

# Arming Navy Helicopters for the 21<sup>st</sup> Century

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Subject Area Aviation

## EXECUTIVE SUMMARY

**Title:** ARMING NAVY HELICOPTERS FOR THE 21<sup>ST</sup> CENTURY

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**Thesis:** Throughout the history of naval rotary wing aviation, aircrews have had to adapt to expanding missions and changing threats. As our Navy transforms to meet the challenges of 21<sup>st</sup> century, helicopters will continue to play a critical warfighting role. Despite the obvious requirement, few Navy helicopters are equipped to execute the missions they are tasked to accomplish. By arming less than a quarter of the fleet, the Helicopter Concept of Operations (CONOPS) does little to resolve this shortfall. It is time Navy leadership break the paradigm, envision the Navy helicopter as a combat platform and equip it appropriately. We must arm all Navy helicopters with robust and flexible weapon systems so they can respond to the demands of 21<sup>st</sup> century warfare.

**Discussion:** Helicopters play a critical role in virtually every aspect of “Sea Power 21,” the Chief of Naval Operations’ (CNO) vision for the 21<sup>st</sup> century. The helicopter, however, is only one part of the equation. The links, sensors and weapons systems that are part of the helicopter should optimize it as a warfighting tool.

The Navy Helicopter Concept of Operations (Helicopter CONOPS), a supporting tenet of “Sea Power 21,” imposes a neck down from seven type/model/series (TMS) to two. Ultimately, fewer Navy helicopters will be expected to accomplish a greater number of missions. The Global Concept of Operations will require Navy helicopters to perform these missions independently or as part of a Carrier Strike Group (CSG), an Expeditionary Strike Group (ESG), and/or an Expeditionary Strike Force (ESF). Moreover, the challenges of operating in the littorals will place a high demand on the Navy’s rotary wing fleet.

Since Vietnam, the Navy has armed some of its helicopters for Anti-Surface Warfare (ASuW), Combat Search and Rescue (CSAR), Special Operations Forces (SOF) support and other missions. Since the beginning of the Global War on Terrorism, Navy Reserve helicopter squadrons have been supporting these and other combat operations in Afghanistan and Iraq.

To be the integrated warfighting weapon system a Strike Group commander needs, Navy helicopters must be armed appropriately. This relatively inexpensive technology already exists and has been employed on similar TMS airframes. Yet, there continues to be a severe shortfall of armed Navy helicopters. Those that are armed are not armed adequately.

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**Recommendations:** All baseline MH-60 helicopters entering the fleet should be outfitted with a fixed-forward-firing machinegun. Further, MH-60R *Strikehawks* should be armed with a capable air-to-ship missile with a 50 nm standoff range. Until such a missile is developed, all *Strikehawks* should incorporate the *JCM* or *Hellfire II*. MH-60S *Knighthawks* should be armed with air-to-surface rockets to improve tactical resilience and protect ships from small-boat raids as they operate in the littorals. Aircrews should begin training now to be able to successfully employ these systems.

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## PREFACE

### Possible Scenario

Political unrest over recent elections result in increased violence in a country on the African coast. At the U.S. Ambassador's request, the USS *Nassau* (LHA 4) Expeditionary Strike Group (ESG) is ordered conduct Non-combatant Evacuation Operations (NEO) of American citizens. Positioned in the littorals, the first wave of aircraft completes their pre-launch checks. A SH-60R *Strikehawk* helicopter, operating off the ESG guided-missile destroyer, hunts the waters for a single diesel submarine reportedly operating in regional waters. Two cruisers provide air defense coverage as a single P-3C *Orion* scours the air conducting essential Intelligence, Surveillance and Reconnaissance (ISR) operations. Minutes before sunrise, *Nassau* launches the first wave of AH-1Z *SuperCobra* helicopters and MV-22 *Ospreys* as two MH-60S *Knighthawk* helicopters carry out Amphibious Search and Rescue (ASAR) and logistics duties. As the second wave of aircraft is towed to spot, the first wave crosses the beach en route to the objective area 25 miles inland. Just then, Combat Information Center (CIC) reports six small surface contacts less than 20 miles away, moving quickly off the coast toward the *Nassau*. The P3 reports they appear to be rubber boats traveling on a collision course with *Nassau* at over 35 knots. The only fully armed helicopter is conducting sonar-dipping operations 35 miles to the north. The boats begin to disperse and continue their swarming mission. The ESG commander orders the *Knighthawk* helicopters to intercept and engage the contacts. Armed with only M-240 machineguns, the helicopters are able to disable only two of the contacts as the others continue toward *Nassau*. Within two miles, .50-caliber and 25-millimeter guns on *Nassau* successfully engage two of the remaining contacts, but it is too late. Minutes later, two large explosions are heard as the last two boats make contact with *Nassau's* hull.

## **FUTURE ROLE OF THE NAVY HELICOPTER**

***Winning in combat is the requirement. Everything else we talk about contributes to that end.***

***- Admiral Vern Clark  
Chief of Naval Operations***

Today, as our Navy transforms to meet the challenges of tomorrow, the role of the Navy helicopter is transitioning from support to warfighting. Helicopters play a critical role in virtually every aspect of “Sea Power 21,” the Chief of Naval Operations’ (CNO) vision for the 21<sup>st</sup> century. In addition, Navy helicopters are providing crucial Anti-Terrorism and Force Protection (ATFP) services in the Global War on Terrorism (GWOT). Over the next decade, the Navy Helicopter Concept of Operations (Helicopter CONOPS) will undergo a neck down from seven type/model/series (TMS) to two. Ultimately, fewer Navy helicopters will be expected to accomplish a greater number of missions. The introduction of the Global Concept of Operations will require Navy helicopters to perform these missions independently or as part of a Carrier Strike Group (CSG), an Expeditionary Strike Group (ESG), and/or an Expeditionary Strike Force (ESF). Moreover, the challenges of operating in the littorals will place a high demand on the Navy’s rotary wing fleet.

Helicopters are more than capable of meeting the unique threats posed by the littoral. Highly mobile, highly versatile and stealthy, helicopters with the right sensors, endurance and weapons will be critical to Anti-Surface Warfare (ASuW) against small and nimble speedboats in a sea-land interface where sea space is dramatically constrained. In order to be the integrated warfighting weapon system a battle group commander needs, Navy helicopters must be armed appropriately and Navy leadership appears to recognize this. Today, however, there is a severe shortfall of armed helicopters. Those that are armed are not armed adequately to meet current

and future threats. Moreover, the Helicopter Concept of Operations (Helicopter CONOPS), a supporting tenet of “Sea Power 21,” does little to resolve this shortfall.

Arming Navy helicopters is not a new concept. In fact, the Navy has armed helicopters since Vietnam. Throughout the history of rotary wing aviation, Navy helicopter aircrews have had to adapt to expanding missions thrust upon them by commanders. This reactive approach has resulted in a “beg, borrow, or steal” process of equipping and training Navy helicopter aircrews. “Sea Power 21” demands multiple missions from nearly every naval platform.

In March 2000, Rear Admiral John Nathman, then Director of the U.S. Navy’s Air Warfare Division stated to Congress that, “Helicopter CONOPS is one of the linchpins of a modern, total force solution to increase fleet capability and lethality in the littorals.”<sup>1</sup> Yet, Helicopter CONOPS does not call for arming all Navy helicopters. This is shortsighted and unwise.

All of the services, including the Coast Guard and many foreign navies, arm their helicopters. The technology already exists, has been employed on similar TMS airframes, and is relatively inexpensive. If history is a guide, Navy helicopters will have to adapt to expanding missions and threats. Even today, despite the obvious requirement, not all Navy helicopters are equipped to execute the missions they are tasked to accomplish. Some Navy helicopters have no armament at all, leaving them defenseless in an age of unprecedented threat. As the Navy steams into the 21<sup>st</sup> century, it is imperative that we learn from history and take a proactive stance in the way we equip and train our rotary wing aircrews. To meet the challenges of tomorrow, we must arm all Navy helicopters with robust and flexible weapon systems today so they can respond to the demands of 21<sup>st</sup> century warfare. This paper will develop the thesis that such armament is

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<sup>1</sup> Rear Admiral John B. Nathman, USN, Director, Air Warfare Division, *Statement Before the Seapower Subcommittee of the Senate Armed Services Committee on Air Warfare Systems for the 21st Century*, 23 March 2000, 9. Stated hereafter as Nathman statement.

critical if helicopters are to be reduced to two types and yet are expected to perform the vital roles assigned in the Sea Power 21 concept.



## HISTORICAL PRECEDENT

*Those who cannot learn from history are condemned to repeat it.*

*- George Santayana  
The Life of Reason, Volume 1, 1905*

The role of the helicopter has quickly grown since their addition to the U.S. military in 1938. Originally developed for observation, the agile platforms were soon adapted for Search and Rescue (SAR) and utility operations during the 40s and 50s. Navy helicopter missions evolutionally expanded to embrace the varied utilitarian and combat missions of: Anti-Submarine Warfare (ASW), Anti-Surface Warfare, Vertical Replenishment (VERTREP), day and night Amphibious SAR (ASAR), Combat Search and Rescue (CSAR), Vertical Onboard Delivery (VOD), Special Warfare Support (SWS), Noncombatant Evacuation Operations (NEO), Medical Evacuations (MEDEVAC), humanitarian assistance, executive transport, disaster relief, and the recovery of torpedoes, drones, unmanned aerial and undersea vehicles. Helicopter missions are limited only by the imagination of commanders.

