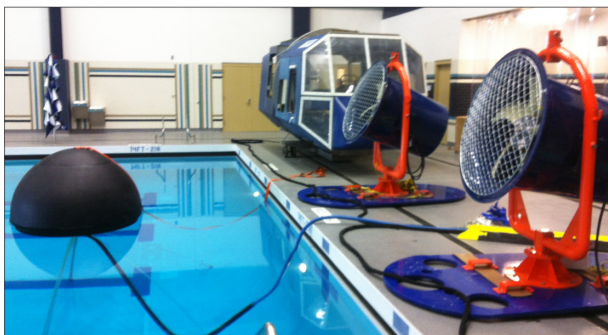
An AH-64 Apache Modular Egress Training Simulator, a type of egress simulator used by the Army to train its Apache pilots and aircrew on a replica of their specific airframe.

Source: GAO (text); Survival Systems USA (photos). | GAO-14-615R



An H-6 Little Bird Modular Egress Training Simulator, a type of egress simulator used by Special Operations Command to train its Little Bird pilots, aircrew, and passengers on a replica of their specific airframe.

Figure 6: Wave Generator with Two High-Speed Fans and Shallow Water Initial Memory Mechanical Exit Release Device



A wave generator and two high-speed fans, part of a suite of environmental condition simulation equipment installed by the Air Force in its water-egress training facilities. Special Operations Command (SOCOM) installed similar equipment in its facility. SOCOM officials said they used the equipment to increase the realism of their water-egress and water survival training. Air Force officials said the Air Force uses the equipment for the same purpose in its water survival training.

Source: GAO (text); Survival Systems USA (left photo); Navy (right photo). | GAO-14-615R



A Shallow Water Initial Memory Mechanical Exit Release device, a type of problem-solving trainer used by the Navy to teach students to operate helicopter exit release controls underwater and develop their confidence prior to training in its egress simulators.

Figure 7: Modular Shallow Water Egress Trainer



A Modular Shallow Water Egress Trainer, a type of customized egress trainer used by the Navy that can be configured to match specific aircraft and that permits operation of exit release handles during egress training. The Navy uses the trainer to familiarize students with the experience of being inverted underwater and with the steps involved in water-egress. The Air Force, Army, and Special Operations Command use a different model of egress trainer called a Shallow Water Egress Trainer for the same purpose.

Source: GAO (text); Navy (photo). | GAO-14-615R

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