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"FROM THE SEA" AND THE ARMY'S NEW  
DOCTRINAL TENET "VERSATILITY"

By

LTC THOMAS F. STEWART

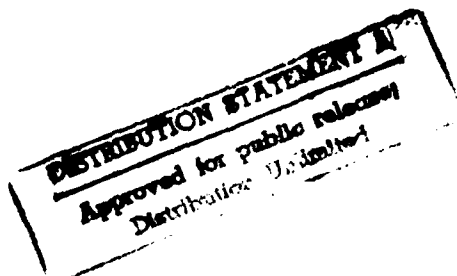
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The contents of this paper are based on the experiences and  
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Abstract of  
"From the Sea" and the Army's New Doctrinal Tenet  
"Versatility"

In light of the growing interdependence of forces, the concept of operating Army helicopters from naval vessels is a force multiplier with great possibilities for future contingency applications. The trend, if not for the near term employment of this concept, must be toward a true "joint" capability in a mix which enhances the overall potential of all the services.

This paper is an analysis of the implications of the recent Navy White Paper, "From the Sea" and how it relates to the U.S. Army's new tenet "Versatility." The historical use of Army aircraft off naval vessels will be examined, along with the feasibility and benefits of employing the AH-64 attack helicopter on U.S. Navy carriers and assault ships.

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## 1. INTRODUCTION

The challenge, during a period of constrained resources, is not only to retain current capabilities, but to grow operationally in spite of these limitations. As the future defense budget is reduced in favor of domestic requirements and the Congress continues to debate the issue of redundancy in capabilities; the Army, Navy, Marines, and Air Force will be required to be more innovative and effective in the employment of the forces currently on hand. Conflicts in the world will no doubt increase in complexity, while the predictability of the next crisis will remain difficult to ascertain. In order to ensure the continued security of the United States, the individual services must take every opportunity to work together to enhance our overall defensive posture.

The Navy's White Paper of September 1992, "From The Sea - Preparing the Naval Service for the 21st Century," in light of the fall of the Soviet Union, proposes the development of a doctrine which places added emphasis on the need to conduct combat operations along the more complex environment of coastlines or the littoral regions of the world's oceans. Coinciding with this document, the Army has delivered to the field, for comment, a preliminary draft of FM 100-5, Operations, which includes a new tenet to Army doctrine - Versatility.

With these themes and a new spirit of cooperation between services in mind, this paper will examine the desirability and feasibility of placing the Army's heavy attack helicopter, the AH-64 Apache, on Navy carriers and amphibious ships for

contingency/forced entry missions. The analysis will begin with the implications of the recent Navy White Paper, "From the Sea" and the draft "Army Operations Doctrine"; to include an historical example of the successful employment of Army helicopters on naval vessels in recent Persian Gulf operations.

The discussion will be further expanded to include: the operational benefit offered by the inclusion of Army aviation in a Joint Task Force, the tactics of the amphibious action including a concept for the employment and control of the aircraft in this environment, and finally a checklist for Army and Navy planners to consider as the concept is moved to the testing phases.

In summarizing the paper, the issues and shortcomings for future resolution will be discussed, to include an expansion of the concept to incorporate other types of Army aviation resources to augment naval forces with additional lift and fire support required in the amphibious assault of the MAGTAF.

## 2. IMPLICATIONS OF THE "WHITE PAPER" AND THE ARMY'S OPERATIONS DOCTRINE:

On 21 August 1992, the Army published its revised draft of FM 100-5, Operations, and the Navy's White Paper "From the Sea" was issued in September of 1992. Both documents reflect the realization that the world, in the last several years, has changed dramatically. In accordance with the new National Security Strategy, which places emphasis on strategic

deterrence, forward presence, crisis response, and reconstitution, the individual services have begun the process of revising their separate doctrines; that is, the way they intend to operate in the future.

The Navy's White Paper describes the change from a global threat to one of a regional nature. It states that "the shift in the strategic landscape means that naval forces will concentrate on littoral warfare and maneuver from the sea" with forces tailored for the particular operation; because "the battlefield of the future will demand that everyone on the field be team-mates."<sup>2</sup> The change from a "Blue" to a "Brown Water" emphasis will require greater cooperation between the Army and Navy when the force is projected ashore.