Since WWII, Naval Aviation has been extremely aircraft carrier biased, placing an emphasis on resourcing fighter and attack jets often at the expense of helicopters and other maritime aircraft. It has been said that the Vietnam Conflict demonstrated the limits of airpower. It was also the real debut of the military helicopter. During this period, all of the services adapted to the expanding roles and missions of the helicopter by developing innovative tactics, techniques and procedures. In spite of this, sorely needed resources and equipment were often an afterthought or at best cobbled together to address a specific need. Consequently, success was largely dependent upon the creativity, adaptability and flexibility of the sailors and aviators charged with maintaining and piloting Navy helicopters. Time and again, these expanded

missions would send aircrews into harm's way, requiring some sort of armament. Usually armament was limited by weight, unless attack was the primary mission. Until recently, however, arming Navy helicopters has been a postscript. Navy aircrews have been involved in a variety of combat missions since Vietnam and will continue to be tasked to complete missions (especially CSAR, NSW Support and ASUW) requiring offensive weapons.

### **The Vietnam Conflict**

While air power has played an important role in America's strategic and tactical military doctrine since WWII, it was especially significant in Vietnam. The difficult and dangerous terrain of Southeast Asia proved a catalyst for innovation, and the military helicopter truly came of age. In the fertile grasslands, marshes, swamps and rain forests of Indochina, the helicopter quickly became the GI's lifeline, providing fire support, food, mail, ammunition, medical assistance and virtually instant mobility. In the course of this war, the *Seawolves* of Helicopter Attack Light THREE (HAL-3) became the first and only Navy helicopter attack squadron. This elite helicopter squadron played a critical role in the conduct of coastal and river patrols.

In the fall of 1965, the Navy initiated limited river patrols of the Mekong Delta using armed landing craft. Though these vessels were slow and rather cumbersome in the tight confines of the waterways of the Delta, the concept proved effective in disrupting Viet Cong lines of communication and locating armament and supply caches buried along the riverbanks. Consequently, a commitment was made to continue river operations on a full-scale basis across the breadth of the Mekong Delta.<sup>2</sup> Planners recognized air support would be vital to the success and survival of the patrols boats. At first, Army aviation units were tasked with the mission.

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<sup>2</sup> CAPT W. C. Wells, USN, "The Riverine Force in Action," in ed. Frank Uhlig, *Vietnam: The Naval Story* (Annapolis, MD: Naval Institute Press, 1986), 414-415.

Two US Army helicopters operating from the deck of the USS Belle Grove (LSD-2) and USS Tortuga (LSD-26) provided close air support to the Navy river patrol boats (PBR) and fast patrol craft (PCF) attempting to gain control of the Viet Cong stronghold southeast of Saigon.<sup>3</sup>

Because of their cultural differences, Army aircrews flying from Navy ships in support of naval operations experienced many difficulties. Though the Army had pioneered the armed helicopter concept, it had little experience operating from the decks of ships and supporting naval riverine operations. Army gunships were not equipped for and their pilots were not skilled in all-weather shipboard helicopter flying. The cultural gap could have been bridged and the necessary experience could have been gained over a period of time, but Army and Navy leaders felt that naval aviators trained in gunship operations would more quickly and readily adapt to the mission requirements. Direct and tailored naval air support for the PBRs and other riverine craft was viewed as the solution for existing and anticipated problems of overall command, control and availability.<sup>4</sup>

Because the Navy had no gunships of its own, eight UH-1B *Huey* helicopters were borrowed from the Army's 197<sup>th</sup> Assault Helicopter Company (AHC) in the summer of 1966 to form the nucleus of a Navy armed helicopter unit. Pilots and crewmen were initially drawn from Helicopter Combat Support Squadron ONE (HC-1) based at NAS Ream Field, Imperial Beach, California. The first eight pilots and enlisted crewmen of HC-1, Detachment 29, were deployed to Vietnam on 1 July 1966. They were followed on the 17th and 29th of July by Detachments 27 and 25, respectively. Detachment 21, the last of the original HC-1 detachments, was not deployed to Vietnam until several months later, arriving during the last week of November 1966.

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<sup>3</sup> CDR R. L. Schreadley, USN(Ret), *From the Rivers to the Sea* (Annapolis, MD: Naval Institute Press, 1992), 84.

<sup>4</sup> CDR S. A. Swarztrauber, USN, "River Patrol Relearned," in ed. Frank Uhlig, *Vietnam: The Naval Story* (Annapolis, MD: Naval Institute Press, 1986), 385-6.

The Navy procured 22 UH-1Bs through an inter-service loan from the Army.<sup>5</sup> On 30 August 1966, HC-1, Detachment 29, relieved the Army Light Helicopter Fire Team (LHFT) operating from the *Tortuga*, anchored off the mouth of the Long Tau River, opening a new chapter in Naval Aviation.<sup>6</sup>

Under the operational control of Commander Task Force (CTF) 116, The HC-1 Detachments, nicknamed the Seawolves, enjoyed great autonomy in their operations. Armed with 2.75 inch rockets and fixed 7.62-mm or .50 caliber machineguns, the gunships initially supported PBR operations with fire support, reconnaissance, and medical evacuation (medevac) services. Their efforts were so valuable, that they were called upon to assist the PCFs of TF-115 and the Vietnamese Navy units operating in the delta.<sup>7</sup> They also became the platform of choice for Navy SEALs (Sea, Air, Land) operating deep in enemy territory.

*Seawolf* services were constantly in demand. It became evident that the original four detachments, no matter how strategically located, could not provide adequate coverage to the entire Mekong Delta. There was a demonstrated need for a steady supply of instrument-qualified pilots who could operate autonomously from major bases and work closely with the riverine forces. Additional detachments would obviously be needed to satisfy increasing operational demands that were growing beyond the capability and scope of HC-1. Navy leaders concluded that a more integrated and localized command structure was necessary to assure continuity in all aspects of the TF-116 mission. Therefore, late in 1966, Navy squadrons were polled for volunteers to form a Vietnam-based helicopter attack squadron.<sup>8</sup>

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<sup>5</sup> Swarztrauber, 386.

<sup>6</sup> Swarztrauber, 386-7.

<sup>7</sup> CDR David G. Tyler, U.S. Naval Reserve, "Seawolves Roll In Across the Mekong Delta," *U.S. Naval Institute Proceedings*, 128 no.7, (January 2002): 45-47.

<sup>8</sup> Tyler, 45.

Approximately 80 pilots were selected and began reporting during April 1967 for duty in Vietnam. The Army provided extremely abbreviated training for pilots and aircrewmen. It was not uncommon for a replacement pilot with only 10 hours of familiarization training in the UH-1B to fly as a copilot into actual combat conditions. Often, the most inexperienced pilots would get their first taste of combat as copilots on Army helicopters in order to gain flight time and experience prior to beginning their Navy missions. The men of the four Vietnam-based HC-1 detachments became the *Seawolves* of Helicopter Attack (Light) Squadron THREE (HA(L)-3) on 1 April 1967, when the squadron was officially commissioned at Vung Tau.<sup>9</sup>

The *Seawolves* operated from modified LSDs, which also acted as PBR bases. In 1966, several converted LSTs, replaced the smaller LSD as support ships for Navy air and surface operations in the Delta. Led by a Lieutenant Commander as the Officer-in-Charge (OIC), typical HA(L)-3 detachments consisted of eight pilots and eight aircrew-gunners who also acted as mechanics. Since there was little time for training, HA(L)-3 plankowners developed tactics, techniques and procedures while executing actual combat missions.

The *Seawolves* quickly acclimated to their new role in support of riverine operations. They performed admirably in one of the most challenging combat environments of South Vietnam. Most impressive, however, was their ability to accomplish this with little doctrine and scarce resources. Flying loaner “off-the-shelf” *Hueys*, they simply rose to the task and rapidly responded to a complex problem in a challenging environment. This, however, would not be the last time Navy helicopters would see combat.

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<sup>9</sup> Wells, 416-417.

## **The Gulf War**

In 1991, during the Gulf War, U.S. Navy helicopters were involved in combat action as part of Coalition forces. For example, U.S. Navy SH-60B *Seahawk* LAMPS Mark III helicopters assigned to Combat Search and Rescue (CSAR) contributed to the seizure of the ad-Dorra Oil Platforms on the second day of the maritime campaign. Assigned to the guided missile frigate *USS Nicholas*, the SH-60s had capable sensors, but lacked armament. Supplemented by two Kuwaiti guided missile patrol boats, the *Nicholas* steamed into the northern gulf carrying a SEAL detachment, a Coast Guard Law Enforcement Detachment, two U.S. Army OH-58D *Kiowa Warrior* helicopters and two of its generic SH-60B *Seahawk* helicopters. The OH-58s were armed with Hellfire missiles, 2.5-inch rockets and .50 caliber machineguns. The Hellfires proved extremely effective in that they struck gun emplacements and other laser designated targets with pinpoint accuracy.<sup>10</sup> The capable *Seahawk* radar was invaluable to the success of the mission, as it provided airborne radar coverage the OH-58s lacked. Without armament, however, *Seahawks* were limited to a supporting role. Five days later, a *Nicholas Seahawk* helicopter, operating in the littorals, completed the first at-sea rescue of the war when it pulled an Air Force F-16 pilot out of the water after he had ejected.<sup>11</sup>

Throughout the war, ship-based U.S. Navy SH-60s worked with Royal Navy *Lynx* and U.S. Army OH-58D *Kiowa Warrior* helicopters in anti-surface roles. In fact, 15 *Kiowa Warriors* designated “Prime Chance” were shipped to the Persian Gulf where they were based aboard U.S. Navy ships accumulating over 7500 hours Night Vision Goggle (NVG) flight time. Working in hunter-killer teams, the SH-60s routinely picked up contacts with their long-range radars and

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<sup>10</sup> Edward J. Marolda and Robert J. Schneller, *Shield and Sword: The United States Navy and the Persian Gulf War*, (Annapolis, MD: U.S. Naval Institute Press, 1998/2001), 213-214.

