AMERICAN MILITARY UNIVERSITY

THE EVOLUTION AND INFLUENCE OF THE HELICOPTER IN THE UNITED STATES AIR FORCE

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RESEARCH PAPER

RC500

MARCH 2004

Disclaimer

The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the US government or the Department of Defense.

In discussing certain missions and operations, crewmembers names and certain details have been left out as combat operations with these crews are ongoing throughout the world.

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Abstract

The advent and evolution of the helicopter is one of the most influential forces on the American military's modern warfighting capability. This influence has often been researched and discussed in reference to the United States Army, yet the helicopter has also had a profound effect on the operational doctrine and employment of the United States Air Force. From the introduction of the helicopter into the Army Air Corps during World War II, through today's highly sophisticated helicopter weapons systems, rotary wing aircraft have become a defining force in all American military engagements throughout the world. Helicopters have carried out a multitude of missions in the Air Force, including combat search and rescue (CSAR), civilian SAR, nuclear weapon security, and special operations. By researching helicopter doctrine, as well as specific Air Force helicopter missions, it is clearly seen that the helicopter has drastically influenced and expanded the capabilities of the Air Force as a fighting force in today's military. From the infancy of combat search and rescue in Burma during World War II, to today's highly complex special operations in the war on terrorism, the Air Force helicopter has greatly influenced the combat capabilities of our fighting force. The flexibility and precision of rotary wing operations have established the helicopter as a force multiplier in all of today's worldwide conflicts. This influence will only continue to grow, in a world no longer threatened by large scale nuclear war, but a world threatened by terrorism, low intensity conflict, and insurgency.

Chapter 1

Introduction

The helicopter is aerodynamically unsound. It is like lifting oneself by the boot-straps. It is no good as an air vehicle.

- Unnamed Air Force General, 1950.[1]

As Lieutenant Carter Harman lifted off from the Burmese jungle on April 24th, 1944, no one, including himself, could have ever imagined the incredible impact that his mission would have on the future of the American military. Lt. Harman had just successfully executed the first helicopter combat rescue in American history, and the effects of his success have evolved into the highly effective rotary-wing contingent of today's United States Air Force. From the first Army-Air Force helicopter missions in Burma throughout the latter half of World War II, to the covert, deep infiltration missions of today's Air Force Special Operations Command, the helicopter has established itself time and again as a vital asset and crucial weapon in the warfighting capability of the United States military.

Though much has been written on helicopter doctrine and operations of the U.S. Army, little is published about the evolution of the rotary-wing contingent of the Air Force. By researching the introduction, evolution, and history of Air Force helicopters, one will undoubtedly comprehend the tremendous impact that helicopters have had on doctrine, planning and execution of modern American combat operations.

The evolution of the helicopter is divided into five categories. The first category addresses the events from the introduction of the helicopter into combat during World War II through the operations and missions of Air Force rotary-wing aircraft through the

Korean Conflict. The second category of this evolution is the period of American involvement in Southeast Asia; a time which defined Air Force helicopters in both combat search and rescue roles as well as special operations. The next category of Air Force helicopter history is the time between the end of the Vietnam Conflict to the present day. Though there were no major wars fought during this time, a multitude of small scale operations took place throughout the world, including a pivotal moment in Air Force helicopter history, the disaster at Desert One. The fourth category will detail the current doctrine, aircraft and operational missions of today's Air Force helicopter force. These missions include special operations, combat search and rescue, and intercontinental ballistic missile (ICBM) security. The final category will look ahead toward the future of Air Force helicopter operations, missions, doctrine and aircraft; a future of small scale conflict, terrorism and insurgency of which Air Force helicopter crews will be intimately involved.

Notes

[1]James M. Gavin, *War and Peace in the Space Age* (London: Hutchinson, 1959) 114.

Chapter 2

WORLD WAR II TO KOREA
The Birth and Evolution of Air Force Helicopters

Today the 'egg-beater' went into action and the damn thing acted like it had good sense

- Col. Philip G. Cochran, Commander, 1st Air Commando Group.[1]

Figure 1: First AAF Helicopter Rescue

On the 21st of April 1944, a British L-1 observation aircraft was shot down by Japanese forces in the jungles of Burma. Upon news of the crash reaching the headquarters of the 1st Air Commando Group, the commander, Colonel Phillip Cochran ordered "Let's try the egg-beater." Immediately a Sikorsky YR-4 "Hoverfly" helicopter flown by 1Lt Carter Harman was dispatched from Lalaghat, India to retrieve the four injured soldiers. With only a 100 mile range, Harman was required to stop five times to refuel enroute to Taro, Burma. Harman and the YR-4 finally arrived on the 23rd and after

a rescue mission was planned, Harman and a fixed wing L-1 observation plane headed to the crash site. Harman, over the next two days, while demanding maximum performance from the Hoverfly under enemy fire, proceeded to individually rescue each crewmember and fly them to safety. The first ever American helicopter combat rescue had been executed flawlessly. No one, including Harman knew the tremendous impact that his mission would have on the future of helicopter warfare and the future of the United States Air Force. Harman flew another eighteen combat sorties in his YR-4 in the following weeks until the engine finally quit after serving so faithfully for so long. Harman has now passed into the annals of history as the pilot of the first helicopter combat rescue.[2]