Additionally, the paper provides a description of Naval Expeditionary Forces "structured to build power from the sea when required by national demands" - a "sea-air-land" team capable of a "full range of action - from port visits and humanitarian relief to major offensive operations."<sup>3</sup> This capability can be further optimized when the array of assets is expanded to include those available from the other services. "From the Sea" commits the Navy to the examination of "ways to minimize the duplication of capabilities" and adaption of existing forces to counter littoral threats."<sup>4</sup>

The evolution in doctrine continues with the circulation of a "Preliminary Draft" of the Army's Field Manual 100-5, Operations. Among the myriad of changes that are incorporated,

the new "Air-Land Battle" doctrine is termed "Army Operations Doctrine" and is modified to include a fifth tenet (Versatility). Additionally, a new emphasis on force projection through the use of joint assets is discussed.

Key to the successful employment of Army helicopters off U.S. naval craft is the implications of the new tenet - Versatility. This concept is defined as "the ability to shift focus, to tailor forces, and to move from one mission to another rapidly and efficiently." It implies a capacity to be multi-functional, to operate across regions of the world throughout the full range of military operations, and to perform at the tactical, operational, and strategic levels.<sup>5</sup> The versatility of Army aviation, be it attack, assault, or medium lift, is inherent in the helicopter's ability to overfly obstacles and to operate from a variety of locations and platforms - to include ships. Add to this capability, the advantage of force tailoring for combined operations with other services, and the missions which aviation forces can have application are limited only by the commander's imagination.

In an entire chapter devoted to the concept of "Force Projection" it is pointed out that these operations will require a "dramatic departure from past practices for most of our Army."<sup>6</sup> The chapter expands upon the concept of applying the factors of METT-T (Mission, Enemy, Terrain, Troops, and Time Available) to the force-projection mission and points out that "decisive operations will often involve the commitment of the

ground commander's air cavalry and attack helicopters in missions throughout the theater of operations." These actions are always "synchronized with tactical air and other supporting fires."<sup>7</sup> Therefore, operations in the joint arena are expanded through the structure of the Joint Task Force in support of a variety of missions.

In summary, these documents clearly reflect an opportunity for profound advances in the spirit of cooperation between the services in the evolution of doctrine, tactics, and interoperability.

### 3. A HISTORICAL PERSPECTIVE

With the significant points of the White Paper reviewed and emerging doctrine in mind, the concept of Army aircraft operating from U.S. naval vessels has already been proven successfully in recent combat operations.

The United States Navy first experienced the implications of modern littoral warfare in the Persian Gulf during the summer of 1987 while Iran and Iraq were in the final stages of their six year war. Although Iraq had concentrated its anti-shipping efforts solely against vessels trading with her enemy and operating inside the declared Iranian exclusion zone, Iran engaged ships of various nations (e.g. India, France, United Kingdom, and USSR) indiscriminately and without warning in international waters. There appeared to be no attempt on Iran's part to determine, prior to the attacks, which were or were not

neutral vessels.

Kuwait was known by Iran to be one of Iraq's primary supporters, both financially and as a transfer point for war materials. For this reason, Kuwaiti shipping became a prime target for the Iranians. As a result of an urgent request for assistance, the United States agreed to re-flag eleven Kuwaiti tankers with U.S. colors for their protection. Under "Operation Earnest Will", the U.S. Navy was given the challenging assignment of ensuring that the reflagged convoys were provided security during their transit to and from the Northern Gulf through the Straits of Hormuz.

The inherent danger involved in serving in this theater was demonstrated on 17 May 1987 with the supposedly accidental attack on the USS Stark, by an Iraqi aircraft (Mirage F-1) with Exocet missiles, which resulted in the loss of 37 of the ship's crew.

A new threat to international shipping appeared in May 1987 with the discovery of mines in Kuwaiti waters. Although it could not be proven at the time, they were suspected to be of Iranian origin and part of a campaign to disrupt the flow of oil from the Gulf. There was an equally dangerous anti-shipping threat from the numerous small attack boats of the aggressive Islamic Revolutionary Guard Corps (IRGC). These craft ranged from the Boston Whaler-type outboard powered boats to the larger Boghammer class and were equipped with a variety of weapons to include: 12.7mm machine guns, rocket propelled grenades (RPG),

and multiple rocket launchers.