<sup>11</sup> Marolda and Schneller, 221-222.

guided the *Lynx* or the OH-58s to engage and destroy Iraqi ships with their air-to-ground missiles.<sup>12</sup>

When Navy A-6 *Intruders* sank an Iraqi minesweeper, the Guided missile frigate *USS Curts* (FFG 38) was ordered to move in and capture the Iraqi crew. The *Curts* SH-60B was first on scene, spotting the minesweeper and a floating mine. Adapting to the situation, the *Seahawk* exploded the mine with small caliber machinegun fire. As the frigate drew near the damaged minesweeper, Iraqi sailors were observed destroying equipment and documents in an attempt to keep them from the enemy. Strafing fire from the SH-60B put a quick end to this sabotage, and the Iraqis abandoned ship.<sup>13</sup>

Unarmed Navy helicopters, again, were tasked to accomplish missions in a combat environment. Clearly, these were low-threat conditions when compared to those encountered by Army, Air Force and Marine Corps helicopters in the same war. However, a viable threat did exist. At a minimum, Navy helicopters should have been armed purely for self-defense. Had they been equipped with offensive weaponry, however, their value to the battlegroup commander would have increased dramatically. Capable of prosecuting the enemy, there would have been no need for the hunter-killer teams. Navy helicopters could have accomplished the same missions without assistance while freeing valuable Army assets to perform their primary mission.

### **The Global War On Terror**

Within hours of the terrorist attacks on 11 September 2001, the U.S. Navy sortied the greater part of its fleet in support of heightened readiness. Navy helicopters deployed on numerous ships to

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<sup>12</sup> Marolda and Schneller, 222.

<sup>13</sup> Marolda and Schneller, 224.

support SAR, logistics and Force Protection (ATFP) requirements.<sup>14</sup> Unfortunately, some of these helicopters were unarmed. Had these attacks been followed by sea-borne assaults on America's ports, Navy helicopters would have been in the right place at the right time to engage the perpetrators. Without armament, however, their usefulness would have been reduced to observation, logistics and SAR.

Recently, two naval reserve helicopter squadrons, HCS-4 and HCS-5 specializing in Naval Special Warfare Support (NSWS) and Combat Search and Rescue (CSAR), deployed in support of operations ENDURING FREEDOM (OEF) and IRAQI FREEDOM (OIF). The HCS-5 *Firehawks* was the first naval air squadron deployed to Iraq, and it still remains in theater. Flying more than 390 sorties and 850 flight hours to date, the *Firehawks* utilize the HH-60H *Seahawk*, an aircraft that is capable of low-level and long-distance missions in the most challenging operational environments.<sup>15</sup> Aircraft Survivability Equipment incorporated into the helicopter enables the flight crew to defend against infrared and radar-guided missiles. Although the majority of such flights in the Iraqi theater were flown in support of special operations ground force missions, both in urban and rural areas, also supported were PSYOP (psychological operations), military operations in urban terrain, medical and casualty evacuations.<sup>16</sup>

Though the helicopters initially tasked to perform these duties were properly armed and equipped, relief aircraft may well not have been so. If every Navy helicopter had the same capability to perform these missions, the battlegroup commander would have far greater flexibility in deciding which of his helicopters to task. If history serves as a guide, and current

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<sup>14</sup> Author's personal experience while Operations Officer at Helicopter Combat Support Squadron SIX from June 2001 to July 2002.

<sup>15</sup> JO2 Rebecca Horton, USNR, "Firehawks Participate in Iraqi Freedom," 10 October 2003, *Navy Newsstand*, URL: <<http://www.news.navy.mil>>. 1 January 2004.

<sup>16</sup> *Ibid*, 1.



SOF usage trends persist or accelerate, CSG and ESG commanders will clearly continue to utilize this indispensable resource.

Since the Vietnam era, U.S. Navy helicopters have been called upon again and again to perform a variety of combat missions requiring armament, many of them overland. In some cases, the helicopters were armed appropriately because they belonged to a specialized squadron. In other cases, in order to complete the mission, commanders had to protect Navy helicopters with other armed airborne assets. Pairing utilized two or more aircraft to overcome this configuration shortfall in the Navy helicopters, whereas proper armament would have been more efficient and cost effective. Clearly, operating in the littorals will increase a commander's reliance on helicopters and they will continue to be tasked with missions like CSAR, NSWS and ASuW. With fewer and fewer assets available to commanders, arming every Navy helicopter makes infinite sense from a cost-effective mission accomplishment perspective.

## CURRENT AND FUTURE THREATS

***"By God, the youths of God are preparing for you things that would fill your hearts with terror and target your economic lifeline until you stop your oppression and aggression."*<sup>17</sup>**  
***- Osama bin Laden***

In his article, "Fighting Terrorism from the Sea," Vice Admiral Yedidia Ya'ari, Commander in Chief, Israel Navy, makes the case that maritime power will be a key factor in the fight against multinational terrorism. "Fighting multinational terrorism on a global scale," he says, "...means using deadly force ...practically anywhere on the planet."<sup>18</sup> Terrorist acts targeting commercial and military shipping are well documented and growing in frequency and deadliness. Terrorists at sea exercise full freedom of choice with regard to place, time target and method for carrying out an attack.<sup>19</sup>

As the Navy shifts its focus from blue to brown water operations in the littoral, the naval commander is faced with a complex battle space containing significant and unique challenges. Platforms, sensors, weapons systems, doctrine and tactics designed for blue water operations are not always adequate for or applicable to the complex geometry, environmental and dimensional aspects of the littoral battle space.

Today, the small combatant naval vessel is a considerable threat to naval operations in the littoral. Due to its size, stealth, speed and armament, a small boat is in a strong position to shape and respond within the coastal battle space. This is particularly true when fielded in numbers. When combined with modern weapons and proper tactics, the small boat is a force

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<sup>17</sup> Jon Henley and Heather Stewart, "Al Qaida Suspected in Tanker Explosion: Terror Fear Alarm Over Oil Prices as French Ship Burns Off Yemen," *The Guardian*, 7 October 2002.

<sup>18</sup> Vice Admiral Yedidia Ya'ari, Commander in Chief Israel Navy, "Fighting Terrorism from the Sea," *U.S. Naval Institute Proceedings*, 129 no.8, (August 2003): 66.

<sup>19</sup> LCDR Krzysztof Kubiak, Polish Navy, "Terrorism is the New Enemy at Sea," *U.S. Naval Institute Proceedings*, 129 no.12, (December 2003): 68.

multiplier for the nations or factions that choose to use it. The small boat combatant encompasses a potentially broad range of operational vessels including the patrol boat, patrol gunboat, torpedo boat, missile boat, fast-attack-craft, drones, suicide craft and motorboat. A small craft's tonnage can vary between 300 pounds and 700 tons with speed capabilities of 1 to 50+ knots, depending on many variables including sea state. Weapons for small boats range from light side arms to surface-to-surface missiles (SSM) and surface-to-air missiles (SAM) or a ton of high explosives in a suicide boat. In 1995 there were 54 nations whose small boats carried 20 different makes of SSMs.<sup>20</sup> In the past, the U.S. carrier battlegroups have benefited from generic fixed-wing assets dedicated to ASW and ASuW. Operations of the coast of Libya in the late 1970s to mid-1980s, for instance, underscore this capability.

In July 1985 tensions between the U.S. and Libya mounted after the hijacking of a TWA airliner in Beirut. Following December 1985 terrorist attacks at the American Airlines counters in the Rome and Vienna airports, the U.S began a series of Freedom of Navigation operations in the Gulf of Sidra. Three carrier task forces of the Sixth Fleet assembled off the Libyan coast in March 1986 to carry out operation ATTAIN DOCUMENT. United States naval vessels openly challenged Qaddafi's claim to the Gulf of Sidra by periodically crossing the line of Libyan territorial claim coined by Qaddafi as the "line of death."<sup>21</sup>

On 24 March two SA-5 surface-to-air missiles were fired at U.S. aircraft operating over the high seas in the Gulf of Sidra. The U.S responded with carrier-based strikes on Libyan radars and missile batteries. Over the next 16 hours, Navy aircraft sank two Libyan patrol boats equipped with surface-to-surface missiles that came within missile range of U.S. ships operating in international waters. A-6 *Intruders* armed with *Harpoon* missiles sank a Soviet-supplied

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<sup>20</sup> David Baker, *Combat Fleets of the World 2002-2003* (Annapolis, MD: Naval Institute Press, 2002).

<sup>21</sup> Joseph T. Stanik, *Swift and Effective Retribution: The U.S. Sixth Fleet and the Confrontation with Qaddafi* (Washington, DC: Naval Historical Center, 1999.) 7.