The YR-4 Hoverfly, having established itself as a combat search and rescue (CSAR) platform, continued to serve in the Burma theater and expanded its role from a utility platform to a combat asset. The YR-4 had limited use as a platform for psychological operations (PsyOps) and covert infiltrations; these missions represented the infancy of what we now know as special operations helicopter missions. Though the Hoverfly was extremely power limited, and only had room for two people, the missions it flew created the foundation of combat helicopter doctrine, tactics and capabilities which we know today. The value of the helicopter was again solidified in another rescue in January 1945. An American PT-19 crashed shortly after takeoff from a small airfield in Burma, the crash site was located in thick jungle only three miles from the runway. Though only three miles away, it took nearly two weeks for army engineers to cut through the forest to get to the survivor. The pilot, having such severe injuries, would not be able to be carried back through the jungle, thus the YR-4 was called on again. The helicopter was able to make the short flight to the crash site and landed in a clearing. The

helicopter pilot extracted the survivor and was back at base in less than ten minutes. A rescue that would normally take weeks to accomplish was now done in less than ten minutes, a fact that defined the helicopter as the primary rescue and recovery vehicle for downed aircrews. In May of 1945, the AAF newest helicopter, the Sikorsky YR-6 was sent to China to continue the rescue and recovery missions. It was then that the 8th ERS, the first ever helicopter rescue unit was established. The lessons learned from the YR-4 and the YR-6 in rescue and combat operations were vital in creating the highly capable helicopter force used just five years later in Korea.

Figure 2: YR-6 Hoverfly II

With the invasion of South Korea by the communist North Koreans in 1950, the American military was called up again, and with it another opportunity for the helicopter to prove itself in combat. As the rapid American military buildup on the Korean peninsula began, Air Force helicopter units were used solely for local civilian rescue in the States. As the amount of tactical aircraft increased in the Korean theater, commanders saw the need for viable search and rescue assets as aircraft were being lost in enemy territory. The Air Force's newest helicopter, the Sikorsky H-5 Dragonfly, from the 3rd Air Rescue Squadron at Johnson Air Base, Japan, was sent to the conflict in July 1950. Within hours of their arrival, the H-5s were engaged in medical evacuation (MedEvac) of wounded soldiers from the battlefront.[3] The H-5 was used heavily in the MedEvac role throughout the war, carrying over 9,200 wounded soldiers to safety by the

war's end.[4] In a testament to the effectiveness of the helicopter, Dr. Elmer Henderson, a past chairman of the American Medical Association, said that the mortality rate among wounded in Korea was half that of the previous war largely because of the rapid medical evacuation provided by the Air Rescue Service helicopters.[5] Though the H-5 was extremely effective in personnel rescue and recovery, it did had major limitations. It had no armor, its range was limited, and it carried only four people including the pilot and copilot. These factors made missions behind enemy lines extremely dangerous. Many H-5s were lost in 1950 due to enemy fire and accidents; the Air Force required a more suitable helicopter for the combat search and rescue mission.

Figure 3: H-5 Dragonfly

In 1952, Sikorsky delivered the first of its new H-19 Chickasaw medium lift helicopters to Korea.[6] The H-19 was a much larger aircraft with a large cargo compartment capable of holding many troops. The Chickasaw had a 400 foot hoist as well as much longer range than the H-5. These improvements had drastic effects on the aeromedical evacuation role and well as the combat search and rescue capabilities of the Air Rescue Service. With the introduction

Figure 4: H-19 Chickasaw

of the H-19, along with the improvement in CSAR capability was the real introduction of Air Force helicopters in special operations missions. The 3rd Air Rescue Squadron was the first unit to be awarded the Presidential Unit Citation during the Korean War with its member receiving more than one thousand personal citations and commendations.[7] Helicopters prior to this had played a major role in troop movement and re-supply, but now the special operations forces (SOF) were calling upon helicopter crews to carry out a variety of other missions. The Air Force developed the 581st Air Resupply and Communications Wing, this unit was tasked to conduct psychological warfare against North Korean forces, its helicopters and crews operated almost exclusively at night and were also tasked to deliver covert special operations teams into North Korea.[8] The missions of the 581st were the first true special operations helicopter missions, and from these, the Air Force built a foundation of experience which would be greatly utilized a decade later in Southeast Asia.

Notes

[1]Philip D. Chinnery, *Air Commando* (New York: St Martin's, 1994), 21.
[2]Ibid., 23.
[3]Earl H. Tilford, *Search and Rescue in Southeast Asia* (Washington: Office of Air Force History, 1980), 9.
[4]Ibid., 12.
[5]Ibid.
[6]Ibid., 13.
[7]Ibid., 14.
[8]Mike McKinney, *Chariots of the Damned* (New York: St Martin's, 2001), 2.

Chapter 3

SOUTHEAST ASIA
The Baptism by Fire

When the history of the war in Vietnam is finally written, the story of Air Rescue may well become one of the most outstanding human dramas in the entire history of the Air Force.

- Secretary of the Air Force Harold Brown
Aerospace Historian Group.[1]

Figure 5: HH-53 Super Jolly Green Giant over SE Asia

Nearly twenty years had passed since the first helicopter combat rescue in Burma. During these years the helicopter had established itself as a battle hardened weapon in the Air Force inventory. In the years leading up to actions in Southeast Asia, Air Force helicopters and crew had been used solely for local base rescue (LBR) and firefighting. In the ongoing struggle of the Cold War, the recovery of Strategic Air Command (SAC) aircrews during a nuclear war was the primary responsibility of Air Rescue crews. The

8th ERS, the first helicopter rescue squadron activated during World War II was reactivated at Camp Carson, Colorado as the 8th ARSq. The 8th assumed responsibility for the rescue of SAC crews if and when extended missions over the Polar Regions into the Soviet Union or across the Pacific against Communist China were required.[2] The Air Force depended on the Piasecki SH-21B Workhorse to serve as an arctic rescue platform.