The combination of these threats posed unique challenges for the United States Navy due to the fact that there were no naval assets designed specifically to preempt covert mining or terrorist boat attacks. Although the American warships were very successful in deterring day-time aggression, they could not prevent the Iranians from switching their operations to the hours of darkness. Unfortunately, the Navy not only lacked mine detection equipment and night vision systems, but also a rapid reaction capability that would be necessary to catch and destroy these hit and run menaces in the act.

In July 1987, the U.S. Army's 160th Special Operations Aviation Group (a.k.a. Task Force 160) was alerted to be prepared to deploy armed reconnaissance assets (McDonnell Douglas MH/AH-6 helicopters) to the Persian Gulf to fill the void in the Navy's night operational capability.<sup>8</sup> This tasking presented no significant problems since the command's mission essential task requirements included the routine participation in joint naval exercises, in addition to, maintaining night shipboard currency for all aircrews and specializing in the utilization of night vision systems.

On 25 July 1987, the Commander-in-Chief, Central Command, General George B. Crist, USMC, provided the following guidance to the aviation detachment commander prior to deployment:

A) Army Aviation elements would come under the operational control of the Commander, Middle East Forces (RADM Harold J.

Bernsen).

B) There would be no shore based maintenance. All scheduled and unscheduled maintenance must be conducted at sea.

C) There would be no separate Army communication channels. All requirements must utilize established Navy links.

D) There would be no separate Army re-supply flights. All logistical requirements would be via scheduled Military Airlift Command missions from CONUS.

E) And finally, there would be a limit of 44 total Army personnel, to include staff, flight crews, and mechanics.

**The Army had just joined the Navy!**

On 4 August 1987, the Task Force 160 "Nightstalkers" departed CONUS for Bahrain. On arrival, the contingent was placed under the operational control of the Commander, Middle East Forces. Due to the outstanding efforts of the COMIDEASTFOR and his staff, the Army's attack elements were integrated with their naval aviation counterparts and the newly formed attack teams were fully operational by 6 August. The basic concept of employment called for a Navy anti-submarine helicopter (LAMPS Mark III) to acquire, track, and vector the Army MH/AH-6 armed reconnaissance elements (2-3 helicopters) to suspicious targets that were operating in the Gulf waters, primarily after the hours of darkness. Prior to the Army's arrival, this method of identifying friend or foe had been handled solely by the unarmed SH-60B Seahawks (LAMPS). The process was made even more difficult and hazardous by the lack of night vision

goggles/systems, armament, and training of Navy aircrews for this type of engagement. The mission of the LAMPS is anti-submarine warfare and although extremely effective in this capacity, it was not equipped to defend itself against an unconventional enemy.

The primary naval platforms, from which the attack teams operated, were the Oliver Hazard Perry Class frigates (FFG) which have organic support facilities for SH-60B helicopters. These ships were the mainstay of the tanker escort operations and provided the bases from which to patrol the Gulf in search of Iranian mine-layers and attack boats.

The military value of this joint effort was first proven on the night of 21 September 1987 when an attack team (LAMPS and MH, AH-6s) operating from the USS Jarrett (FFG-33) caught the Iranian ship Iran Ajar in the terrorist act of laying mines in the sea lanes off the coast of Bahrain. This successful engagement not only demonstrated, to the international community, the resolve of the United States to defend its interests, but also the determination to stand by her allies in the Gulf region. The capture of the Iran Ajar subsequently proved to be an intelligence windfall. Along with several mines recovered intact, there were numerous cases of documents outlining the Iranian mining campaign in the Gulf.

The utility of this joint concept was once more validated on the evening of 8 October 1987, when another attack team was fired upon by 3 IRGC gunboats, which were lying in wait in the

vicinity of Farsi Island. The Iranians, again made a serious tactical error by taking on the combined forces of the Army and Navy. The result of this short, but furious fire fight was the destruction of all 3 boats and numerous enemy casualties. Following this defeat, there were no further IRGC attacks in the Northern Persian Gulf for a period of several months. The overall success of the joint attack team concept was also credited with causing the IRGC to switch to primarily daylight attacks in the Southern Gulf as well.

By virtue of their operational effectiveness, the 160th SOAG MH/AH-6 aircrews were given the nickname "Seabats" by their naval counterparts. This mythical and elusive nautical creature flies only on the darkest of nights and was a fitting tribute to the Army attack elements that, along with their Navy partners, patrolled the Gulf during the period of greatest threat to the convoy operations.

