Rethinking United States Marine Corps Assault Support Concept Of Employment

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Executive Summary

Title: Rethinking United States Marine Corps Assault Support Concept of Employment

for the Interim Period Between Now and the Introduction of the MV-22.

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Research Question: This paper examines the deterioration of the Air Combat Element's helicopter assault support capabilities in supporting the Marine Expeditionary Unit (Special Operations Capable) Commander.

Discussion: For a decade now, the Marine Corps has struggled with a controversial subject: What will replace its aging assault support medium lift helicopter assets and how to go about doing it without losing capabilities during the transition process. The controversy of what will replace the aging CH-46E has been solved, at least for now, with the planned introduction of the MV-22 Osprey. This new revolution in rotor lift supports the Marine Corps' "Operational Maneuver From The Sea" (OMFTS) as well as the emerging concept of "Sea Dragon". What still remains debatable is how to hold the pieces together while our assault support lift capabilities deteriorate due to diminishing resources. The scheduled arrival of the MV-22 has been delayed. The delay has placed the burden of responsibility on the Marine Expeditionary Force (MEF) Commanders to solve a deficiency in the Marine Expeditionary Unit's (MEU) assault support capabilities for the next decade. In particular, it has become a constant challenge for MEF commanders to task organize a capable helicopter force under the current structure of the MEU Aviation Combat Element (ACE). This deficit in the rotor lift assault support capabilities must be improved to maintain the Marine Corps' amphibious role in the National Defense Strategy. 1-low well we fight today and tomorrow will depend on how well we task organize the battlefield systems used by the MAGTF Commander. The Marine Carps' "911 Force in Readiness" is the MEU. It is upon the basic MAGTF building block of the MEU that the Marine Corps expands its force capabilities; up to a Marine Expeditionary Force (MEF) level if the situation requires it. The backbone of the MEUs maneuver capability is the rotor wing composite squadron. Therefore, deficiencies in rotor wing assault support have a detrimental effect on the entire amphibious capability of the MEU. Deficiencies in assault support rotor lift were determined as: (1) lack of tactically sound troop lift capabilities; (2) lack of helo force long range capabilities; and (3) lack of total multi-mission flexibility. Examined next were the mission deficiencies which exist with current employment of the CH-46 as the predominant troop lift helicopter asset for the MEU ACE. Discussion will then focus on an interim solution to the mission deficiencies until the arrival of the MV-22. A interim solution is inhibited only by the Marine Corps~ traditional thoughts on medium vs. heavy lift helicopter employment. Reference will be made throughout this study to the helicopter concept of employment used by other service components, in particular, United States Special Operations Command (USSOCOM). The comparison of employment is not to suggest the Marine Corps should employ its heavy lift assets as a special operations platform, but rather lessons can be learned from how Special

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Operations utilizes its heavy lift assets. Modification of the Marine Corps' helicopter employment, followed through with a modified task organization of the MEU (SOC) ACE for the interim period, could increase the MAGTF Commander's combat maneuverability and effectiveness. The Marine Corps does possess a tremendous over the horizon capability today employing 'Warfighting and Operational Maneuver From The Sea', if only Marine leaders are willing to change to meet the challenge.

Thesis: The Marine Corps cannot maintain nor improve its warfighting capability for the interim period with the aging CIJ-46 as the backbone of the assault support lift for the MEUs; but that the Marine Corps can 'ride the dragon of change' through the restructured employment of the CH-53E.

Contents

LIST OF FIGURES

INTRODUCTION

> History also tells us that whenever we have stayed at the forefront of change, we have prospered....Marines must sustain that ability to innovate. This one of the biggest challenges of our institution....Creativity and innovation are absolutely essential if we are to anticipate events and win across the spectrum of conflict. We must be ruthless in stamping out those things that restrict creative thinking or limit the development of new approaches to the challenges we face.
>
> Gen Charles C. Krulak

The Marine Corps has been leading the efforts in the development of a revolutionary replacement for the CH-46--the MV-22 Osprey. Air Force Special Operations has also jumped on board with this rotor lift revolution of military affairs (RMA) to replace its aging MH-53J Pavelow helicopter. It is fairly predictable that the Army will join the crowd once the aircraft proves its capabilities. Although the Medium Lift Replacement (MLR) program is something the Marine Corps has planned out, the technological advancement and time line of the MV-22's arrival has not kept up with our increasing need for a medium lift assault support replacement. The Marine Corps now finds itself in a state of 'things are broke and they need fixing'. The term 'fixing' implies an interim fix until the arrival of the MV-22, currently scheduled for Initial Operating Capability (IOC) in 2001 and operational in 2004.[1] A period of eight years, unless the program is delayed further (which no one can guarantee that it will not).

> What has suffered even more than our current capability to provide adequate helicopter lift for the Marine Air Ground Task Force (MAGTF) Commander, is our adaptiveness to the environment through modification of rotary lift employment. Our concept of employment of helicopters has changed very little in the past ten years. Additionally the Marine Corps has neglected to capitalize on the capabilities some of our helicopters possess today. The Marine Corps has been slow in 'expanding its box' in rotor lift employment to better serve the MAGTF Commander in meeting today's challenges in the littoral areas.[2]

The Marine Corps is a proponent of task organization of assets in order to effectively adapt to the mission environment. In spite of this, the current structure of the Marine Expeditionary Unit (Special Operations Capable) [MEU (SOC)] Aviation Combat Element (ACE) remains relatively unchanged, despite the rotor lift limitations we face today. This coupled, with the demanding challenges of littoral conflict, presents a controversial challenge for MAGTF Commanders.