Figure 6: SH-21 Workhorse

With the beginnings of the American space program, the Air Rescue Service was called upon to assist in locating, rendering aid to, and retrieving nose cones, space capsules and personnel.[3] At the onset of hostilities in Southeast Asia, the U.S. Air Force maintained numerous nearly eighty HH-43B, sixty H-19B, and four SH-21 helicopters.[4] Local base rescue units were stationed at every major Air Force installation on twenty-four hour alert status.

Concentrating and training on these new peacetime missions, the role of combat search and rescue became a secondary role of which was paid little attention; this fact would be seen early in 1962 as the American military became embroiled in covert combat operations in Southeast Asia. The true test of Air Force helicopters took place in the mountains, jungles and swamplands of Cambodia, Laos and Vietnam in 1962 through 1975. The unforeseen requirements imposed by climate, geography and the enemy mad much of the equipment inadequate and nullified many of the tactics previously used by ARS crews. A sprit of determined and imaginative innovation, however, which had

become traditional in the Air Rescue Service, was applied to meet and overcome the difficulties of rescuing men in Southeast Asia.[5]

The primary Air Force rescue vehicle in 1962 was the Kaman HH-43B Huskie, a twin rotor utility helicopter used extensively throughout the Air Force as a local base rescue and firefighting asset. The Huskie served well in this role yet had major weaknesses in the CSAR role, including no armor, weak engines and a very limited range. Because of these weaknesses, most rescues in the early 1960s were carried out by helicopters from the U.S. Army, Marine Corps and the contract aviators of Air America. The Huskie first saw service in a CSAR mission November 18th, 1964. A joint effort of Navy A-1E Skyraiders, Air Force F-105s, F-100s, two ARS HH-43Bs and two Air America H-34s were dispatched to a crash site of an F-100 Super Saber fighter in central Laos. Though the pilot was killed in the crash, and the HH-43B made no rescue attempt, the coordination and control of these diverse elements provided a preview of search and rescue efforts that would be conducted over the next decade.[6]

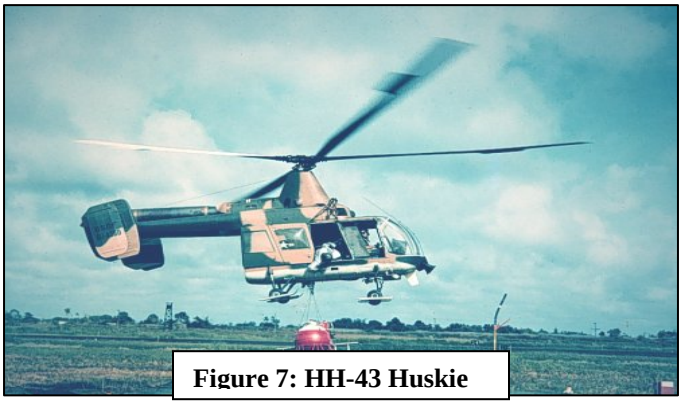


Figure 7: HH-43 Huskie

In September of 1964, the Air Rescue Service began receiving shipment of the improved HH-43F. The HH-43F represented a significant improvement over the B-model and provided the Air Rescue Service with limited combat crew recovery capability. The new F-model carried 800 pounds of titanium armor as well as a much more powerful engine than that in the B-model. The range was extended from 75 to 120

miles with the installation of a 350 gallon self sealing fuel tank. Though these were major improvements from the B-model, the HH-43F still could not fly very far into North Vietnam or Laos from its bases in South Vietnam. Though the HH-43 performed satisfactorily in the local base rescue mission, it was judged "…not adequate to perform the majority of recovery missions."[7] The Air Rescue Service demanded a larger, more capable aircraft designed solely for combat search and rescue.

On July 6, 1965, two Sikorsky CH-3C Jolly Green Giants arrived at Nakhom Phanom Royal Thai Air Base to initiate a new era for search and rescue in Southeast Asia. The added range, protective armor, and larger carrying capacity made the Jolly Green an adequate air rescue vehicle – certainly a major improvement over the short range, unarmed, vulnerable HH-43F. The CH-3Cs after extensive modifications were renamed the HH-3E, this aircraft had a range of just over 500 nautical miles, an aerial refueling capability, and a 240 foot hoist with a jungle penetrator. The vast improvements of the HH-3E were seen through out the early years of the conflict in Southeast Asia, with the HH-3E being credited with 755 combat saves between 1966 and 1970. Air action in Southeast Asia through the late 1960s showed that combat search and rescue was indispensable to tactical air operations, the dismal days that saw air operations conducted without effective rescue forces had passed. The Jolly Green Giant or the newly formed

Figure 8: HH-3E Jolly Green Giant

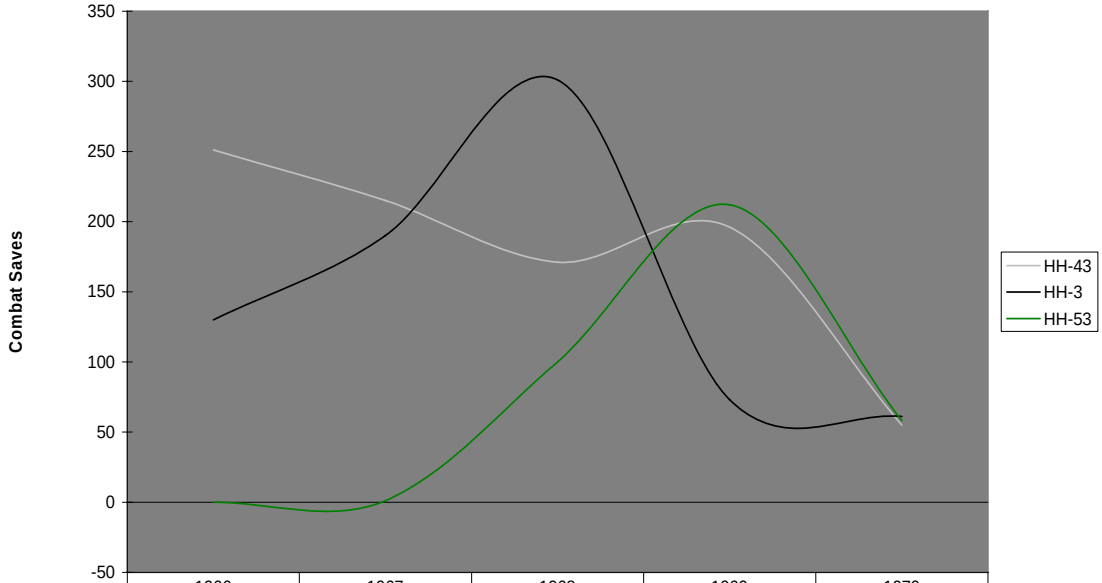
Aerospace Rescue and Recovery (ARRS) service had established itself as a combat proven rescue platform. Much had been demanded of the men of the ARRS, but much more would be required.[8]