*Nanuchka*-class missile corvette and a French-built *Combattante* class missile attack craft. The USS *Yorktown* (CG 48) fired two *Harpoon* missiles at a rapidly approaching Libyan patrol craft, severely damaging it.<sup>22</sup> The A/U/RGM-84 *Harpoon* is an all-weather, over-the-horizon, anti-ship missile system. Today, within the generic carrier battle group, *Harpoons* can be delivered by the F/A-18 *Hornet* and S3 *Viking*. But, the *Hornet* is already over-tasked and the *Viking* is being phased out of the Navy's inventory with no identified fixed-wing replacement. If helicopters are supposed to supplant carrier-based fixed wing aircraft to conduct airborne anti-surface warfare, they must be armed appropriately.

More recently, terrorists have exploited the U.S. Navy's vulnerability to small boat attack. The U.S. Navy had become complacent with regard to the threat of terrorism when the USS *Cole* (DDG 67) was attacked while refueling at a port in Aden on 12 October 2000. Terrorist resolve and a mere 500-700 pounds of explosives resulted in 17 fatalities, 39 wounded and a forty-foot hole in the ship that cost over \$100 million to repair.<sup>23</sup> This event highlighted meticulous planning, local experience in explosives handling, the use of suicide bombers and remote command and control.

In January 2003, the government of Singapore published a White Paper 'The Jemaah Islamiyah Arrests and the Threat of Terrorism.' The White Paper established linkage between Jemaah Islamiyah (JI) based in Indonesia, Singapore and Malaysia, Al Qaeda in Pakistan/Afghanistan and Moro Islamic Liberation Front, a militant separatist group in the Philippines. Importantly, these groups have developed some dangerous maritime capabilities

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<sup>22</sup> Joseph T. Stanik, *El Dorado Canyon: Regan's Undeclared War with Qaddafi* (Annapolis, MD: Naval Institute Press, 2002) 135.

<sup>23</sup> Henley and Stewart, 1-2.

and have the capacity to disrupt and even destroy elements of regional maritime infrastructure.<sup>24</sup> In the past, a series of terrorist attacks and attempted attacks against maritime shipping have shown that the “Kamikaze” approach of Japanese fame is the most popular technique. The White Paper noted that the Jemaah Islamiyah (JI) intended to attack US naval vessels and personnel in the vicinity of Changi naval base in Singapore. The discovery of topographic maps with Fiah Ayub, a JI operative, revealed that the group had potentially successful operational plans and targeting data. The attack would be executed by ramming a small vessel packed with explosives against U.S. ships transiting the shallow waters. The most vulnerable point of passage was meticulously established at a point where the channel was the narrowest and the fast approaching boat would leave no sea room for the target to maneuver to safety.<sup>25</sup>

On 23 April 2003, the USNS *Walter S. Diehl* (T-AO 193), one of 34 underway replenishment oilers used to support Navy ships in the Far East, was passing through the Strait of Hormuz, when it was approached by as many as six small powerboats. The ship fired flares to warn the approaching boats away, but the boats continued to close. Not until a gunner on *Diehl* opened fire with a .50 caliber machinegun did the boats speed off.<sup>26</sup>

In May 2003, the Moroccan government arrested several alleged Al Qaeda members accusing them of plotting to attack British and other ships in the Straits of Gibraltar.<sup>27</sup> Clearly, terrorist groups have built up an irregular but often successful enough capability and expertise in suicide attacks against ships.

Terrorists, however, are not the only ones planning to use small boats to their own tactical advantage. For example, North Korean Maritime Special Operations Forces (SOF) are a

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<sup>24</sup> Vijay Sakhuja, “Terrorist Sea Strategy: The Kamikaze Approach,” *Peace Forum Essays* AP0302001e, 1-2. Mr Sakhuja is the Maritime Security Analyst and Research Scholar at Jawaharlal Nehru University in New Delhi, India.

<sup>25</sup> Sakhuja, 2.

<sup>26</sup> Notes from the Pentagon (May 3, 2002)

<sup>27</sup> Notes from the Pentagon (May 3, 2002)

robust and proven threat.<sup>28</sup> Should conflict with South Korea recur, North Korea intends to land these forces on ROK soil via the littorals. North Korean naval forces have significant numbers of watercraft with various capabilities allocated exclusively to a maritime infiltration mission. These craft include a variety of submarines, coastal patrol craft, high-speed semi-submersible craft, air-cushioned amphibious craft, and rubber raiding craft.<sup>29</sup> The North Koreans expect to use these craft to transport SOF believed to be capable of sustained independent operations. These forces will perform reconnaissance and disrupt the critical rear area of the Combined Forces Command (CFC) by performing sabotage and attacking utility systems, lines of communication and population centers.<sup>30</sup> Their numbers, while limited and eventually controllable, will be highly disruptive. In addition, Surface combatants operating in the ROK littorals would be vulnerable to enemy land based weapon systems.<sup>31</sup> In addition, the North Korean Navy has over 130 air-cushioned vessels each capable of carrying up to fifty fully equipped personnel and reaching speeds of up to 50 knots. The key to interdicting them is to detect the North's maritime SOF teams early, while they are still off shore, and destroy them before they land on ROK soil.<sup>32</sup>

A successful campaign against North Korea must include the ability to detect, track, and destroy enemy vessels operating along the ROK coast and along sea lines of communication. Navy helicopters are ideal for such a mission. Unless they are armed, however, they will be limited to target detection only. Engagement by fighter aircraft, surface combatant ships and/or submarines would add a layer of communication and coordination, dangerously delaying the

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<sup>28</sup> "Anti-Maritime SOF: Using Innovation and Synergy to Solve a Very Real and Substantial Threat," *U.S. Forces Korea Public Affairs*, "SOF Challenge." URL: <<http://www.korea.army.mil/pao/paohomepage.htm>>, 10 December 2003. Stated hereafter as Anti-Maritime SOF.

<sup>29</sup> Anti-Maritime SOF, 3.

<sup>30</sup> Ibid, 4.

<sup>31</sup> Ibid, 4.

<sup>32</sup> Ibid, 4.

time from detection to engagement. In addition, there simply are not enough resources to detect, track and destroy every enemy surface vessel, submarine, and aircraft in both the “blue water” and the littoral. One study proposed using Army *Apache* attack helicopters in an anti-maritime SOF role.<sup>33</sup> While capable in this role, anti-maritime SOF is clearly not the *Apache*’s primary mission and would surely lead to resource competition. Armed Navy helicopters generic to ships operating in the littorals would be a vastly more effective and efficient use of resources. Not only would armed helicopters be able to detect and track enemy small combatants, but also they could engage and destroy them. This scenario would significantly reduce time-to-kill and would free the *Apaches* to conduct their primary mission.

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<sup>33</sup> Ibid, 5.

## ARMED HELICOPTER SHORTFALL

***The Navy is committed to procuring the right helicopters with warfighting capabilities that will enable our helicopter force to meet the challenges inherent in littoral warfare and a wide spectrum of missions.***<sup>34</sup>

***- Vice Admiral John Nathman, USN  
Deputy Chief Of Naval Operations  
(Warfare Requirements and Programs)***

In “Sea Power 21” the CNO has outlined his vision of how our Navy will organize, integrate, and transform in the 21<sup>st</sup> century. The CNO believes our Navy must expand its striking power, achieve information dominance and develop transformational ways of fulfilling our enduring missions sea control, power projection, strategic deterrence, strategic sealift and forward presence.<sup>35</sup> While previous naval strategies have addressed regional challenges, “Sea Power 21” expands the strategic focus to include both evolving regional challenges and transnational threats. By organizing the fleet into Carrier Strike Groups (CSGs), Expeditionary Strike Groups (ESGs), and Surface Action Groups (SAGs), the plan restructures our naval forces from 19 to 37 independent strike groups that train and deploy together.<sup>36</sup> These strike groups are expected to provide Regional Combat Commanders the ability to quickly project combat power. By placing the amphibious-based strike groups on par with carrier-based strike groups, the plan seems to finally give the “Gator Navy” the respect it deserves. Whether this brown-water emphasis is truly transformational or just a more palatable method of force reduction is questionable.

Clearly, one driving factor behind the reorganization is simply downsizing, as ships are being

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<sup>34</sup> Vice Admiral John B. Nathman, USN, Commander, Naval Air Forces U.S. Pacific Fleet, “U.S. Military: Sea Change,” interview by John R. Guardiano in *Rotor and Wing* 35, no.10 (October 2001): 43. Cited hereafter as Nathman interview.

<sup>35</sup> Admiral Vern Clark, USN, Chief of Naval Operations, “Sea Power 21: Projecting Decisive Joint Capabilities,” *U.S. Naval Institute Proceedings* 128, no.10 (October 2002): 33.

<sup>36</sup> Vice Admiral Mike Mullen, USN, Deputy Chief of Naval Operations (Resources, Requirements, and Assessments), “Sea Power 21 Series—Part VI: Global Concept of Operations,” *U.S. Naval Institute Proceedings* 129, no.4 (April 2003): 66-68.



retired faster than new hulls will be built. The CNO has defended a budget plan that would inevitably draw down the fleet below the 300-ship level it has maintained since the Cold War.

The Fleet Response Plan (FRP) is the Navy's implementation schedule for "reconstitution" in readiness for a prolonged war against global terrorism. FRP fundamentally changes the way the Navy will deploy and sustain fighting forces after it recovers from the stresses of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Rather than returning the fleet to the Cold War-era paradigm of scheduling regular deployments of aircraft carrier battle groups and amphibious ready groups on an 18-month cycle, fleet organization and maintenance will be altered favoring a less predictable and more "surge ready" force. Navy leadership believes that a surge-ready force requires six CSGs and six ESGs. At any other time, forward presence will be carried out by a smaller group of ships than in the past. Obviously, fewer ships means diminished forward presence. The bottom line is, aside from when the Navy surges, there will be fewer ships on station in the hot-spots of the world at any given time. Therefore, strike group commanders will have fewer platforms available to employ to an immediate crisis. Accordingly, every platform, whether it is a ship, aircraft, or submarine, must be able to rapidly respond and project power, if necessary. Helicopters will be common to all strike groups and may be one of the first platforms to respond. They should be appropriately armed.