Proposals for an interim fix have been met with extreme prejudice due to the politics and sensitivity of this issue. Excellent professional articles, written by extremely knowledgeable officers, addressing this very subject have been shunned because they have highlighted a critical vulnerability.[3] This has almost imposed a near 'self-censorship' on proposals to fix the problem for the interim period. Regardless of the validity of these previous proposals, they have been viewed as opponents to the V-22 program and not teams players.[4] The Marine Corps has reached a culminating point where its leaders must be innovative in the employment of current helicopter assets to effectively execute today's missions, at least until the MV-22 arrives to replace the CH-46. But most Marine Corps leaders are reluctant to change in this situation, because it will force them to conduct business in a different manner from which they have become comfortable in doing. Other leaders are reluctant to modify the current employment of the helicopter force for fear of jeopardizing the MV-22 program.

The CH-46 has been the prominent leader in assault support operations for 30 years, no one will argue that. But it is time for change. The CH-46 is no longer capable of meeting this challenge. "Our current 12-plane CH-46 squadrons cannot meet minimum mission requirements..."[5]

This study makes two assumptions: (1) that the Marine Corps is willing to implement an interim solution to fix the current capabilities gap in order to better support the MAGTF Commander; and (2) that the Marine Corps will receive the MV-22 as the replacement for the CH-46.

The situation the Marine Corps faces today is one that needs a solution today, not a decade from now if the Marine Corps wishes to emerge triumphant from the era of the dragon.

> Change is a dragon... if you continue to ignore him, he will eat you. You can try to control the dragon of change, try to force him onto a path of your own choosing. Push him or pull him. But the dragon is powerful and will not go where you want him to go. He will ultimately knock you down and eat you. But if you ride the dragon of change, you can avoid his lethal powers... .Accept change, constantly anticipate and adapt to it, and always take advantage of the opportunities it brings. This is the strategy we must

> embrace. The Marine Corps has ridden the dragons of change in the past, and we must do so again in the years to come.[6]

Marine leaders face the dragon of change today with Marine assault support capabilities. The Marine Corps knows where it wants to be ten years from now, however it is neglecting today and tomorrow. "The price paid for the Marine Corps' reluctance to change is the creation of a 'hollow' helicopter force struggling to support the MAGTF Commander forcing the piecemealing of stretched thin assets to meet the minimum requirements for the mission."[7] Leaders are presented with the opportunity today to make the best use of what current assets they have to meet the current challenges of today's battlefield. The Marine Corps can ill afford to wait until 2004 to fix the problems that exist today with its helicopter assault support capabilities. If the Marine Corps delays, they are setting up the MAGTF Commanders and operators for mission failure. The Marine Corps can not afford to fail in any mission. "Any mission failure would jeopardize the future roles of the Marine Corps in this nation's National Military Strategy."[8] It is the Marine Corps' responsibility to ensure MAGTF Commanders are supported with the best capabilities that exist today.

The Marine Corps possesses the capability today, through task organization of the ACE to meet and exceed the helicopter support requirements of the MAGTF Commander in order to conduct Operational Maneuver From The Sea.

CHAPTER 1

Does a Deficiency Exist in Rotor Lift Assault Support Capabilities?

(Or Are Things Broke And Working Well)

> The CH-46 now has severe restrictions on the number of troops that it can carry, which means that any sizable trooplift over the distances discussed earlier (50 miles) will take an extended period of time that may not be tactically feasible. The CH-53 may have to pick up the slack, which it is fully capable of doing...As to how fast the CH-46 will be replaced will depend on procurement profiles for the MV-22 in the years following 2001. This could stretch into the decade of the 21st Century.[9]

The debate of whether the Marine Corps can continue with the current concept of employment of its helicopters until the arrival of the MV-22 is the controversial and extremely sensitive issue which faces the Marine Corps leadership today. Many leaders in the Marine Corps want to believe the philosophy--'things are broke and working well'. That the Marine Corps can tough it out until the MV-22 arrives and nothing should be done now for fear of jeopardizing the MV-22 Osprey program. Marine Corps leaders on the other side of the fence feel a fix is needed now before the MEU assault force capabilities deteriorate even further. Medium lift assets have historically been the backbone of assault support lift to the Marine Air Ground Task Force Commander. If the medium lift community suffers a capability loss, then the total force capability feels this loss.[10] Adversaries of the United States may perceive this rotor lift degradation as a critical vulnerability to the Marine Corps' amphibious capabilities.

The CH-46 is suffering from maintenance difficulties, aeronautical restrictions, and an inability to conduct support for the MEUs other than short range and transporting 10 or less passengers.[11] The concept of using the current medium lift assets to perform over the horizon, long range, tactically sound troop movements and sufficient buildup of combat power is out of the question at this point.

There is an ongoing attempt to relieve some of the restrictions placed on the CH-46; with time these efforts will achieve some limited success. One program, the CH-46 Dynamic Component Upgrade (DCU), will eventually lift the restrictions presently placed on the CH-46, but will be limited to only restoring the aircraft to its previous capabilities. The DCU program features will upgrade/replace parts associated with the rotor heads, transmissions, drive system, and flight control system. The program cost is $662,000 per aircraft with a total cost of $206,505,000 to upgrade the fleet. The installation phase has already begun and will be completed by October 1999.[12] It is important to note however, the DCU will restore the 46 to its previous capabilities but will not enhance its perfonnance.[13]

With the aircraft approaching its 12,500 flight hour service life limit, a Service Life Assessment Plan study (SLAP) was conducted and recently completed. The study showed favorable results indicating that the CH-46 could be safely flown beyond its 12,500 hour limit without going through a Service Life Extension Plan (SLEP).[14] Although this has relieved some of the mounting pressures on the community, there is still reason for concern.