Also integral to overall mission success were the 160th SOAG MH-60 Blackhawk helicopters that arrived in theater to provide combat search and rescue (CSAR) for the patrolling attack teams. These sophisticated special operations aircraft were equipped with night vision systems (forward looking infrared), long range fuel cells, mini-gun weapon systems, and extraction rigs. Manned by highly trained special operations aircrews, the MH-60s were fully capable of conducting various contingency missions, if the need had arisen.

After nearly one year in theater, the 160th SOAG was

relieved on station to resume its normal special operations posture in CONUS. During this period, the MH/AH-6 "Seabat" elements had never missed a mission and had flown over 3,400 hours without a combat loss. This unqualified success story was directly attributable to the ability of the U.S. Navy and the Army to work together toward a common goal.

The United States Army's commitment, to providing continued support to the Navy, was assumed by Task Force 118 of the 18th Aviation Brigade, XVIII Airborne Corps in July 1988.<sup>9</sup> This unit was ultimately redesignated 4th Squadron, 17th Aviation Regiment on 15 January 1991 and continued to maintain the superlative standards for jointness, established by the 160th "Nightstalkers", for the duration of the requirement. Although the Army's direct role in the Persian Gulf ended with the re-deployment of the 4-17th in 1991, the lessons are clear. Army Aviation provides a versatile, combat ready force that can be readily integrated to enhance the overall capability of the United State's Navy in the conduct of its global mission.

#### 4. CINCLANT EXPERIMENTS WITH MARINES ABOARD CARRIERS

In a recent test of the "From the Sea" evolution, a Special Marine Air Ground Task Force (SPMAGTF) was placed aboard the USS Theodore Roosevelt (CVN 71) for a 10 day exercise and subsequent deployment to the Mediterranean in April of 1993. The concept was apparently first announced in a message from CINCLANT which highlighted the fact that "Marines are masters of task

organization." Given a set of clearly defined and limited operational requirements -- for example: security operations, mobile training teams, civic actions, NEO, and fire support control -- it should be possible to constitute a Marine Special Purpose Force (including USMC helos) of sufficient size, capability, depth and breadth, to ensure mission effectiveness, yet small enough to embark on the CV/CVN. Space could be made available by deploying the CVN less one or two air squadron(s) and/or by dispersing H-3/H-60F helos to surface combatants. The CVBG with USMC Special Purpose Force embarked is not envisioned as either a substitute or replacement for the time proven ARG/MEU(SOC). Rather, the goal is to combine the speed and firepower of the aircraft carrier, with a special purpose force, to enhance specific USMC capabilities -- which are at a premium -- more widely available/rapidly employable than would otherwise be possible.<sup>10</sup>

The SPMAGTF reportedly consisted of a command element of 102 personnel, a ground combat element of 286 personnel, an air combat element of 230 personnel with 6 CH-53s, 4 AH-1Ws, and 2 UH-1Ns, and a combat service support element of 43 personnel. The 10 day shakedown run was termed a great success, while the actual deployment is still on-going.<sup>11</sup> In discussing this initiative of adaptive force planning with a Department of the Navy representative, it appears that the next SPMAGTF will be deployed with the upcoming America Battle Group and that CINCLANT is also working an initiative for Ocean Venture 93

involving an Army Airborne Brigade and OH-58D helicopters in the vicinity of NAS Roosevelt Roads, Puerto Rico.<sup>12</sup>

#### 5. THE AH-64 AND THE AIRCRAFT CARRIER

With "Operation Earnest Will" as historical background and the adaptive force planning of the SPMAGTF as the precedent for innovation, the concept of employing a larger contingent of Army helicopters on U.S. naval vessels should be considered. Obviously, in today's environment of declining defense dollars, the exploration of using other service capabilities has benefits to the overall accomplishment of the mission. In this case, the combination of the most sophisticated attack helicopter in the world with the mobility of the carrier can have application in many scenarios.