In spite of the success and ability of the ARRS in the late 1960s, an atmosphere of concern prevailed in the rescue community. The HH-43F and the HH-3E, though having performed superbly in Southeast Asia, were "off-the-shelf" helicopters, modified for the rescue mission as opposed to being manufactured solely as a combat search and rescue platform. The 3rd Aerospace Rescue and Recovery Group found that forty-seven percent of all unsuccessful rescue attempts resulted from the slow speed of the helicopter.[9] Planners required an aircraft with higher speed, longer range, higher payloads and increased survivability. The ARRS began petitioning the Air Force for a more capable air rescue vehicle to replace the HH-43 and HH-3. Finally, in late 1967, Sikorsky delivered to the Air Force its first HH-53B Super Jolly Green Giant, a helicopter nearly twice the size of the HH-3E. The HH-53B represented almost as much of an improvement over the HH-3E as that helicopter had over the HH-43F.[9] The HH-53B could carry nearly 10,000 lbs more than the HH-3E. It cruised nearly 30 knots faster than the Jolly Green, and had three weapons stations able to utilize either a .50 caliber machine gun, or a 7.62mm minigun.[10] As a result of the larger size, the HH-53B usually carried two pararescueman (PJs) rather than the one carried on the HH-3E. Despite the

Figure 9: HH-53B and A-1 Skyraiders over SEA

shortcomings found in any helicopter – speed, range, size, the HH-53B was the finest rescue helicopter in the world. With the subsequent modifications, and within the framework of the entire rescue effort the HH-53 contributed to making successful rescue, the norm rather than the exception for downed aircrews between 1967 and 1975.[11]

Figure 10:
3rd Aerospace Rescue and Recovery Group Combat Saves



	1966	1967	1968	1969	1970
HH-43	251	215	171	196	55
HH-3	130	190	301	73	61
HH-53	0	1	100	212	58

Year

As seen in Figure 10, the HH-53, in the latter part of the 1960s, became the backbone of the Aerospace Rescue and Recovery Service. The data shows the drastic improvement of rescue capabilities with the introduction of the HH-3 prior to 1966. Rescue numbers for the HH-43F remained high throughout this time period because of its mission of local base rescue. The number of HH-53 combat saves continued to increase until the end of the war as the rescue doctrine, tactics and planning became more effective and structured. During its involvement in the wars in Southeast Asia, the

Aerospace Rescue and Recovery Service became the greatest combat aircrew recovery force in the history of aerial warfare, saving 3,883 lives.[12]

Though combat search and rescue was the defining mission of Air Force helicopters, the evolution of another mission was to take place in the jungles of Southeast Asia. As the Jolly Greens were conducting rescue missions in theater, the catalyst for the development of special operations helicopters occurred to Air Force helicopter aircrews in Laos, Cambodia and Vietnam. Historically, special operations forces (SOF) were not available during peacetime and had only been generated in a time of war. This was the case again during the conflicts in Southeast Asia, as the Air Force was tasked to provide helicopter assets for special operations forces only after the war had escalated. In late 1965, the 20th Helicopter Squadron, was changed to the 20th Special Operations Squadron and became the first dedicated special operations helicopter unit in the Vietnam War.[13] The 20th initially flew the CH-3C "Charlies", a blacked out version of the Jolly Green Giant, supporting the covert wars of Military Assistance Command Vietnam – Studies and Observations Group, or MACV-SOG. The 20th operated primarily at night, behind enemy lines with Army Special Forces "Green Berets", and indigenous Montagnard guerillas. Another SOF helicopter unit, the 21st Special Operations Squadron was established in Thailand, and along with the 20th, flying the UH-1F/P Huey, established the foundation of special operations helicopter tactics and doctrine which was used well beyond the jungles of Southeast Asia, in the myriad of special operations actions which plagued the mid-1970s and early 1980s.

Notes

[1]Timothy Leahy, "The Future of US Air Force Combat Search and Rescue" (Maxwell AFB: Air University, 1998, thesis), 6.

[2]Earl H. Tilford, *Search and Rescue in Southeast Asia* (Washington: Office of Air Force History, 1980), 15.

[3]John Vandegrift, *A History of the Air Rescue Service* (Winter Park, FL: 1959), 7.

[4]Tilford, *Search and Rescue in Southeast Asia*,18.

[5]Ibid.

[6]Ibid., 54.

[7]PACAF Study, HH-3C Helicopter Requirements in the Pacific Command, Dec 3, 1964, 3-4.

[8]Tilford, *Search and Rescue in Southeast Asia*,77.

[9]Ibid., 91.