The aircraft has experienced recent problems with its engines which may require replacing in the near future.[15] Other concerns of Fleet Marine Force pilots deal with supply. Some of the expendable and dynamic components are no longer produced commercially due to contracts long since expiring. In one case, a civilian was brought in from retirement to produce a 'one of a kind' seal for the aircraft that only this person had the capability of making. This situation will only worsen as time progresses.[16]

The cumulative effects of these restrictions and deterioration of aircraft performance have resulted in deficiencies of rotor lift capacity (number of troops), mission radius, and multi-mission flexibility.

The CH-46 is limited to transporting 10-15 combat troops for a mission radius[17] of 50-70 miles. Current operational performance capabilities of the CH-46 deployed on the MEU "...for some contingency missions, the CH-46 is limited to carrying 6 troops and traveling 35 nautical

miles in order to conduct flights in Albania."[18]

> Speed and focus of effort are essential elements of maneuver, both of which the MAGTF can exploit using assault support. Assault support provides the MAGTF commander with the capability to move assets over long distances in a matter of minutes.... The MAGTF can bring together assault support assets from multiple locations in a single focus of effort in a very short time.... The increase in mobility, speed, range, and freedom of action provides the MAGTF commander options unavailable in the past.[19]

The current concept of employment using the CH-46 as the primary troop lift aircraft, no longer fulfills the above requirements. Figure 1 displays the current medium and heavy lift helicopters that are utilized by Marine Expeditionary Forces to source

Figure 1 .--Aircraft performance as measured to the MLR Requirements.[20]

AIRCRAFT	MEETS GCE REQUIREMENT	MEETS MLR REQUIREMENT (24 TROOPS)	CAPABLE OF CARRYING 10,000 LB LOAD
CH-46	NO	NO-10 TO 15 TROOPS	NO
CH-53E	YES	YES-55+ IF REQ'D	YES

Note: Surveyed OCE Commanders stated the current minimum mission requirement was at least 17 to 24 combat troops per aircraft capable of a one wave assault.

the deploying MEU (SOC)s The MEU ACE is currently structured around the CH-46, which equates to the preponderance of troop transport helicopters being CH-46s. This structure has not been changed even though the CH-46 is no longer meeting the mission requirement criteria as depicted in Figure 1. An interim restructure of the MEU ACE around a more capable multi-mission aircraft would provide the maneuver capability the MEU Commander needs today, not in the year 2010.

Beginning as early as 1969, studies were initiated searching for what would be the replacement for the CH-46. In 1978, the VSTOL -A Studies (Vertical Short Take Off and Landing) revealed a tiltrotor potential. From 1954 to 1966, the XV-3 demonstrated that this concept was conceivable. In 1982, then Secretary of Defense Caspar Weinberger, approved a

Joint Service Operational Requirement (JSOR) to develop a Medium Lift Replacement (MLR) aircraft. The requirement directed all of the services to purchase a single,, medium-lift aircraft based on new tilt-rotor technology. This effort was transformed into the V-22 Osprey program. Due to the increasing costs of the program and the waffling of program support due to 'changes in the watch', the threat of cancellation of the V-22 program loomed on the horizon. "The end result of these efforts to replace the CH-46 has resulted in a myriad of delays prolonging the anticipated retirement of the CH-46. Twenty-five years, eighteen studies, and four Cost and Operational Effectiveness Analysis's (COBA) later, we find ourselves struggling to get the V-22 into our ranks to replace an aged aircraft."[21]

Due to the era of a 'fiscally constrained environment' of declining resources the Marines are pursuing a survival strategy of 'aircraft type necking down' placing emphasis on 'multi-mission capable assets'. The current plan laid out in the Marine Corps Aviation Plan is to replace all current rotor lift assets with three type model aircraft depicted in Figure 2.[22]

Figure 2--Marine Corps Helicopter Neckdown Strategy

CURRENT ASSET	REPLACEMENT ASSET	REPLACEMENT YEAR
CH-46E/CH-53D	MV-22	2004-2015
CH-53E	HEAVY LIFT REPLACEMENT (HLR)	2025
AH- 1 /UH-1N	JOINT REPLACEMENT AIRCRAFT	2015

The goal of the neckdown strategy "is an effort to field a credible fighting force of advanced technological systems possessing affordable capabilities.., accomplished through prudent procurement of new weapons systems by upgrading existing platforms with modem technology equipment and replacing obsolete systems."[23] In a 'fiscally constrained' environment, an effective neckdown strategy should invest money in the aircraft which will provide the highest return in multi-mission versatility and have the highest remaining service life to the Marine Corps.[24] The challenge for leaders and planners is deciding what the aircraft should be capable of performing. Each type model helicopter in the Marine Corps inventory should be

capable of a multitude of roles, not just the outdated mission statements listed in FMFM 5-30 "Assault Support".[25] To adapt to this type of mindset is nothing revolutionary. The fixed wing have employed this concept for years with their combined fighter/attack roles associated with the F-4, F/A- 18, and AV-8B. The Marine Corps' interim solution should begin immediately using the neck down strategy and implement the multi-mission concept by using the heavy lift capable platforms to conduct not only heavy lift, but also medium and light lift.