The three pillars of "Sea Power 21" are: *Sea Strike*, *Sea Shield*, and *Sea Basing*. These fundamental concepts lie at the heart of the Navy's continued operational effectiveness. Navy helicopters play important roles in support of these three concepts. *Sea Strike* is the ability to project precise and persistent offensive power from the sea. *Sea Shield* extends defensive assurance throughout the world. *Sea Basing* enhances operational independence and support for

the joint force.<sup>37</sup> Navy and Marine rotorcraft constitute a common thread that effects the realization of these concepts. According to Admiral Clark, “maritime forces will provide *Sea Strike*, *Sea Shield* capabilities of unprecedented range and accuracy, global connectivity of great capacity and survivability, and streamlined logistics to support joint forces throughout the battle space.”<sup>38</sup> To meet the *Sea Shield* requirements, dominance in the missions of Anti Submarine Warfare, Anti Surface Warfare, Mine Interdiction Warfare, and Naval Special Warfare will be essential. Despite these statements, Naval leadership still appears to overlook the importance of helicopters.

In January 2002, the CNO approved Navy Helicopter CONOPS, a fleet proposal to restructure our Navy helicopter forces around the two linchpin airframes, the MH-60R and MH-60S. Helicopter CONOPS will be implemented over the next 12 years and will increase the number of fleet helicopter squadrons from 25 to 31.<sup>39</sup> The reorganization consolidates the existing three helicopter communities (HS, HSL, HC) into two (HSC and HSL) and downsizes from seven type/model/series (TMS) to two. Ostensibly, helicopter CONOPS capitalizes on the efficiencies of singular maintenance, logistics, and training systems. The plan also aligns the leadership of helicopter aviation with the carrier air wing by basing helicopter squadron commanders on the carrier. While the new helicopters tout increased capabilities, in reality there will be a significant reduction in logistics capability, at least for the short term. Neither airframe will be able to carry the internal load of the H-46D *Seaknight* and there is still no plan to replace the heavy lift capability of the aging H-53 *Sea Stallion*. A leaner, meaner Navy may not need the

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<sup>37</sup> Clark, 33-36.

<sup>38</sup> Rear Admiral Thomas J. Kilcline, Jr., USN, Head, Aviation Plans and Requirements Branch of the Navy Air Warfare Directorate, *Statement Before the House Armed Service Committee on the Department of The Navy Rotorcraft Programs and Future Technology Initiatives and Concerns*, 12 March 2003, 1. Stated hereafter as Kilcline statement.

<sup>39</sup> Captain Wayne A. Tunick, USN, *Arm All Navy Helicopters*, U.S. Naval Institute Proceedings 129, no.12 (December 2003): 57.

logistics capability of the past, but it certainly needs the same, if not more, strike capability. Fundamentally, this is the reason every Navy helicopter should be offensively armed.

### **MH-60R Strikehawk**

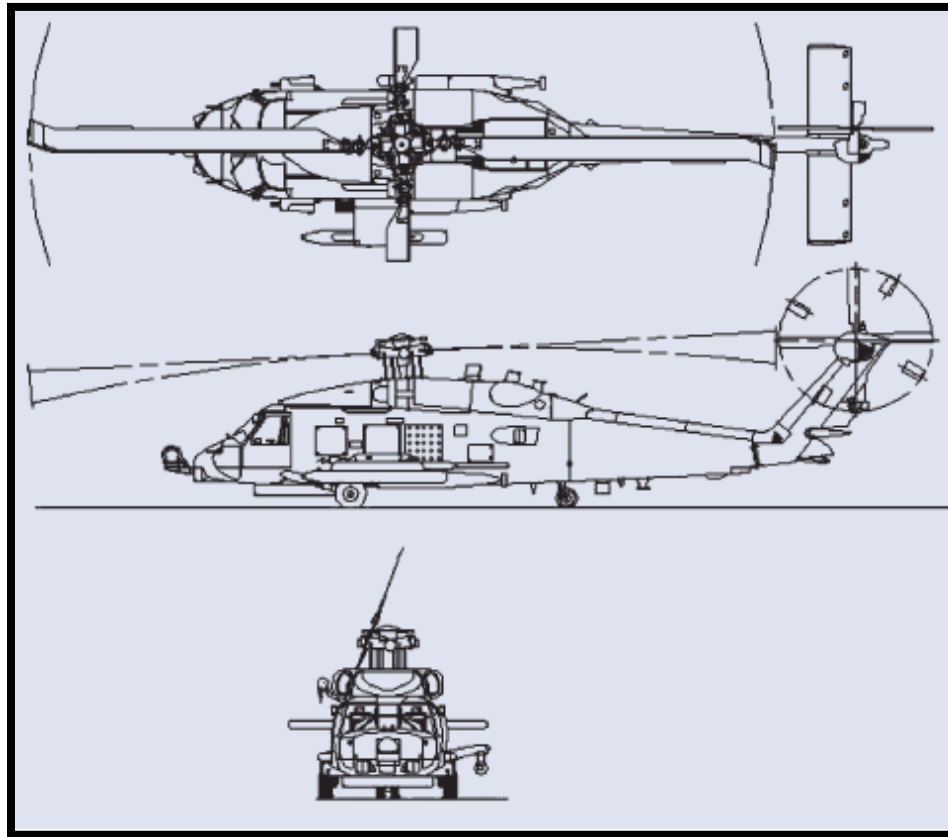


Figure 1 – MH-60R *Strikehawk*<sup>40</sup>

The MH-60R Multi-Mission Helicopter will eventually replace the Navy's existing fleet of SH-60B and SH-60F helicopters as the tactical helicopter for anti-submarine and anti-surface warfare. Its warfighting systems are planned to incorporate an advanced multi-mode Inverse Synthetic Aperture Radar (ISAR), the Airborne Low Frequency (dipping) Sonar (ALFS), a greatly enhanced electronic support measures and self defense sensor suite and upgraded mission

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<sup>40</sup> Sikorsky Military Products Web Page, *MH-60R Multi-mission Ship-based Helicopter*, URL: <<http://www.sikorsky.com>>. Accessed 07 January 2004

computers. The MH-60R is scheduled for Operational Evaluation in May 2004 and should achieve initial operational capability (IOC) in September 2005.<sup>41</sup>

The Navy plans to procure a total of 254 MH-60Rs, 114 in fiscal years 2004 through 2009. To date, the program has cost the Navy \$289.2 million. An additional \$453.2 million has been requested to procure six MH-60Rs in FY 2004, as well as \$46.5 million for advance procurement for future years.<sup>42</sup>

The current MH-60R configuration includes the Tactical Common Data Link (TCDL), a point-to-point link that transmits pure sensor data from the helicopter to the mother ship. The TCDL will replace the C-band Hawklink used by the SH-60B. The Block 1 upgrade also will add Link 16, the tactical link common to ships and aircraft in a CSG.<sup>43</sup> The Block 1 upgrade for the MH-60R includes the addition of a weapons pylon on the starboard side of the fuselage that will enable it to carry eight Hellfire missiles; the hardware and software needed to launch the Mk54 antisubmarine torpedo; and installation of a third-generation infrared sensor, the AAS-44A—the same type installed on the RQ-1 *Predator* unmanned aerial vehicle. It also includes the installation of infrared suppressor shrouds on the engine exhausts similar to those installed on the HH-60H *Seahawk*. Funding for the Block 1 upgrade has been requested for fiscal year 2004, with an initial operational capability scheduled for 2008. Until then, the fleet will be dependent upon legacy *Seahawk* airframes.

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<sup>41</sup> Nathman statement, 9-10.

<sup>42</sup> Ruskin, David M., Dittmer, David L., Ebert, CDR Joseph G., Perin David A., *Future Helicopter Force Requirements Analysis*, (Center for Naval Analyses, February 2000), 2. Cited hereafter as CAN.

<sup>43</sup> Navy Training System Plan for the H-60 Armed Helicopter Program N88-NTSP-A-50-9805/A (March 2002), I-1. Cited hereafter as NTSP Armed Helicopter Prgm.