[10]David Donald, *The Encyclopedia of World Military Aircraft* (London: Amber Books, 2000), 388.

[11]Tilford, *Search and Rescue in Southeast Asia*,93.

[12]Ibid., 155.

[13]Mike McKinney, *Chariots of the Damned* (New York: St Martin's, 2001), 3.

Chapter 4

POST VIETNAM TO PRESENT
Defining the Role

To you all, from us all, for having the guts to try.

- Note, along with two cases of beer from British mercenaries to American commandos after the disaster at Desert One[1]

Figure 11: Disaster at Desert One, RH-53D

The lessons, trials and tribulations of helicopter operations in Southeast Asia defined the capabilities and limitations of Air Force combat rescue and special operations missions in the nation's warfighting capability for many years to come. Some of the most significant operations took place, not in a large scale conflict, but in small, direct actions by American helicopter forces. From these actions, the role and mission of Air

Force helicopters has been defined into the organizations seen in today's military. A few of the defining missions include the rescue attempt of the crew of the American cargo ship the S.S. Mayaguez, the disaster at Desert One in Operation Eagle Claw, operations in Panama, the rescues of downed aircrew in Bosnia, and the actions of Air Force helicopters in Operation Desert Storm. One operation, though having taken place during the Vietnam Conflict will be discussed as it is vital to the shaping of American Air Force helicopter special operations.

On November 21, 1970, the American military launched one of the most defining operations of Air Force helicopter history. The mission was an attempt to rescue sixty-one American prisoners of war (POWs) from the Son Tay prison in Hanoi, North Vietnam. Plans for the raid began on June 5, 1970, when General Donald Blackburn, Special Assistant for Counterinsurgency and Special Activity, received permission from the Joint Chiefs of Staff to undertake a study concerning the problem of rescuing a large number of prisoners of war from Son Tay prison. In August, planners decided on the composition of the task force, it would consist of two C-130E Combat Talon special operations aircraft, five A-1Es for close air support, five HH-53s, one HH-3E and two UH-1 Hueys. The UH-1s were scrapped as unsuitable for the mission but were kept as backup aircraft if needed.[2] The plan was for the helicopter rescue force to depart Udorn Air Base, Thailand and for the A-1Es to depart

Figure 12: C-130E an HH-53

Nakhom Phanom RTAB, and join up enroute to Son Tay prison. Upon reaching the prison, the HH-53 gunships were to make low gun passes over the prison and fire at their intended, preplanned target areas. After the first pass, the HH-3 was to enter the compound and make a controlled "crash" landing in the center of the compound, rapidly deploying its shock troops. Upon securing the interior of the compound, two other HH-53s were to be called in from a holding position to pick up the prisoners and the crew of the HH-3. From insertion to extraction, the mission was scheduled to take less than thirty minutes. The mission was planned and rehearsed numerous times on the Eglin AFB range in Florida. All players were involved and each new his role in the rescue attempt; the green light was given to execute the mission.

During the months leading up to the raid, heavy down pours had forced the Son Tay prison to be evacuated. American intelligence had estimated well over fifty prisoners remained in the camp, yet to no one's knowledge, no American was in the prison in November of 1970. After the prison was evacuated, it was made into a dormitory for the nearby sapper school for North Vietnamese soldiers. Thus, satellite and SR-71 photos indicated there was still activity in and around the camp, though no Americans remained. The most probable cause of the flooding and evacuation was a secret CIA program to seed rain clouds with chemicals in order to cause floods and ruin the North's rice crops. As the rains fell, the camp flooded and was evacuated, a breakdown in communication between the CIA, military intelligence agencies and mission planners may be a major reason the mission was a failure.

The mission was launched on the 21st of November, 1970. The departure, join up with the A-1s and the three hour trip were conducted flawlessly. Upon reaching the

operations area, two HH-53s took up holding position seven miles west of the prison. Far to the east, the Navy begun a massive show of force to distract forces from Hanoi and give the low flying helicopters cover from enemy anti-aircraft weapons. The assault formation of three HH-53s and the lone HH-3 approached from the west flying less than 300 feet above the ground. As the helicopters approached the objective area, *Apple 3*, the lead HH-53, began a firing run on what appeared to be the compound. As he approached the target, the pilot realized it was not the correct location and turned toward the prison. Unfortunately, the second HH-53 landed at the incorrect location. The third aircraft saw the mistake and continued to the prison. At 0218, *Apple 3* commenced his firing run on the Son Tay guard tower, destroying the watchtower instantly. *Banana 1*, the HH-3 made a west-to-east approach over the prison wall and executed a controlled crash into the compound courtyard.[3] Upon landing, the assault group secured all corners of the compound and entered and cleared each building, facing heavy yet indirect machine gun fire from NVA troops. Much to their surprise, the assault group found no Americans, and under fire called to fall back to the evacuation helicopters. The assault force was picked up by the HH-53 and the entire assault package returned to Udorn.

Figure 13: Artist depiction of *Banana 1*

Operation Kingpin is considered one of the most "successful failures" in American special operations. While on the surface, the raid seems like a complete failure, it did have many unseen positive effects. The North Vietnamese, fearing another raid, congregated all American prisoners into two camps in Hanoi. This allowed the POWs to communicate and had a significant impact on morale and prison conditions. Colonel Arthur "Bull" Simmons, overall Commander of the task force stated "I thought the thing was great! Okay, we didn't get 'em. Christ, the thing was worth doing without getting them!"[4] What the Son Tay Raiders had done was something truly remarkable. They planned, rehearsed and executed a daring special operations mission, deep in the heart of North Vietnam. Their goal was the noblest of all, to rescue fellow countrymen held against their will. The lessons of the Son Tay raid are still echoed today in special operations training; that a mission properly planned and practiced can succeed even under the most demanding conditions.[5] The success of the Son Tay raid would be shadowed by a disastrous mission just five years later in Cambodia.