Prior to further discussion, a description of the AH-64 (Apache) is appropriate. The aircraft is a twin engine, four blade, tandem seat, aerial weapons platform similar to the AH-1W, Sea Cobra. There are, however, significant differences between the two helicopters. Primarily, the AH-64 is designed to fight at night with a fully integrated night vision system - the pilot night vision system (PNVS) and target acquisition and designation system (TADS), on board. The AH-1W, currently has a daytime only telescopic sight unit (TSU) and while the AH-1W's TSU has a maximum amplification of 13 power, the Apache's sights are 126 power in the day television mode (DTV) and 36 power in the night infrared mode. These amplifications are most useful

in acquiring targets at great distances - especially at night. In addition, and more significantly, the TADS of the Apache can designate targets with coded laser energy for the firing of Hellfire missiles to a range of 8 kilometers, and for guiding other laser designated munitions. The Sea Cobra does not currently possess this capability and must rely on external sources such as a Ground/Vehicular Laser Locator Designator (G/VLLD) for designation.

With regard to ordnance, the AH-1W may be restricted by density altitude conditions in what it can carry, while the Apache rarely encounters any restriction on its carrying capacity. A comparison of the two aircraft for planning purposes is as follows:

|                     | <u>AH-64</u>         | <u>AH-1W</u>       |
|---------------------|----------------------|--------------------|
| FUSELAGE LENGTH     | 48 feet, 2 inches    | 45 feet, 5 inches  |
| OVERALL LENGTH      | 57 feet, 8 inches    | 58 feet, 0 inches  |
| HEIGHT              | 15 feet, 3 inches    | 13 feet, 7 inches  |
| MAX TAKE OFF WEIGHT | 17,650 pounds        | 14,750 pounds      |
| MAX SPEED           | 196 knots            | 190 knots          |
| MAX RANGE           | 275 nautical miles   | 256 nautical miles |
| * RANGE 1 AUX TANK  | 385 nautical miles   | -                  |
| RANGE 2 AUX TANKS   | 600 nautical miles   | -                  |
| RANGE 3 AUX TANKS   | 815 nautical miles   | -                  |
| RANGE 4 AUX TANKS   | 1,030 nautical miles | -                  |

\* The range of the Apache is increased by adding external 230 gallon fuel tanks - with the maximum allowable take off gross

weight in this configuration increased to 21,000 pounds. Adding each wing tank, however, decreases an external store station for a rocket pod or a Hellfire rack.

| <u>ORDNANCE CAPACITY*</u> | <u>AH-64</u> | <u>AH-1W</u> |
|---------------------------|--------------|--------------|
| MAX HELLFIRE              | 16           | 8            |
| MAX 2.75 INCH ROCKETS     | 72           | 52           |
| 30 mm cannon              | 1,200        | -            |
| 20 mm cannon              | -            | 750          |
| AIM 9                     | -            | 2            |

\* Actual configuration to be determined by mission and aircraft performance capabilities.<sup>13</sup>

Organizationally, the AH-64 attack battalion is comprised of five company sized elements - a headquarters company, 3 attack companies, and a maintenance company. The battalion, under current tables of organization, is authorized 268 personnel - 3 UH-60 Blackhawk Helicopters, 13 OH-58 Scout Helicopters, and 18 AH-64 Apache Helicopters - 6 in each company.<sup>14</sup> In the 1995 time-frame, however, these battalions will be simplified and reduced in size, with only AH-64s assigned to the battalions.<sup>15</sup> Regardless of what that organization finally turns out to be, commanders of these units are experienced in task organizing for the mission at hand - much like the SPMAGTF. A typical force package may include as few as 6 Apaches and about 45 personnel - 12 pilots, 8 supervisors and crew chiefs, 10 command and control, and 15 maintainers, to as many 18 Apaches and about 106 personnel

performing various functions. Additionally, about thirteen "Air Force 463L" pallets of equipment would be required to support logistically the largest AH-64 task force on a carrier - not including ammunition. This discussion is intended to point out that the size of the Apache task force embarked upon the carrier can be tailored to meet space restrictions placed upon it by the naval task force commander - just as the SPMAGTF has been.

Now turning our attention to the carrier, the dimensions of which are generally 1,090 feet by 250 feet. This generally provides a landing area for 6 Apache helicopters and parking or landing of another 6 if the deck is clear. The elevator to the lower hangar areas is generally 75 feet by 56 feet.<sup>16</sup> This enables the aircraft to be taken below deck without folding the blades, however, space can be maximized by doing so. In discussing the situation with an experienced carrier officer, there is sufficient room for a tailored force of a variety of aircraft, assuming that the full compliment of fixed wing aircraft is not aboard.<sup>17</sup> A similar analysis of assault ships indicates that, in general, 6 to 12 Apaches with required personnel can also be accommodated on the vessel, depending upon the type of assault ship.