## MH-60S *Knighthawk*

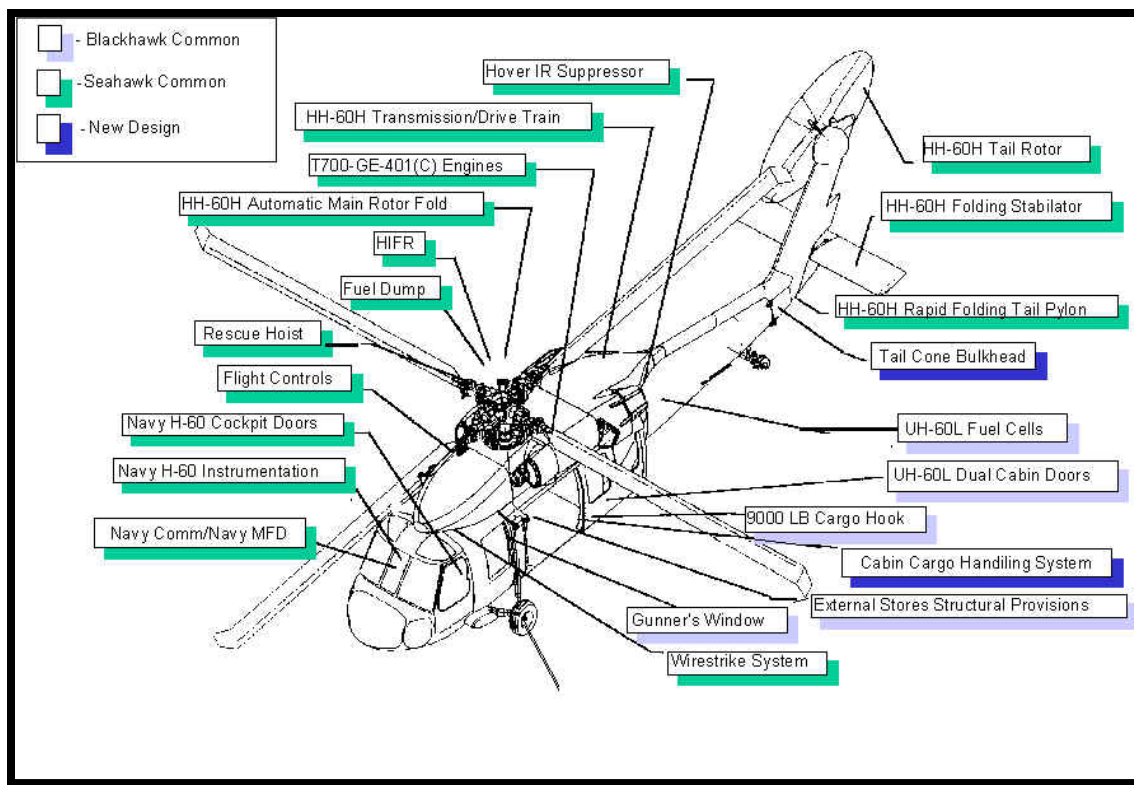


Figure 2 – MH-60S *Knighthawk*<sup>44</sup>

The MH-60S Multi-Mission Combat Support Helicopter is based on the Army's UH-60 *Blackhawk* airframe with SH-60 *Seahawk* engines and dynamic components. The *Knighthawk* is rapidly replacing the Navy's aging but effective fleet of H-46, H-1, H-3 and HH-60H helicopters. It has accumulated more than 32,000 flight hours in the fleet and recently completed its first year of operational service.<sup>45</sup> The MH-60S has been designated as the future aircraft for organic airborne mine countermeasures (AMCM), combat search and rescue (CSAR), special

<sup>44</sup> Sikorsky Military Products Web Page, *MH-60S Nighthawk Lineage*, URL: <<http://www.sikorsky.com>>. Accessed 07 January 2004

<sup>45</sup> "Naval Helicopter CONOPS Analysis," briefing presented to the Vice Chief of Naval Operations (VCNO), Washington, DC, 26 August 2003. Cited hereafter as Helicopter CONOPS Analysis briefing.

operations (SPECOPS), and logistics support. These missions will be incorporated through a Block Upgrade plan.<sup>46</sup>

The Navy plans to procure a total of 271 MH-60Ss; 157 in fiscal years 2004 through 2009. To date 65 have been ordered or received at a cost of \$1.5 billion. The Navy's FY 2004 budget request totals \$445.4 million for 13 MH-60Ss and \$95.0 million for future years advance procurement.<sup>47</sup>

Two upgrades are underway for the MH-60S. The Block 2 upgrade is designed to provide 44 kits for an organic airborne mine countermeasures capability. It includes the ability to deploy the AQS-20A sonar mine detection set and the AES-1 Airborne Laser Mine Detection System by FY 2005, and the Airborne Mine Neutralization System, the Organic Airborne & Surface Influence Sweep (OASIS) system, and the Rapid Airborne Mine Clearance System (RAMICS) by FY 2007.

The Block 3 upgrade is designed to arm the MH-60S for CSAR and SPECOPS support. The Block 3 kits include Forward Looking Infrared (FLIR), crew-served machineguns, external weapons mounts, precision-guided air-to-ground weapons, a refueling probe, and a mission computer. Block 3A *Knighthawks* will deploy in Fiscal 2006. Block 3B introduces the LINK 16 datalink and Block 3C completes the armed helicopter package with a fixed forward-firing ordnance system and digital map. A total of 52 Block 3 kits have been ordered.<sup>48</sup>

Beginning in fiscal year 2008, under Helicopter CONOPS, CSG will begin the transition to the new aircraft. It is projected that each Carrier Strike Group will have 8 Sierras and 12 Romeos. (6 Sierras and 4 Romeos per carrier; 8 Romeos on surface combatants and 2 Sierras per Combat Logistics Force ship). Each ESG will have 2 to 4 Sierras and 2 to 4 Romeos. In

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<sup>46</sup> McCabe statement, 4.

<sup>47</sup> Helicopter CONOPS Analysis briefing.

<sup>48</sup> Helicopter CONOPS Analysis briefing.

addition to operating from today's current inventory of combatant ships, the MH-60S will interface with the Maritime Prepositioning ship of the future (MPF), the Littoral Combat Ship (LCS), and the High Speed Vessel (HSV).<sup>49</sup>

Currently, the Navy's H-60 Armed Helicopter Program is mounted on Legacy SH-60B and HH-60H aircraft. It is designed to provide aircrews with increased situational awareness, discretionary defensive strike capability against multiple targets, enhanced night navigation, autonomous as well as cooperative target acquisition and designation and enhanced survivability. It consists of the *Hellfire* Missile, the AN/AAS-44(V) Infrared Laser Detecting-Ranging Tracking Set (ILDRTS) and small arms capability utilizing the GAU-16/A and GAU-17/A Machineguns. The GAU-16/A Machinegun is crew operated and is compatible with the SH-60B, SH-60F, and HH-60H Helicopters. It has a firing rate of 750-850 rounds per minute and is belt-fed from a standard 100-round ammunition canister. The GAU-17/A Aircraft Machinegun is a 7.62mm externally powered, six-barrel, air-cooled, multipurpose weapon capable of firing at a rate of 2,000 or 4,000 rounds per minute.<sup>50</sup>

Today there are 115 Navy helicopters (SH-60B and HH-60H) capable of being fully armed. To reduce costs, however, only 85 armed helicopter kits were purchased. Therefore, only 85 of the total 359 Navy helicopters are capable of meeting all mission requirements in surface warfare, SPECOPS support, CSAR, and ATFP.<sup>51</sup> This shortage has resulted in a significant shift in aircraft utilization rates and a divided force split between mission capable and deployable, armed helicopters. The unarmed helicopters that are not mission capable remain stateside. A helicopter force structure of only 24 percent armed aircraft is straining to support the GWOT today and will not be sufficient to support the capabilities of "Sea Power 21" in the

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<sup>49</sup> Nathman statement, 7.

<sup>50</sup> NTSP Armed Helicopter Prgm, I-2

<sup>51</sup> Tunick, 37.

future.<sup>52</sup> Clearly, there are too few armed helicopters available to meet today's threat. At first look, the Helicopter CONOPS appears to resolve the armed helicopter shortfall. A closer look at the numbers, however, reveals just the opposite. While most MH-60Rs are slated for weapons upgrades, there will be a limited number of armed helicopter kits in the system. Also, weapons upgrades will be completed incrementally over a ten-year period. Many of today's SH-60Bs will be in service until 2015, sharing the same arming kits they use today. More problematic, however, is the plan to arm the MH-60S. The Helicopter CONOPS includes only 52 armed helicopter (Block 3) kits—just 19 percent of the total MH-60S force or 23 percent of the non-AMCM MH-60Ss.<sup>53</sup> Procured prior to 9/11, these kits were based on requirements for the CSAR mission only. They will be mounted on the carrier-borne helicopters for quick reaction CSAR during strike operations. What about other 77 percent of MH-60Ss deploying on ships throughout the CSG and ESG? They will not be armed sufficiently to meet the current threat.

For several years, Navy Helicopter Combat Support (HC) detachments have deployed with Amphibious Ready Groups (ARGs) performing Amphibious Search and Rescue (ASAR) in support of embarked Marine Expeditionary Unit (MEU) flight operations. Under Helicopter CONOPS, these two-plane “expeditionary” detachments have recently transitioned from flying the HH-46D to the MH-60S. In addition to their primary ASAR role, detachments perform logistics, reconnaissance (RECCE) and SPECOPS support to include Helicopter Visit Board Search and Seizure (HVBSS), Insert/Extract and EOD Mine Pounce. Frequently, due to their unique capability for night overwater SAR, HC aircrews are included the MEU's waterborne Tactical Recovery of Aircraft and Personnel (TRAP) packages. Traditionally waterborne TRAP would occur in a benign or low-threat environment. Arguably, there is no longer such an

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<sup>52</sup> Tunick, 37.

<sup>53</sup> NTSP Armed Helicopter Prgm, I-3



environment, especially in the littorals. Unlike their CSAR brethren, these aircraft have no Hellfire, no armament or warning systems and only a machinegun for defense.<sup>54</sup>

Similar to the MH-60R procurement plan, MH-60Ss will be introduced to the fleet incrementally over a ten-year period. Delivery of armed helicopters kits will not take place until 2006 and the first 50 Block 1 MH-60Ss (currently operating in the fleet) are not Block-3 kit compatible. Even if there were enough kits to go around, these aircraft would require retrofitting to be fully armed.<sup>55</sup> Thus, the armed helicopter shortfall continues. In fact, these 50 aircraft, which replaced many of the fleet's aging H-46s, did not even have gun mounts. In light of 9/11, they have since been retrofitted with M-240 machineguns to provide critical airborne ATFP requirements to the fleet. This, however, is actually a decrease in capability from the H-46 with its two .50 caliber machineguns.