On May 12, 1975, the Khmer Rouge government of Cambodia seized the US vessel, *SS Mayaguez,* some 60 miles south of the country. The 21st Special Operations Squadron and its CH-53 helicopters were called upon, along with AC-130 gunships, HH-53s from the 40th ARRS and Navy A-7 Corsair attack jets to recapture the Mayaguez and rescue its crew. What followed was a pitched battle amongst American airmen and marines against the stubborn, well trained Khmer Rouge soldiers. During an interview of one of the co-

Figure 14: Marines board CH-53 on Koh Tang Island, Cambodia

pilots on board an HH-53 from the 40th ARRS, the unnamed pilot stated "I had never seen anything like that before, in twenty years of flying since then, I have never been so scared."[6] During the actions on Koh Tang Island, approximately 230 men were landed on the island and then withdrawn. Total U.S. casualties were fifteen killed, three missing and forty-nine wounded. Of the fifteen helicopters that participated, four were destroyed and nine were damaged.[7] The intelligence failures and hurried planning of the operation were clear, it was now evident that planning, rehearsal, and deliberate execution must all combine when planning and carrying out special operations missions. Yet, no amount of planning and rehearsal could have prevented the disaster which lay ahead only five years later at Desert One.

One of the most defining moments in the history of Air Force helicopter special operations was not even carried out by Air Force helicopter crews, yet its effect on doctrine, planning and execution of special operations missions was tremendous and still felt today, nearly twenty five years later. On Sunday, November 4, 1979, the American Embassy in Tehran came under attack by supporters of the Ayatollah Khomeini. Sixty-six Americans were taken hostage in an attempt to force the U.S. to hand over the pro-Western deposed Shah of Iran.[8] The Iranians threatened to execute the American prisoner if the U.S. did not comply; America was forced to take action. After the failure of diplomacy and economic sanctions, President Carter realized that little choice remained but to take military action.

The American military formulated a complex plan to rescue the hostages with little or no Iranian casualties. Amongst the units tasked to carry out this mission were Air Force special operations C-130s, Navy RH-53D helicopters, Marine CH-53 pilots, and

the newly formed counter-terrorist team "Delta Force". Originally, Air Force HH-53 pilots were chosen to fly the Navy RH-53s, as they were more adept at flying long, night, low-level missions. Yet, in a political move, Marine CH-53 pilots were chosen; as the Marine Corps had no troops originally planned into the mission.[9] The Marine pilots were capable and skilled pilots yet lacked the experience and abilities that the Air Force had. The plan was for the C-130s to depart from Masirah, Oman, and to rendezvous with the eight RH-53Ds from the *USS Nimitz* and *USS Kitty Hawk*, in a remote location in the Dasht-e-Kavir desert; the site was named Desert One. Enroute from the *Nimitz*, the helicopter crews had to fly low-level to remain beneath the Iranian radar. Flying at this low-level at night, the aircrews were already tasked to their limits. Ahead of them in the darkness, a large sandstorm called a haboob was developing. As the crews continued their journey, they flew into the haboob and the visibility decreased to near zero. In the storm one helicopter suffered maintenance problems and was forced to land. The RH-53 landed and the crew was picked up by its wingman. Now only seven helicopters remained for the mission; the mission required at least six helicopters to continue, and Desert One was still along ways away.

Figure 15: RH-53Ds on USS Nimitz

Meanwhile, the C-130s from Oman landed at the desert site to await the arrival of the helicopter force. In the haboob, the fifth helicopter of the force had maintenance problem and was forced to turn around and return to the USS Nimitz, Operation Eagle Claw now only had six helicopters. The helicopters finally arrived at Desert One; the

crews were fatigued and tried to convince the commander Colonel Beckwith to terminate the mission. As Beckwith tried to regain control of the mission, nearly ninety minutes behind schedule, one of the helicopters suffered a hydraulic malfunction and was deemed unable to fly. With only five helicopters available, Beckwith was forced to terminate the mission; the RH-53s were to refuel from the C-130s and all were to return to their stations.[10] During the refueling operations, one of the helicopter crews became disoriented and drifted into a running C-130. Both aircraft erupted into flames and the ammunition in them began to explode. In the disaster, eight American servicemen were killed, and many more injured. The remaining personnel were loaded onto the C-130s and evacuated back to Masirah. The hostages were eventually released, yet the damage to the special operations community was great and it would take years to recover.

From the disaster at Desert One, the American military realized the need for a helicopter able to execute deep infiltration missions, into denied areas, in night and marginal weather conditions. It was from this realization, that the U.S. Air Force developed the highly sophisticated helicopters that are currently used in today's special operations worldwide. These helicopters have proven themselves in combat in Grenada, Panama, Iraq, Bosnia and Afghanistan. Much has been written on these recent operations and thorough research is vital in gaining a deep understanding of Air Force helicopter history. Present day Air Force helicopter missions and operations are conducted with three types of helicopters and span the range of missions from special operations, to combat search and rescue, to ICBM security.

Notes

[1]James H. Kyle, *The Guts to Try* (New York: Ballantine, 1995), 9.

[2]Earl H. Tilford, *Search and Rescue in Southeast Asia* (Washington: Office of Air Force History, 1980), 105.

[3]William H. McRaven, *Spec Ops: Case Studies in Special Operations Warfare, Theory and Practice* (Novato, CA: Presidio, 1995), 312.

[4]Benjamin F. Schemmer, *The Raid: The Son Tay Prison Rescue Mission* (New York: Ballantine, 1976), 239.