Summary

History has proven time and again, that ground commanders regardless of the type mission anticipation, will always need the capability to go 'heavy' when required.[26] Whether the mission is crossing a river in Bosnia or extracting personnel from an embassy, the MAGTF has the requirement for the flexibility to be long range capable across the light, medium, and heavy lift spectrums.[27]

Helicopter lift deficiencies exist with the current reliance on the CH-46 to carry out the majority of the assault support missions in the Marine Corps. These deficiencies have an adverse effect on the MEU ACE's ability to carry out the required missions set forth for MEU. The interim solution to effectively eliminate these deficiencies is through the restructuring of the MEU ACE. For at least the next eight years, the only aircraft in the Marine Corps inventory capable of fixing the lift deficiencies of the MEU ACE is the CH-53E. Failure to effectively employ this asset will only inhibit MEU operational maneuver rotor lift capabilities until the year 2004 or even later. Through restructure of the MEU ACE and modification of the employment of helicopter lift, the Marine Corps would be able to take advantage of the current capabilities of the CH-53E.

CHAPTER 2

KEEPING THE JEWEL FROM FALLING OUT OF THE CROWN

MARINE CORPS EXPEDITIONARY UNITS (SPECIAL OPERATIONS CAPABLE)

(MEU (SOC))

The 'JEWEL IN THE CROWN' for the Marine Corps is its forward presence demonstrated through the MEU (SOC)s. The MEU is considered the 'tip of the sword' for the Marine Corps. Its capabilities report card is measured by the performance of the Marine Corps' '911 force in readiness'--the MEUs. "The primary objective of the MEU (SOC) ... is to provide theater Commander in Chiefs (ClNC) with an effective means of dealing with the uncertainties of future threats, providing a forward deployed unit that is inherently balanced, sustainable, flexible responsive, expandable, and credible."[28]

The MEU (SOC) is the National Command Authorities'(NCA) most flexible employment option and requires continued improvement to keep it a viable option. There has now been a fundamental shift towards 'Operational Maneuver From The Sea' (OMFTS) with 'Ship to Objective Maneuver' replacing traditional amphibious doctrine. This new direction includes the use of naval expeditionary forces shaping the battlespace allowing maneuver assault operations deep into the littorals. The current limitation on conducting limited OMFTS is the degraded assault support capabilities of the amphibious MAGTF directly attributed to the lack of adequate troop carrying long range helicopters.[29] Figure 3 depicts the missions most affected by the deficient long range lift capabilities of the MEU ACE.

Figure 3. --MEU (SOC) missions most affected by MEU ACE helicopter lift

AMPHBIOUS RAIDS	**NON-COMBATANT EVACUATIONS**
TACTICAL RECOVERY OF AIRCRAFT AND PERSONNEL	**HUMANITARIAN/CIVIC ASSISTANCE**
MILITARY OPERATIONS IN URBAN	**IN EXTREMIS HOSTAGE RESCUE**
VISIT BOARD SEARCH AND SEIZURE	**MILITARY TACTICAL DECEPTION OPERATIONS**

Note: Stated missions for MEU (SOC) were taken from MCO 3120

The CH-46 has for years, led the efforts in the ACE support for the MEU Commander with a reliable means of operating from an amphibious environment to a foreign shore in order to accomplish the stated mission for the combatant commander. The normal compliment of rotor wing aircraft comprising a MEU Air Combat Element was 12 CH-46's, 4 CH-53Es, 4 AH-ls, and 3 UH-1s, plus 6 AV-8s. The deployment sequence for composite squadrons starting in 1986 was to form the composite 180 days prior to deployment. The mother CH-53E and AH-l/UH-l squadrons would send over their aircraft detachments to the 12 plane CH-46 squadron. Mission tasking would utilize the CH-46s as the primary troop transports and the CH-53s would be assigned the mission of 'following in trail' carrying jeeps and trailers on the initial assault. Getting the entire heliborne company ashore would normally involve two or more cycles for the CH-46s, depending on the range, troop load outs, and CH-46 refuel cycles. It was not uncommon for the CH-53Es to loiter for two or more hours overhead (providing an easily detectable signature of the Amphibious Readiness Group) while the refuel and launch cycles were accomplished for the medium/light lift helicopters. This procedure was generally acceptable until the CH-46 performance was hindered due to airframe restrictions resulting from its age. As a result, it was taking longer to build up combat power ashore using the medium lift assets for troop transport, falling far short of the "90 minute requirement of establishing the force on the beach in two waves"[30] In addition, the distances began to shorten in order to accommodate the decreased fuel loads of the CH-46 and to speed up the shuttle process of building up the combat power ashore. Missions requiring a range greater than 50 miles normally ruled out the use of the CH-46. In

1987, the MEUs began experimenting with long range employment of the CH-53E usually in a ship to ship or ship to shore scenario.[31] The CH-53E soon proved its versatility to the MAGTF Commander through its heavy lift capability (carrying a large number of troops per airframe) and employing air refueling to greatly extend the range. The CH-53E also proved its heavy lift flexibility when massive numbers of troops needed to be transported from point A to B in an expeditious manner.