Ultimately, Helicopter CONOPS envisions 31 operational squadrons equipped with MH-60s organized in to four wings (two on each coast). Five squadrons of MH-60Rs and five squadrons of MH-60Ss would be assigned to each coast for deployment with carrier strike groups (with one squadron of each type in each carrier strike group). Five other MH-60R expeditionary squadrons (two in the Atlantic, three in the Pacific) will provide detachments for ships steaming independently. Six other MH-60S expeditionary squadrons (three in the Atlantic, three in the Pacific) will provide detachments for amphibious assault ships and some logistics and command ships. In addition, fleet replacement squadrons for each type would be positioned on each coast.<sup>56</sup>

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<sup>54</sup> CDR Kenneth Inglesby, USN, Executive Officer Helicopter Combat Support Squadron SIX, interview by the author, 4 January 2004.

<sup>55</sup> Inglesby Interview.

<sup>56</sup> Helicopter CONOPS Analysis briefing

While this plan sounds workable, the bottom line is that the Navy is only capable of fully arming 24 percent of its helicopters today. Unfortunately, it took the GWOT to convince Navy leadership to fit fleet helicopters with machineguns for self-defense and AFTP. For two years running, one of the CNO's "Top Five Priorities" is improving Navy warfighting capabilities. A component of this priority is to arm Navy helicopters in sufficient quantity to meet the SUW threat.<sup>57</sup> Nonetheless, since 9/11, the offensive capability of Navy helicopters has remained relatively unchanged. Helicopter CONOPS correctly places a greater emphasis on naval rotary wing aviation, but still falls short. Over ten years will pass before *Strikehawks* completely replace legacy *Seahawks*. Further, just 23 percent of *Knighthawks* will ever be armed. No other service equips their aircrews this way. Undoubtedly, this will place a significant burden on those helicopters that are armed. Strike group commanders will find themselves in the same position they are in today with fleet airborne assets that lack strike capability. In fact, that is exactly what the first ESGs have discovered. In a recently published proof of concept assessment by the Center for Naval Analyses (CNA), the following themes emerged:<sup>58</sup>

- 1) Marine Air Combat Element (ACE) assets were given the additional tasks of surface surveillance and visual identification (VID) to support the Sea Combat Commander (SSC).
- 2) Two additional SH-60Bs were requested to support 24-hour surface surveillance. The request was not filled, due to lack of aircraft.
- 3) ACE attack aircraft (AB-8B *Harriers* and AH-1W *Cobras*) were considered crucial in protecting the force from low, slow flier threat
- 4) Two additional AH-1W and CH-53E were requested. The request was not filled, due to lack of aircraft.

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<sup>57</sup> Admiral Vern Clark, CNO, "Chief of Naval Operations – Top Five Priorities," <<http://www.navy.mil>>. Accessed 4 November 2003.

<sup>58</sup> John D. Goetke, Carter A. Malkasain and Kim Deal, *Expeditionary Strike Group (ESG) Proof-of-Concept Assessment: Emerging Themes and Issues*, Center for Naval Analyses (CNA) (Alexandria, VA: CRM D0009225.A1, October 2003), 29-31. Cited hereafter as "CNA: ESG Proof of Concept Assessment."

An estimated 10% of CH-46E flight time during the ESG-1 deployment was in direct support of the SSC.<sup>59</sup> In addition, 10-12% of ACE attack aircraft flight time was dedicated to defending the ESG.<sup>60</sup> More than once, under the perceived threat of foreign Maritime Patrol aircraft operating in the vicinity of the ESG, *Harriers* were put on ready-5 strip alert for up to six hours at a time effectively shutting down flight operations to keep the flight deck clear for their immediate launch. In these cases, the result of abandoning the flight schedule was a loss of valuable training and a reduction in readiness.<sup>61</sup> Clearly, these additional tasks undermine the ability of the ACE to conduct its primary mission as a critical component of the Marine Air Ground Task Force (MAGTF). Moreover, Marine aircrews are not trained or equipped to properly conduct such missions—their Training and Readiness (T&R) manual does not support the new missions and many of their aircraft do not have mission-essential radar and FLIR. With respect to defending the ESG, LtGen Wallace Gregson, Commander, U.S. Marine Forces Pacific (MARFORPAC) stated, “When the asymmetric threat is elevated based on the environment, the best way to protect the ESG is through the shipboard weapon systems.”<sup>62</sup> By definition, Navy helicopters are one of the shipboard weapon systems. Consequently, all Navy helicopter aircrews should be trained and equipped to conduct SSC, VID and other missions to defend the ESG.

Defending the ESG, however, is not the only justification for arming Navy helicopters. As we have seen, the GWOT has relied more heavily on Special Operations Forces (SOF) than

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<sup>59</sup> LtGen Wallace Gregson, Commander, U.S. Marine Forces Pacific (MARFORPAC), *ESG-1 Debrief*, 01 March 2004.

<sup>60</sup> *Ibid.*

<sup>61</sup> *Ibid.*

<sup>62</sup> *Ibid.*

any war in American history.<sup>63</sup> While U.S. Navy contributes none of Special Operations Command's (SOCOM) 152 aircraft, there is a demonstrated need for Navy helicopter aircrews to be able to perform some SOF missions. Over the last two years, as stated before, the recently activated reserve helicopter squadrons HCS-4 and HCS-5 have flown countless missions in support of SOF in Afghanistan and Iraq. According to VADM Eric Thor Olson, Deputy Commander SOCOM, these squadrons have provided, "critical helicopter lift that SOF would not have had."<sup>64</sup> This, however, is only a temporary arrangement as these squadrons will soon reach a deployment threshold when they will have to recuperate in order to deploy again in the future.

Most senior civilian and military leaders acknowledge the GWOT could last up to at least a generation or two. Already, 72 percent of SOCOM discretionary funds are spent on aviation assets.<sup>65</sup> Nonetheless, SOCOM's recent dependence on the Navy HCS squadrons seem to indicate that this is not enough, leaving SOF with limited air assets in the future. While it is doubtful the Navy will dedicate any air assets to SOCOM outright, with the right training and equipment, every deployed Navy MH-60S could provide the same capability. Today, CSG helicopter aircrews train for CSAR and some SOF missions. Likewise, ESG helicopter aircrews should be trained and equipped to support Tactical Recovery of Aircraft and Personnel (TRAP) and ESG generic SOF missions. Navy helicopters are already included in two of the four MEU(SOC) TRAP packages due to their unique capability for waterborne personnel recovery. Traditionally thought of as a low-threat operation, arming these helicopters would give them the added firepower to support such missions in the increased threat environment posed by the

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<sup>63</sup> VADM Eric Thor Olson, Deputy Commander Special Operations Command (SOCOM), *Remarks to Naval Helicopter Symposium—2004*, 20 April 2004, Jacksonville, FL. Cited hereafter as VADM Olson speech, 20 April 2004.

<sup>64</sup> VADM Olson speech, 20 April 2004.

<sup>65</sup> Ibid.

modern littoral. Timing is critical in the littoral battlespace. SOF assets inherent to the ESG may be the closest or the best suited for a particular mission. There may be no time to wait for Army of Air Force Special Operations helicopters to arrive on station. Navy helicopters aircrews, generic to the ESG, who have trained and operated with ESG SOF assets, would be perfectly suited to perform missions such as Helicopter Visit Board Search and Seizure (HVBSS), Insert/Extract, Limp/Soft Duck, etc.

Furthermore, history has again repeated itself on the rivers of Iraq. Reminiscent of the Vietnam-era “Brown Water Navy,” SOF and Marine Corps riverine units continue to patrol the Euphrates River in Iraq. Navy Special Boat Team 22 patrolled southern Iraq’s waterways during the war in the largest use of the Navy river combat operations since Vietnam. Missions included boarding ships to look for weapons, setting up blockades, searching for the enemy and transporting Navy SEALs and British and Polish troops.<sup>66</sup> Similarly, elements of the 13th Marine Expeditionary Unit (MEU) Special Operations Capable (SOC) contributed significantly to the coalition effort ashore by conducting more than 300 patrols in southern Iraq, 50 of which were riverine operations from the MEU’s boat company.<sup>67</sup> As in Vietnam, these units often require some type of air support. Since it is likely that we will be operating in this environment again, we should train and equip for this mission. The more Navy helicopters support operations like these, the less Marine aircraft would be tasked to complete missions not directly in support of the MAGTF. Every Navy helicopter should possess an offensive capability to adequately support these missions and the tenants of Sea Power 21. Arming less than a quarter of the fleet is short sighted and inadequate. It is time Navy leadership break the paradigm, envision the Navy helicopter as a combat platform and equip it appropriately.

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<sup>66</sup> Brian Fisher, Elite Navy Riverine Unit was in Thick of Iraqi War, Associated Press, 15 March 2004.

<sup>67</sup> ESG-1 Public Affairs, *13th MEU Provides Assistance in Southern Iraq*, Navy News Service Story Number: NNS031028-13, 28 October 2003, accessed 12 April 2004.