[5]Mike McKinney, *Chariots of the Damned* (New York: St Martin's, 2001), 47.

[6]John Doe, United States Air Force, interviewed by author, 2 March 2004, Kirtland Air Force Base, NM.

[7]Tilford, *Search and Rescue in Southeast Asia*,155.

[8]McKinney, *Chariots of the Damned*, 49.

[9]Ibid., 61.

[10]Ibid., 97.

Chapter 5

PRESENT DAY AIR FORCE HELICOPTER FORCES
The Product of the Past

Still the question recurs 'can we do better?' The dogmas of the quit past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is so new, we must think anew, and act anew.

-Abraham Lincoln[1]

Figure 16: Air Force MH-53M crew in Iraq

As is seen by the challenges and history of the helicopter in the United States Air Force, its evolution has been filled with success, as well as tragedy. This diverse evolution today, has formed the most effective, professional, and capable helicopter force in the history of warfare. With a diverse array of aircraft and equipment, Air Force helicopter crews operate throughout the world in a multitude of missions including special operations, combat search and rescue, and intercontinental ballistic missile (ICBM) security. By understanding the missions of these men and women, and by

understanding the evolution and history of this component of the Air Force, one can appreciate the proud legacy of honor, duty and sacrifice of the Air Force helicopter crewmember.

The Air Force currently operates three types of helicopters in its day to day operations. The Sikorsky MH-53M Pave Low IV, a descendant of the HH-53 Super Jolly Green Giant, is the Air Force's primary special operations platform. The Sikorsky HH-60G Pave Hawk is used extensively as a combat search and rescue platform, still known in the rescue community as the Jolly Green. Lastly, the Air Force uses the Bell UH-1N Twin Huey for ICBM security and civilian search and rescue. The combination of these three helicopters, in their specific roles, represents the rotary-wing component of the United States Air Force.

The Sikorsky MH-53M Pave Low IV heavy-lift helicopter is the largest, most powerful and technologically advanced helicopter in the Air Force inventory. The terrain-following and terrain-avoidance radar, forward-looking infrared sensor, inertial navigation system with global positioning system, along with a projected map display enable the crew to follow terrain contours and avoid obstacles, making low-level penetration into denied areas possible. The Pave Low's mission is low-level, long-range, undetected penetration into denied areas, day or night, in adverse weather, for infiltration, exfiltration and resupply of special operations forces.[2]

The MH-53M has operated extensively in both Iraq and Afghanistan, conducting missions with Navy SEALs, Army Rangers, Delta Force, and Air Force special tactics personnel. The Pave Low was a critical asset during American military operations in Bosnia, conducting rescues of American pilots in that theater of operations, including the

rescue of Vega 31, an F-117 stealth pilot shot down in March of 1999. The Pave Low was the first American aircraft to cross into Iraq on the opening night of Operation Iraqi Freedom. An unnamed pilot stated that a formation of seven MH-53M Pave Low helicopter conducted a deep, low level, infiltration mission of special operations forces (SOF) into Iraq on the opening night of the war.[3] Missions like this are executed often in both theaters in support of Operations Iraqi Freedom and Enduring Freedom. Many of the missions remain classified and can only be researched by individuals with appropriate clearance, thus they will not be included. Another Air Force helicopter which has seen extensive combat action in the War on Terror is the HH-60G Pave Hawk helicopter.

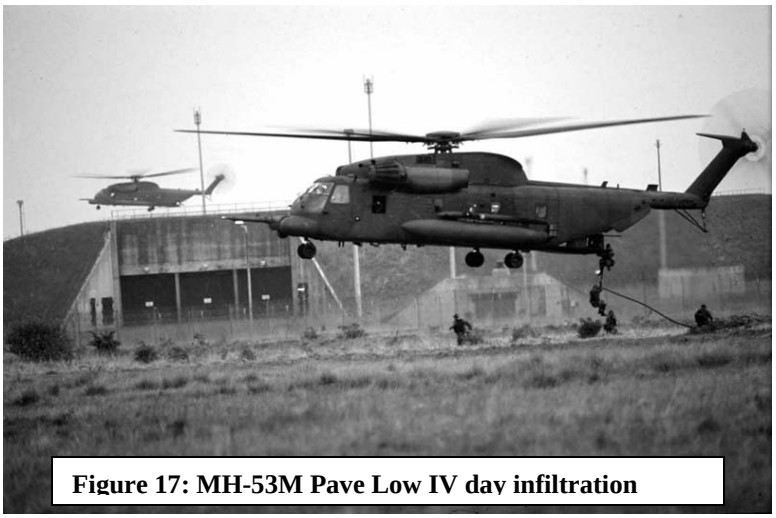


Figure 17: MH-53M Pave Low IV day infiltration

The primary mission of the HH-60G Pave Hawk helicopter is to conduct day or night operations into hostile environments to recover downed aircrew or other isolated personnel during war. Because of its versatility, the HH-60G is also tasked to perform military operations other than war. These tasks include civil search and rescue, emergency aeromedical evacuation, disaster relief, international aid, counterdrug activities and NASA space shuttle support.[4] The descendant of the Jolly Green Giants of Vietnam, the HH-60G carries out the long tradition of the Air Rescue Service which it now serves. The Pave Hawk has seen extensive combat in both Iraq and Afghanistan

performing CSAR as well as medical evacuation of Iraqi and Afghani nationals. A close friend of the author was killed when her HH-60G crashed into a hillside during night aerial refueling while attempting to evacuate a sick Afghani child north of Kabul. Interviews with unnamed pilots have stated the difficulties of missions in the high altitude mountainous terrain of Afghanistan. Small arms fire is a threat on nearly every mission, and the helicopter has some limitations in the thin air of the mountains.[5] The Pave Hawk was used extensively as an alert rescue platform during Operations Northern and Southern Watch in Iraq after the first Gulf War.