Today, effective helicopter mission support must do what is possible to fulfill the needs of the ground commander. This is accomplished through providing the adequate type and number of helicopters to lift the required number of troops per aircraft, required distance, and without numerous shuffles.[32] Contrary to the requirements of the ground commander, the limited size of the CH-46 (an aircraft plagued with restrictions and limited capabilities) troop loads are limiting the combat abilities of the ground commander. According to former company commanders and future battalion commanders surveyed, the optimal number is no less than 17 (a squad reinforced). Maximum number would be 26 plus comprising two squads or more. Stick load outs of 5,10, or even 15 troops per aircraft split up the integrity of the ground forces creating further chaos in a night combat environment. It would be optimal to transport all the forces in one wave.[33] Current studies and restrictions dictate that the optimum number of troops per aircraft is 24.[34] The only asset capable of transporting those numbers today is the CH-53E. Company commanders and battalion operations officers have placed their faith in the CH-53E to meet their needs for mission accomplishment through troop capacity, distance, and multi-mission flexibility.[35] Indicative of this trust in the CH-53E…."the percentage of troop lifts that the CH-53E conducts for the Marine Expeditionary Force (MEF) comprise seventy percent of the total missions conducted"[36]

Despite the versatile multi-mission capabilities of the CH-53E, it comprises one of the smallest elements in the structure of the MEU ACE, yet, little has been done with task organizing the MEU Air Combat Element (ACE) structure to take full advantage of the 53E's

capabilities. This has forced MEU Commanders to take the situation into their own hands and attempt to implement an interim solution to the troop lift, mission radius, and flexibility deficiency. MEU Commanders are now trying to resolve the rotor lift capabilities deficiency through the beefing up of the CH-53E detachments assigned to the ACE. The normal MEU ACE detachment of 4 aircraft has grown to 6, even 8 aircraft. The plus up is "not because of any particular mission requirement but rather the commander's mission anticipation ensuring the MEU has the lift capabilities for any real world contingencies such as the peace keeping efforts in Bosnia or any typical rapid action response mission such as Rwanda or Haiti.

Although this plus up is essential for the MEUs, there is a price to be paid at the other end. The mother CH-53E squadrons are being depleted of not only aircraft assets, but maintenance personnel, and qualified aircrew. The challenge is getting so severe on the east coast that "come summer 1996, the CH-53E mother squadrons will no longer be able to support the MEU dets they have to supply."[38] "With the HMH squadrons designed to support the mother squadron and 2 four plane detachments, the HMH squadrons are forced to eat their 'seed corn' and are quickly losing their ability to train and qualify aircrew for the next detachment. The east coast MEUs will soon find themselves in an unrecoverable dilemma once the HMHs can no longer support a MEU deployment."[39]

Since the design of the HMH squadrons was for the mother squadron and two 4 plane detachments, these unforeseen increased commitments leave the Marine Aircraft Group Commanders with little support flexibility. This will have a windfall effect on the squadrons' ability of supporting the MEF for Continental United States (CONUS) operations. With 2 six plane or 2 eight plane detachments gone at any given time, this leaves little or no assets (aircraft and manpower) behind to perform an almost equally important mission of training the next MEU detachment, supporting CONUS missions, and exercises such as Combined Arms Exercise (CAX), Agile Provider, or Purple Star. Any one of those listed commitments, not to mention pop-up contingencies such as Haiti, require a total sourcing of CH-53E assets.

The two HMH squadrons on the east coast are forced to employ 'Air Station Sourcing'[40] of CH-53E assets to meet the MEU det requirements in addition to the day to day mission commitments of II MEF. The situation is reaching the point where the pooling of east coast CH-53E assets (manpower and aircraft) is becoming the norm vice the exception, accelerating the deterioration of Marine Corps heavy lift capabilities.

The underlying problem of rotor lift capability degradation is being band aided at the operational level, but those bandages will hold together for only so long. Current and future studies have and should examine the implied statement being made by the MEU commanders with their demands for increased CH-53E support. Perhaps the studies will discover the traditional MEU ACE structure built around the HMM (CH-46) squadron can no longer support the needs of the MAGTF commander and certainly will not be able to do so for the next decade.[41]Manpower deficiencies have become an even more prominent challenge than airframes available on the ramp in supporting the MEF. "The ability to meet required missions and to conduct some resemblance of training is dictated by whether there are any crewchiefs available to fly."[42] The HIMH squadron manpower shortages not only affect the ability to fly but also to work on the airframes. This has already had a serious effect on the two squadrons being able to train and qualify aircrew instructors not to mention sending qualified and experienced aircrew to the Weapons and Tactics Instructor Course (WTI) at MAWTS-One. If the squadrons are unable to send aircrew to WTI, they will no longer be capable of supplying each MEU with a WTI "which is a requirement for each MEU detachment".[43] The few instructors that are trained and designated, the mother squadrons are obligated to give them to the MEUs. Sending the few qualified WTIs to the MEU ACE leaves a shortfall of instructors in the mother squadron, limiting the ability to conduct training for future MEU detachments. The CH-53E mother squadrons are caught up in a vicious continuous cycle of training up and transferring MEU detachments, 2 detachments out at any given time, while trying to conduct disjointed training amidst CAX, Joint Task

Force training and missions, in addition to the daily mission requirements.