## ARMING OPTIONS

The extent to which the new MH-60R and MH-60S helicopters should be armed is a constant topic of debate. Arguably, the lessons of history and the growing threat in the littorals support a fleet of fully armed helicopters. At least armed helicopters should be the baseline for new aircraft entering the fleet. We must also make certain that Navy helicopters are armed appropriately to counter any threat in the unpredictable littoral battlespace. This does not necessarily mean new and expensive technology. There are a variety of low-cost, off-the-shelf options for arming Navy helicopters today. One only needs to look to the other services to find tested and proven weapon systems already installed on similar TMS airframes.

The AGM-114 *Hellfire* missile has been in production since the early 1980s with more than 16,000 *Hellfire II* and more than 60,000 *Hellfire I* rounds produced.<sup>68</sup> The AGM-114B is the version currently used by the select SH-60B, SH-60F and HH-60H *Seahawks* currently in the Navy's armed helicopter program. Nonetheless, the *Hellfire* missile was designed as an anti-tank weapon and is not optimized for the emerging threat. Introduced in December 2000, the AGM-114M *Hellfire II*, incorporates many improvements over previous versions of the missile including solving the laser obscurant/backscatter problem, the only shortcoming identified during operation DESERT STORM.<sup>69</sup> The *Hellfire II* has expanded its original anti-armor target set to include close-air support, urban assault and anti-ship missions. While it performed well in OEF and OIF in the air-to-ground mode, it is not necessarily the right answer for air-to-ship operations.

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<sup>68</sup> "AIM-114 Hellfire," *Jane's Air Launched Weapons*, online edition, 13 October 2000, <[http://www.janes.com/defence/air\\_forces/news/jalw/jalw001013\\_1\\_n.shtml](http://www.janes.com/defence/air_forces/news/jalw/jalw001013_1_n.shtml)> accessed 13 December 2003.

<sup>69</sup> *Ibid*

The Joint Common Missile (JCM) is the next-generation, multi-purpose, air-to-ground precision missile and will replace the *Hellfire*, *Longbow* and *Maverick* air-to-ground missiles currently in the U.S. arsenal. Currently in development, industry competitors boast an extended range for standoff engagements of up to 16 kilometers/10 miles for rotary-wing aircraft. It also may incorporate a tri-mode seeker with imaging infrared, semi-active laser and millimeter wave radar capabilities for active and passive "fire-and-forget" and precision-strike targeting that purportedly increases crew survivability and minimizes collateral damage.<sup>70</sup> This is a great improvement, but not the definitive answer. To be effective in the littoral, aircraft systems must be able to detect and target both fast and slow moving surface craft and engage them with munitions in adverse weather and in day or night. The MH-60R needs a long-range missile that could be used or modified to meet the requirements for a new anti-ship missile. Eventually, the new missile would be a replacement for the AGM-119 *Penguin* built by Norway's Kongsberg. The *Penguin* has a 25-nautical mile range and is currently employed on the SH-60B.<sup>71</sup> The range of the replacement missile should be at least twice as far to allow the helicopter to stay outside the range of a ship's air defenses. That range should be attainable even with the helicopter flying at relatively slow 60-80 knots. In addition, aircrews should have control over the missile post-launch and be able to fly their aircraft with minimal restrictions while guiding the weapon to its target. Rather than resting on the laurels of the JCM, Navy leadership should be promoting a replacement for the *Penguin*.

The mission requirements of the MH-60S are different from the MH-60R. Whereas the *Romeo* is designed primarily for anti-surface/anti-submarine, the *Sierra* is designed for CSAR,

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<sup>70</sup> NAVAIR China Lake Public Affairs Office, *NAVAIR Designs and Builds a More Potent Hellfire Warhead*, Press Release No: ECL200307171, 17 July 2003.

<sup>71</sup> Robert Wall, *Manufacturers Line up to Arm MH-60*, *Aviation Week & Space Technology* 156, no.5 (February 4, 2002): 63.

NSW support, mine hunting and logistics. The Sierra will be operating closer to the beach and, therefore, will not need the same standoff capability. The *Hydra* 70-mm/2.75-inch Rocket System is a weapon that can counter man-portable air defense systems and small arms likely to be encountered when in the brown water operating environment or over the beach in a CSAR role. Light and rapid firing, it could provide exceptional suppression fire and lethality against personnel and small boats and light vehicles.<sup>72</sup> The 2.75-inch rocket can be equipped with several types of tactical and training warheads. The three main tactical warheads are the high explosive (HE), the HE multipurpose submunition (MPSM), and the flechette. The M151 HE rocket is an excellent air-to-ground antipersonnel weapon with an 8.7-pound warhead that disbursts thousands of high-velocity fragments in a kill radius of 50 meters. The M261 MPSM provides improved lethality against light armor and personnel-nine high-fragmentation, shaped charges disburse from the nosecone to give wide-area coverage. Each shaped charge can penetrate four inches of armor and simultaneously spray 200 high-velocity fragments to defeat soft targets. The M225A1 flechette rocket is an airborne shotgun that can be preset to disperse more than 1000 60-grain steel projectiles (flechettes) in various concentrations.<sup>73</sup>

Navy helicopters armed with air-to-surface rockets would offer increased tactical resilience to battle group commanders and help protect ships from small-boat raids as they operate in the littorals. The Hydra 70mm/2.75-inch Rocket System is simple, versatile, and relatively inexpensive. The Low Cost Guided Rocket (LOGIR) is an IR seeker on a 2.75-inch rocket system capable of firing at least 19 and up to 38 rockets. For about \$27 million, the

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<sup>72</sup> Eric Hawley, NAVSEA Indian Head Division, Surface Warfare Center, *Advanced Propulsion Concepts for the Hydra 70 Rocket System*, 27 March 2003. 2, 6-10.

<sup>73</sup> *Ibid*, 8-10.



program could be fully funded to bring about initial capability in 2008-9, yet it remains only a project at China Lake.<sup>74</sup> *Hydra* or LOGIR is technology the Navy should be investing in now. All deployed helicopters are required to have a machinegun for AFTP.<sup>75</sup> To satisfy this requirement, most helicopters have been retrofitted with .50 caliber or M-60 machineguns. Essentially, this is no improvement in capability from the guns used by HA(L)-3 *Hueys* in Vietnam. The crew served .50-caliber machinegun is not accurate and suffers from field-of-fire limitations, but it can be effective against small boats. Adding a forward firing capability and installing a targeting device such as a mono heads-up-display (HUD) would dramatically improved accuracy.<sup>76</sup> The fixed forward firing gun and mono-HUD are already in use on Army UH-60 *Blackhawk* helicopters in the form of .50-caliber and 30-mm weapons. With the commitment of senior leaders, it could be installed easily and inexpensively on Navy helicopters. For a relatively low cost, Navy helicopters with antiquated M-60 machineguns could be outfitted with a common M-240 machinegun for improved reliability and firing rate. Combined with a 2.75-inch IR guided rockets rocket system, would dramatically improve lethality against a small boat. This is nothing new, however, as the *Seawolves* demonstrated over 35 years ago while operating in the waterways Mekong Delta.

Machineguns and Forward Looking Infrared (FLIR) are the two predominate parts of the current armed helicopter kit; only the missile launcher is missing and it only accounts for about \$200,000 of the \$2 million kit expense.<sup>77</sup> It makes sense to purchase full kits for every helicopter. Those current aircraft that are incapable of being fully armed should at least have a

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<sup>74</sup> Tunick, 37.

<sup>75</sup> Author's personal experience while Operations Officer at Helicopter Combat Support Squadron SIX from June 2001 to July 2002.

<sup>76</sup> NTSP Armed Helicopter Prgm, 30.

<sup>77</sup> NTSP Armed Helicopter Prgm, I-5.

capable and modern machinegun and FLIR for ATRP. The alternative is using weapons that were not designed to counter the new threat.

## CONCLUSION AND RECOMMENDATIONS

Throughout the history of naval rotary wing aviation, aircrews have had to adapt to expanding missions and changing threats. As our Navy transforms to meet the challenges of 21<sup>st</sup> century, helicopters will continue to play a critical warfighting role. The helicopter, however, is only one part of the equation. The links, sensors and weapons systems that are part of the helicopter should optimize it as a warfighting tool. Timing is critical to success on the modern fast-paced battlefield.

Clearly, future operations in the littoral will place a premium on speed and tempo to out-maneuver and out-pace the enemy. As such, strike group commanders must be able to utilize every available asset to achieve tactical and operational superiority. There will be no time to distinguish between a “hunter” and a “shooter.” Accordingly, all Navy helicopters must be armed to be the integrated warfighting weapon system strike group commanders require. Today, however, there is a serious shortfall of armed helicopters and Helicopter CONOPS does little to resolve this problem. All baseline MH-60 helicopters entering the fleet should be outfitted with a fixed-forward-firing machinegun. Further, MH-60R *Strikehawks* should be armed with a capable air-to-ship missile with a 50 nm standoff range. Until such a missile is developed, all *Strikehawks* should incorporate the *JCM* or *Hellfire II*. MH-60S *Knighthawks* should be armed with air-to-surface rockets to improve tactical resilience and protect ships from small-boat raids as they operate in the littorals.

As the Navy steams into the 21<sup>st</sup> century, it is imperative that we learn from history and take a proactive stance in the way we equip and train our rotary wing aircrews. To meet the

challenges of tomorrow, we must arm all Navy helicopters with robust and flexible weapon systems so that they can respond to the demands of 21<sup>st</sup> century warfare.

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