#### 6. TACTICAL EMPLOYMENT

According to joint operations doctrine, the purpose of the amphibious operation is to establish a landing force on a hostile shore to prosecute further combat operations, obtain a

site for an advanced naval or air base, or deny the use of an area to the enemy.<sup>18</sup> The complexities of the operation are analyzed through a deliberate planning sequence which generally includes planning, embarkation, rehearsal, movement, assault, and finally, termination phases. The termination phase may, however, include reembarkation or subsequent operations ashore. Throughout the amphibious execution sequence, the need for supporting operations in the form of feints and demonstrations, isolation of objective areas, intelligence gathering, and psychological and unconventional warfare operations are executed as necessary in support of the overall concept of the operation. Attack helicopters have demonstrated in the past the ability to participate in all phases of the actual assault or supporting operations.<sup>19</sup> The actual mode of embarkation of the helicopters on ships, or just a link up at sea for refueling, prior to striking a target area independently or in concert with a full amphibious assault, depends on the factors of METT-T. The tactical graphics used by the Marines are standard and understood by Army aviation unit commanders, thus facilitating employment of Army assets.

Key to the preparation for the use of Army aircraft in the littoral area or supporting operations is the initiating directive from the joint commander authorized to conduct the operation. This document is significant because it provides a laundry list of information which include, among many items, the task organization, designation of commanders involved with

command relationships, definition of the objective area, and any special instructions to the task force.<sup>20</sup> Probably the most important item to consider is incorporating Army aircraft into the operation is the task organization of the initiating directive, because this will indicate which commander owns the Army assets for tactical employment. Joint doctrine for the operation includes the fact that there is "no standard organization applicable to all situations that may be encountered," but the task organization must meet the requirements of each phase of the operation.<sup>21</sup>

There normally are two commanders charged with the execution of the operation. They are the commander of the amphibious task force (CATF) and the commander of the landing force (CLF). The CATF is in command of all assets involved in the amphibious operation, while the landing force commander assumes command of the landing forces once control is passed ashore. The CLF is responsible for the basic tactical organization, organization for landing, and organization for embarkation.<sup>22</sup> It may very well be appropriate for Army attack aircraft commander to work for the CATF during pre-assault operations and the landing force commander during the actual assault. The flexibility to assign the attack helicopter assets to either commander can be worked out in the initiating directive or coordinated as the operation evolves. In any case, the command relationships must be addressed and resolved early-on, in order to make the most effective use of all available

assets.

With regard to airspace control, procedures are the responsibility of the CATF and are similar to those used in the Army or civilian environment. When contemplating the use of Army aircraft, a pre-briefing by the Navy of what to expect in the area of the amphibious task force or carrier group operations is imperative. This can be accomplished through message traffic, telephonically, or in person. In general, however, the airspace around the naval formation of vessels is controlled in a fashion similar to a civilian airport traffic area in that arrival and departure procedures are prescribed by standard operating procedures. A typical carrier group will have twenty standard operating frequencies published on a communications card. As aircraft approach the amphibious area or carrier task force, it may be necessary to contact "picket ships" on the periphery of the area, and then be handed off from the ship direction center to approach control, to final approach control and finally, to the air boss of the individual carrier or amphibious assault ship.<sup>23</sup> When departing from a ship, the aircraft will be told to either contact the Tactical Air Direction Center (TADC) during Pre-D-Day operations, the Tactical Air Control Center (TACC) upon the arrival of the CATF in the amphibious area, or a Helicopter Direction Center (HDC) aboard an amphibious assault ship. For further details and fire support coordination, Army commanders should contact the CATF's tactical air officer and refer to the operation order's "Air

Plan" annex.

In summary, Army aviation unit commanders must be briefed on the key elements of the concept of the operation, and specifically, the air traffic control procedures to be used in the amphibious area to include arrival and departure procedures from the carrier or assault ship. This information must then be briefed to every aircraft crew to ensure conformity with Navy and Marine procedures ashore.

#### 7. UNIQUE CAPABILITIES OF THE AH-64

With the concept for the integration of the AH-64 Task Force into the carrier battle group and amphibious task force discussed, it is important to turn to the question of whether this concept has practical application to Navy requirements. After all, what significant capabilities does the AH-64 offer in the area of littoral warfare that current Navy and Marine forces do not already possess?