The Marine Corps has gone past its culminating point in the effective employment of its helicopter assets forcing its leaders to make one of two decisions: (1) tell the MEU Commander he cannot have the aircraft he anticipates needing to conduct the mission, or (2) restructure the MEU ACE task organization for the interim period to better support the MAGTF Commander; restructure the ACE to get the most lift and multi-mission role capability possible from each deployed airframe. The logical choice is to support the MAGTF Commander through restructure of the MEU ACE. This choice is also in alignment with the Marine Corps Aviation Plan to "remain effective and responsive to the MAGTF commander".[44] This would assimilate into a capabilities neck-down strategy of getting the most missions out of the least amount of airframes. Even though the CH-53E takes up more deck space than the CH46 (the CH-53E takes up 2.4 CH-46 spaces[45], compared to the MV-22 taking up 1.56 CH-46 spaces)[46]; the gains received through increased lift over rides the increased footprint. The CH-53E provides a troop lift capability of 4 times that of a non-restricted CH-46. CH-53E dominant deployments have already proved their valuable maneuver capabilities for the MAGTF Commander. During Desert Shield and Desert Storm, HMH-461 deployed with 12 CH-53Es on board the LPH-2 USS Iwo Jima, 2 CH-53s on board the LPD USS Raleigh, and 2 CH-53Es on board the LPD USS Trenton. This helicopter employment package provided a long range ship to objective maneuver capability, and allowed flexibility through split amphibious maneuver elements for the MEF Forward Commander. This concept culminated with the CH-53Es' long range execution of Operation Eastern Exit.

More recently, the concept of an HMH (REIN) was employed in March, 1995 during Exercise Strong Resolve. During this exercise, the squadron comprised with a predominance of CH-53Es, provided the MAGTF Commander an assault support lift capability that is nonexistent in an HMM (Rein).

The remaining portion of this chapter will examine the stated missions for MEU (SOC)s highlighting the current helicopter lift deficiencies which exist with the HMM (Rein) concept of employment. In comparison, the solution for the deficiencies is shown with the restructured MEU (SOC) ACE capabilities. The restructure is in the form of HMH (Rein) squadrons to support the Marine Corps' current and immediate future doctrinal concepts of Operational Maneuver From The Sea. The model for current MEU ACE capabilities will use the standard HMM (Rein) aircraft ratios. The HMH (Rein) will use a proposed aircraft ratio of 14 CH-53Es, 4 CH46s, 6 AH-ls, and 6 AV-8Bs. Both squadrons will utilize a 75% aircraft availability rate.[47]

AMPHIBIOUS RAIDS

The MEUs need to possess the "capability to conduct amphibious raids via air means from extended ranges in order to inflict loss or damage upon opposing forces, create diversions, capture and evacuate individuals and material by swift incursion into an objective area followed by planned withdrawal. The amphibious raid is the primary operational focus for the forward operating MEU (SOC)s."[48]

Marine Medium Helicopter (Reinforced) (HMM (Rein))

The key considerations for raids are "extended ranges, create diversions, evacuate individuals and material by swift incursion"[49]. The CH-46 does not possess the capability to conduct some or any of these simultaneously. "It does not have the lift nor the range."[50] Figure 4 indicates the amphibious raid capabilities that are possessed by the current MEU ACE structure.

Figure 4.--HMM (Rein) Raid Force Package

AIRCRAFT	MISSION/LOAD	ALTERNATE MISSION	MISSION RADIUS
8CH-46s	8X10 (80) TROOPS		50-100 MILES
3 CH-53Es	3 HUMMWVs* plus up to 24 pax each	3 LAVS* plus LAV crew	200 MILES
3 AH-ls	RWCAS SUPPORT		

Note: The CH-53E is the only aircraft capable of carrying the HUMMWV or the LAV.

Marine Heavy Helicopter (Reinforced) (HMH (Rein))

The CH-53E gives the combatant commander the ability to conduct long range raids while simultaneously executing diversionary options. The lift capacity of the 53E allows the raid force commander to extract additional personnel and precious cargo/material along with the original raid force package.

When vehicles are required for the missions, the 53E also has the capability for internal loading. In the case of the M998, High Mobility, Multipurpose, Wheeled Vehicle (HUMMWV), the 53E can lift two HUMMWVs simultaneously (this option has been tested and proven both in the Marine Corps and in the United States Special Operations Command (USSOCOM) using the "YO-YO" or similar device). If the load to be extracted is large, it can be winched inside using the cargo winch or it can be sling loaded and transported externally.

Figure 5 displays the multitude of options available using a CH-53E dominant helicopter force.

Figure 5.--HMH (Rein) Assault Raid Force Package

ACFT TYPE/#	NORMAL RAID	ARTY RAID	LAV RAID	AMPHIB/ RIVERINE
5 CH-53E5	187/120* TROOPS	5 M-198s w/crew w/ammo nets	5 LAVs w/crew	10 BOATS W/UP TO 100 TROOPS
1 CH-53E	extract acft for precious cargo		extract acft for precious cargo	
1 CH-53E	TRAP /C2 medevac	TRAP/C2 medevac	TRAP/C2 medevac	TRAP/C2 medevac
1 CH-53E	FARP ***	FARP***	FARP***	FARP***
4AH-1s	RWCAS	GUARD	SCREEN/ GUARD	SCREEN/ GUARD
2 AV-8BS ****	CAS	CAS	CAS	CAS

Note: **IF RESTRICTED TO 24 TROOPS PER AIRCRAFT*
***Jf vehicles are required, the 53Es would have the additional capability to sling load (extema!).*
****Capable of carrying Robertson Internal tank to Farp gunships or LAVs if required*
***** A V-8BS could be used in con]unction with the Cobras or as a separate escort package # precious cargo refers to any equipment or personnel that are to be rescued or extracted*

An eight aircraft CH-53E raid force package would give the raid force commander the ability to have one command and control aircraft, five raid force aircraft carrying up to 185 raid party personnel (37 per plane) or 120 personnel with 24 per plane, one aircraft for extract of the "precious cargo"[51]and personnel (37 plus passengers or internal cargo of nearly 20,000 lbs.), and one aircraft as a flying back-up and one as a TRAP /Medevac bird. Escort would be provided by AH-1 gunship. If the mission radius exceeds the range of the AH-lW, a FARP can be established using an additional CH-53E with the Robertson tank in back. If the mission profile does not facilitate the establishment of a FARP (long range over water), then the escort would be provided by AV-8Bs augmented with internal weapons supplied by the 53Es (refer to section on Assault Support 'Call For Fire').