Figure 18: HH-60G in Monrovia, Liberia, 2003.

Lastly, the UH-1N Twin Huey, a variant of the venerable UH-1 Huey of the Vietnam War, is used by the Air Force in ICBM security. Its main missions include airlift of emergency security and disaster response forces, security surveillance of off-base movements of nuclear weapons convoys, medical evacuation and response to civilian search and rescue operations.[6] The Huey can be armed with side firing weapons and can carry forward looking infrared (FLIR) for detection of hostile forces at night and in marginal weather conditions. The Huey is a non-deployable asset and its mission falls primarily under Homeland Defense and Security. Having served in the Air Force since

Figure 19: UH-1N Twin Huey

1970, the aircraft is reaching the end of its service life and the Air Force is researching new helicopters to replace the aging Huey. The Air Force is looking ahead to find a common replacement for both the HH-60G and the UH-1N, as well as a replacement aircraft for the MH-53M Pave Low.

Notes

[1]Timothy Leahy, "The Future of US Air Force Combat Search and Rescue" (Maxwell AFB: Air University, 1998, thesis), 10.

[2]Fact Sheet, "MH-53J/M Pave Low", Air Force document online, 2004.

[3]T., United States Air Force, telephone interview by author, February 2004, Cheyenne, WY.

[4]Fact Sheet, "HH-60G Pave Hawk", Air Force document online, 2004.

[5]N., United States Air Force, telephone interview by author, February 2004, Cheyenne, WY.

[6]Fact Sheet, "UH-1N Twin Huey", Air Force document online, 2004.

Chapter 6

THE FUTURE OF AIR FORCE HELICOPTER FORCES
Looking Ahead

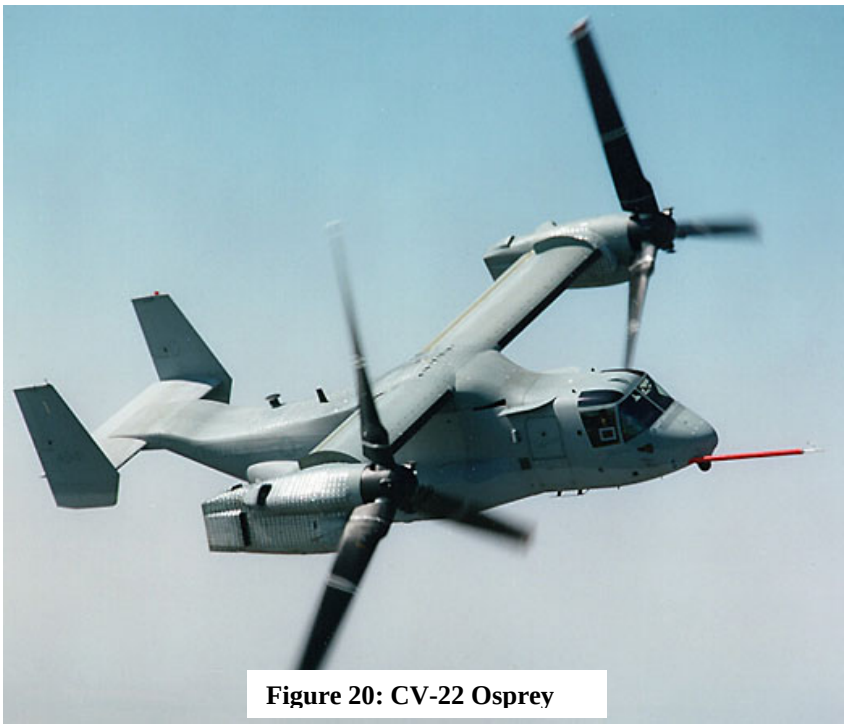


Figure 20: CV-22 Osprey

With the aging fleet of American Air Force helicopters, the military is looking ahead at the challenges of tomorrow. Helicopters have always had weaknesses in speed, range and payload capacity. As the helicopter force continues to age, the government must look to option besides helicopters to continue to carry out special operations missions into the future. The Air Force is currently pursuing the Boeing CV-22 Osprey as its replacement for the aging fleet of MH-53M Pave Low helicopter. The Osprey will offer much greater speed, and range than any available helicopter. Able to takeoff and land like a rotary-wing aircraft, yet as fast as an airplane, the Osprey represents the

perfect combination of characteristics to lead our nation's special operations forces well into the future.

As the HH-60G and UH-1N close in on the ends of their service lives, the Air Force is looking into a replacement helicopter to satisfy both the CSAR mission as well as the ICBM security mission. By adding one type of helicopter to the inventory for both missions, the Air Force will increase the interoperability of both crews and aircraft. Two helicopters are currently under testing and development to replace the HH-60 and Huey. Separate companies are vying for the contract for the next Air Force helicopter. The aircraft competing are the Augusta-Bell US101, and the Sikorsky SH-92. Both are medium-lift helicopter with state-of-the-art avionics and navigations systems. Both would be extremely well suited to both roles they would be required for. The Air Force hoped to begin delivery of the new helicopter by 2012.

Figure 21: US 101

Figure 22: SH-92

As seen, the legacy and evolution of helicopter in the United States Air Force, is one filled with honor, sacrifice, and duty. As the military looks ahead into this ever changing world, the Air Force will continue to meet the call of duty with a strong, effective, and highly capable helicopter force. In a world no longer ruled by thoughts of mass nuclear war, the helicopter will continue to play a vital role in the defense of our nations and the free world. Just as the Air Force helicopter has served since the 1940s, the helicopter and its dedicated crews will continue to serve with honor anytime…anywhere.

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