Primarily, the AH-64 is a night fighter with the capability to identify and engage targets at night - both on land and at sea. As employed in Operation Earnest Will, AH-64 aircraft could be vectored toward menacing gun boats in littoral areas, or directed against shore targets in preparation for an amphibious operation. While an argument could be made for the Marine Corps AH-1W completing this mission, the Sea Cobra does not have the integrated night fighting capabilities of the AH-64 nor the larger ordnance payload.

Probably the greatest advantage of the Apache, compared to the Sea Cobra and the fixed wing aircraft organic to the carrier, is the ability of the AH-64 to designate targets with its integral laser designator - at night and during the daytime. Using the Apache as a command and control aircraft in what is commonly called a Joint Air Attack Team (JAAT) operation, the aircraft's crew could remain on station observing the enemy and simultaneously orchestrate a variety of resources to include naval gunfire, close air support and its own weapons on the unsuspecting enemy. Should the mission warrant, extended range fuel tanks could be employed to increase station time and thus ensure continuity of action.

In summary, the advantages of the Apache over organic naval air assets include the ability to designate targets day or night, a greater payload than the AH-1W helicopter, and the capability to provide command and control for naval gunfire and aviation in a JAAT type of operation. These capabilities are valuable in concert with an amphibious assault, as a diversion, or as a mission to destroy a fixed target without follow-on operations on land.

#### **8. ATTACK HELICOPTER OPERATIONS IN THE AMPHIBIOUS ENVIRONMENT**

During Ocean Venture 92, off the coast of Camp Lejeune, N.C. in May of 1992, a Joint Logistics Over the Shore (JLOTS) operation was conducted after a Marine amphibious assault of the beach. Apache helicopters were lowered over the side of the USS

Bellatrix on to waiting Army LACV-30s (Lighterage Air Cushion Vehicle) and taken ashore over the marshes. The aircraft were then unwrapped from their plastic cocoons, reassembled, and placed into action by the 24th Infantry Division in support of the expansion of the Marine beachhead. In this instance, the aircraft did not contribute to the amphibious assault and may very well have never made off it the ship due to the requirement for stable seas for lashing of the aircraft to the LACVs.

In retrospect, if the Apaches had been deployed aboard a carrier or flown off one of the Fast Sealift Ships, the aircraft could have contributed to the amphibious assault, supported the landing of follow-on Army forces, and then reverted to Army control for the expansion of the beachhead.

The concept of employing the Apache and other Army aircraft aboard ships of the Navy is currently under study at the U.S. Army's Training and Doctrine Command (TRADOC). In organizations called "Battle Labs", TRADOC has created an environment of innovation in order to expand the combat power of existing forces. These "Battle Labs" are designed to "define capabilities, identify requirements, and determine priorities" for the continued power projection of Army capabilities.<sup>24</sup>

Under a "Concept Evaluation Program" (CEP), scheduled to begin on 26 July 1993, the Army Aviation Center's Battle Lab will explore the subject of Army Aircraft Supportability During Ship to Shore Operations (AASSSO). Representatives of Fort Rucker will visit Navy facilities to collect data on the ships

available for the employment of the Army AH-64 and UH-60 helicopters in forced entry and deep strike scenarios; evaluate the support required to implement the concept and will develop a plan outlining the responsibilities for resolving shortfalls.<sup>25</sup>

In preliminary research and experimentation on the subject of AH-64s on aircraft carriers, there are other challenges to be solved prior to further evaluation of the concept. In a previous exercise code named Prime Chance, two Apache helicopters were modified to meet "minimal shipboard operational requirements." Units at Fort Bragg, with the assistance of the Apache Program Manager, modified the aircraft as follows:<sup>26</sup>

A. Fuselage tiedowns were added to meet requirements for tiedown in sea state 5 conditions.

B. Corrosion resistant paints and coatings were applied to the fuselage.

C. A TACAN (Tactical Air Navigation equipment) was installed to match the carrier's instrument approach system.

D. Electronic Magnetic Interference (EMI) hardening was applied to the aircraft's sight sensor unit (SSU) in the cockpit and pylon squibs to prevent inadvertent firing.

E. The electrically primed 30mm cannon was changed to a percussion firing weapon system.

F. Navy 2.75 inch rockets were procured to meet radar hazards (RADHAZ) and explosive ordnance (HERO) susceptibility tests.