If the raid involves artillery, the CH-53E is the only aircraft that would be capable of transporting the M-198, required ammunition, and the gun crews. Each aircraft would be

capable of transporting the gun, an underslung ammo net, and the gun crew. "With the potential introduction of the Highly Mobile Rocket System (HIMARS), the lethal range of our raid force artillery would be increased beyond that of our adversary, therefore making artillery raids an even more lethal maneuver warfare option."[52] As long as the requirements are set forth keeping the HIMARS light weight and air transportable, the CH-53E would be able to provide an effective artillery raid capability to the raid force commander.

If the mission involves a Light Armored Vehicle (LAV) raid, again, the CH-53E is the only aircraft capable of performing this mission. The CH-53E trains to this mission, however it is rarely employed because of MAGTF Commander's lack of faith in this capability. This lack of faith is attributed to planners never getting out of the box and employing this capability.[53] Commander confidence in using this type of maneuver would be achieved through training and experience. Using a flight of CH-53Es carrying LAVs, the MAGTF Commander would have the ability to use this heliborne force as a true maneuver element to exploit a weakness in the enemy's flank or rear. The flight would set down the LAVs at a predetermined distance from their objective, the LAVs could then travel the remaining distance to conduct a raid or a reconnaissance screening maneuver. An LAV maneuver force could also be used as a feint or deception allowing the main force located 150-200 miles away to execute their main effort while a confused enemy concentrates on the deceptions.[54]

Non-Combatant Evacuation Operations (NEO)

HMM (Rein)

Figure 6 displays the capabilities the current MEU ACE possesses.

Figure 6 —**HMM (REIN)** NEO Package

AIRCRAFT	**SECURITY FORCE**	**EXTRACTION**	**MISSION RADIUS**
8 CH-465		8 X 10(80)	50-70 MILES
3 CH-53Es	3 x 55(165)	3 X 55(165)	250-300 MILES

The CH-46 is capable of conducting NEO's that are short range (less than 50-100 miles) and allowing numerous shuttles between the ship and the evacuation site. Numerous shuttles would be required due to multiple refuelings and the limited passenger load out.

HMH (Rein)

The CH-53 has already proven its worth in the role of NEOs. The CH-53E was the logical choice for the long range insertion of the security force during Operation Eastern Exit during the evacuation of the embassy in Somalia. The 53E was the only aircraft capable of conducting a long range coastal penetration and carry the amount of troops required to establish a protective force at the embassy. Special operations forces were also on standby to execute this mission utilizing a helo force composed entirely of MH-53J Pavelows flying non-stop from the Saudi Arabian area of operations to the objective employing aerial refueling.[55] Figure 7 depicts the increase of capabilities achieved through employment of the HMH (Rein).

Figure 7.--**HMB (REIN)** NEO PACKAGE

AIRCRAFT	**SECURITY FORCE**	**EXTRACTION**
10 CH-53Es	3x55(165)	8X55(440)

Note: One wave insertion/extraction capability

<u>Tactical Recovery of Aircraft and Personnel</u> (TRAP)/CSAR

Whether you want to call it TRAP or Combat Search and Rescue (CSAR), the mission is the same; rescuing a downed aircrewman and possibly several passengers (troops), sometimes from a great distance. The Viet Nam conflict highlighted the need for aircraft that were capable of extended ranges and if it involved retrieving a downed aircraft--heavy lift.[56]

HMM(REIN)

Current MEU standard operating procedures lay out different helicopter packages when executing the TRAP package. The deciding factor in mission planning as to which airframe to use for the TRAP, is the distance to be flown to the survivor. This concept works fine when dealing with a lone survivor from a fixed wing ejection, however, when dealing with TRAP scenarios during a helicopter operation involving larger numbers of survivors, the assets capable of conducting the mission are greatly narrowed down to one aircraft--the CH-53E. A scenario of a CH-46 shoot down on the ingress portion of the mission with 8 troops plus the aircrew on board, highlights the deficiency of using a CH-46 as the recovery aircraft. The ability to recover the downed personnel, in addition to the TRAP package recovery team is severely limited, if not impossible. lf the TRAP package is two CH-46s, then the rescue mission may have the possibility of successful execution over a limited range with little or no loiter time factored in. Loiter time is a mission intangible rarely planned for but is a mission reality because "in many situations the TRAP team may have to make movement to the downed aircrew due to survivor injuries and a lack of a suitable nearby LZ".[57] Unplanned threats will certainly alter the time line requiring the aircraft to remain on station longer for once the pickup intentions have been conveyed to the survivor and the enemy; the TRAP force will not be in a position to return to the ship for refuel. Another intangible rarely planned for is the possibility of the aircraft going down on ingress with the full load of troops on board. Now the recovery aircraft may be required to transport 30 plus personnel to safety (aircrew, TRAP team, plus passengers), a larger number than the 46 can carry due to weight restrictions?[58]

HMH (REIN)