G. A hand held Global Positioning System (GPS) was used to update the aircraft's location prior to attacking.

With these requirements for aircraft modification in mind, and the dollars needed to make these improvements to a select number of later model Apaches in short supply, it appears that such operations are currently feasible only for short periods of time aboard ship. Further resolution of these issues is essential to achieving a routine operational capability.

#### 9. CHECKLIST FOR PLANNERS

In the near term, however, while the shortcomings mentioned above are resolved, Army aviation unit commanders should be prepared to conduct operations from naval vessels by working around these problems. Accordingly, it is imperative that planners become thoroughly knowledgeable of U.S. Navy procedures. Naval Warfare Publications (NWP) provide the necessary information to execute this planning. NWP 42 (Revision 1), Shipboard Helicopter Operating Procedures, sets forth the mandatory operational procedures and training requirements for the shipboard employment of helicopters. This manual covers such topics as: general operating procedures, safety, refueling, and air traffic control doctrine. It also lists what U.S. Navy vessels are compatible with U.S. Army aircraft.

Of special interest to planners, especially attack helicopter units, are the Hazards of Electromagnetic Radiation

to Ordnance (HERO)/ Radiation Hazards (RADHAZ) safety precautions. Appropriate procedures are outlined for the handling, loading, arming, and down-loading of weapon systems on naval vessels. NWP 42 does not cover HERO or Electro-Magnetic Vulnerability (EMV) certification of Army aircraft or weapon systems. Commanders must contact the U.S. Army Aviation and Troop Command (USAATCOM) concerning these requirements.

From the research conducted thus far, some specific precautions and procedures for Army aircraft include the following:<sup>27</sup>

A. Army helicopter pilots must be prepared for erratic caution/warning indications and instrument readings when approaching carrier/assault ship electronic emitters.

B. Be prepared for possible stability augmentation system (SAS), integrated helmet, and forward looking infrared sight system malfunctions close to the ship. Operate with SAS off if necessary.

C. Plan to approach the ship from a low altitude to stay out of interfering radar beams.

D. Ensure that the AH-64 is equipped with over water cards (ASN 128/137) for improved heading attitude and reference system (HARS) operation.

E. Use an aircraft equipped with a backup control system (BUCS) if possible, due to improved protection against EMI built into these later production model Apaches.

D. Fresh water rinses of airframe and engine flushes

should be conducted daily if at all possible.

#### 10. EXPANSION OF THE CONCEPT TO OTHER ARMY AIRCRAFT

Although there are many considerations that must be taken into account when operating in a marine environment, i.e. marinization of airframes, Army Aviation has made significant progress in meeting these challenges and the potential operational benefits of these additional joint assets fully justify the effort. The capability to fly great distances with auxiliary fuel tanks, could conceivably make the carrier just a temporary refueling point while enroute to strike targets while under the command of a Joint Task Force. The augmentation of helicopter lift required for a SPMAGTF or the ability to strike targets after a self deployment of aircraft to the carrier are all within the realm of possibility.

Combat, combat support, and combat service support aircraft of the Army can all be used to enhance the littoral capabilities of the Navy during the initial phases of any operation and then revert to land component control as those follow-on forces arrive to expand the amphibious beachhead. CH-47s, UH-60s, and AH-64s are all capable of working for the Joint Task Force Commander regardless of service component.

#### 11. CONCLUSION

The end of the Cold War and the subsequent global instability are necessitating the reexamination of the combined

capabilities of the armed forces in light of future regional threats and contingencies. This paper has examined the changes in doctrine which include an evolution from a "Blue Water" Navy to a force focused on littoral warfare, in addition to, the Army's new tenet of versatility. In this regard, the adaptive force planning concepts being developed using the SPMAGTF have implications across service lines. Additionally, as the budget constraints fully impact on the services, a new era of cooperation will be mandated to maximize these collective capabilities.

While many challenges, such as improving the maritime hardening of the Apache and other Army helicopters remain, the historical employment of these aircraft on naval vessels has been a success story. Operational problems have, and continue to be, overcome through a long term view of product improvement and improvisation. The concept of employment is feasible.

In light of the growing interdependence of forces, the concept of operating U.S. Army helicopters from Navy ships is a force multiplier with great potential for future contingency applications. The trend, if not for the near term employment of this concept, must be toward a true "joint" capability in a mix which enhances the overall potential of all the services. The possibilities are endless - imagination and ingenuity are the solution.

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