The same scenario using a single CH-53E as the TRAP package with a flying back-up CH-53E serving as the command and control aircraft; the recovery aircraft would be

capable of extracting a full load of 37 troops plus the 4 aircrew and the TRAP package personnel. If personnel to be extracted exceed the troop seats available, then the 'alternate seating configuration'[59] would be employed. Using two CH-53Es as the TRAP package would afford more room for the recovered personnel and/or offer the ability to recover the aircraft at the same time if the second aircraft had a maintenance team on board with aircraft retrieval slings. The Marine Corps has not had to concern itself with recovery of downed aircraft since the end of the Vietnam War where the H-53 played a major role in the recovery of downed aircraft. During the conflict the H-53 doubled as an assault helicopter and a retriever of downed aircraft. "Requirements for the CH-53E originated with combat in Vietnam and the aircraft recovery mission. Numerous helicopters were shot down or damaged and, later recovered by CH-53A/Ds (and CH-47s and CH-54s), then repaired and returned to service. For example, in a 3 1/2 year period leading up to 1967, over 1,019 aircraft were retrieved."[60] The days of a prolonged conflict are not necessarily over. Had the ground/air war in Desert Storm lasted longer than it did, there would have been the need for recovery of downed helicopters. If a prolonged commitment in Bosnia turns into a armed conflict for U.S. forces, the requirement for retrieval of downed aircraft will certainly arise due to the high threat of small arms, anti-aircraft artillery (AAA), and Man Portable Air Defense Systems (MANPADS). The CH-53E would be the logical choice to compliment the efforts of the Army's CH-47. In the future, the CH-53E will be the only aircraft capable of retrieving the MV-22 from the battlefield.

The H-53s reliability as a TRAP/CSAR platform was proven in Desert Storm with the successful deep battle recovery of Lt. Devon by an Air Force Special Operations MH-53J Pavelow and more recently with the successful pickup of Capt. O'Grady by a Marine CH-53E. The long range ability, loiter time, heavy lift flexibility, and the capability to carry a Roll-on/Roll-off TRAP Command and Control package make it the platform of choice for all TRAP missions.

Humanitarian/Civic Assistance Missions

HMM (Rein)

Recent operations in Somalia and Rwanda highlighted the need for effective multi-mission helicopter lift. Traditional employment of the CH-46 assets has created a helo lift shortfall limiting the long range influence of the MAGTF. Deficiencies in the current concept of helicopter employment in humanitarian relief operations were highlighted during Operation Restore Hope. "This shortfall in radius resulted in split maintenance, weakened aviation command and control, and increased logistics requirements."[61] Additionally, following the completion of Operation Sea Angel, Lieutenant General Stackpole (Joint Task Force Commander), commented on the helicopter employment capabilities, "The CH-46 is tired, it doesn't have the range we really need; and I can tell you that having just returned six months ago from commanding all the Marines in the Western Pacific, that with improved medium lift, we could have saved thousands of more lives, and responded much more quickly in bringing relief to Bangladesh. "[62]

HMH (Rein)

The CH-53E provides the range, speed, and heavy lift flexibility option required for quick over the horizon response during humanitarian/civic assistance operations. The internal lift capacity (nearly 20,000 lbs.) of the CH-53E provides commanders the ability to transport enormous amounts of supplies or people. The external heavy lift capability of the CH-53E offers extreme flexibility in these types of operations such as lifting bridge sections to cross rivers (Bosnia), hauling cement blocks to block volcanic lava flow (Sicily), and for retrieving a neighboring country's downed aircraft (retrieval of a downed Dominican Republic UH-1 off of a 9,600 foot mountain)[63]. The MH-53J was also used for civic relief following hurricane damage in southeastern Florida in 1993.

Military Tactical Deception Operations

HMM (Rein)

Using the current concept of helicopter employment, the Marine Corps has not exercised effective helicopter deception operations from the sea due to the traditional mind set that current assets do not possess this capability.[64] It is true that the current MEU ACE structure for the MEUs do not afford a deception capability under the current helicopter structure. Deception operations require long range capability by the forces carrying out that mission. The only helicopter capable of conducting long range deception operations is the CH-53E. Because of the limited number of 53s on the current MEU ACE, the employment of this helicopter is dedicated for main effort missions.

HMH (Rein)

From the sea and over the horizon the CH-53E is the only helicopter currently capable of carrying out deception operations. From over the horizon, deception operations will normally involve distances of greater than 150-200 miles from the Amphibious Task Force (ATF). The CH-53E is more than capable of executing this, and even further if employing air refueling. The Marine Corps does not have the deception capabilities today that the V-22 will offer in ten years, but it can conduct limited scale deception from the sea employing the CH-53E today.

Military Operations In Urban Terrain

HMM (Rein)

The Marine Corps must be able to "move units from ships lying over the horizon to objectives lying far from the shore. ...Our combat aircraft must be capable of operating from a variety of ships and austere bases ashore, perform a variety of missions, and land on a

variety of surface."[65] Current periodicals discussing this concept, envision its execution only when the MV-22 comes into service. Reading these articles would imply that the Marine Corps does not have the capability to operate from over the horizon into these littoral urban areas today using the traditional concept of employment for its helicopters.

HMH (Rein)

The Marine Corps possesses deep littoral maneuver to objective capability today with the proper employment of its assets. A case study used by the Marine Corps highlights the helicopter lift deficiencies experienced during operations in Mogadishu with simultaneous operations in Baidoa 240 km (roughly 140 miles) away.[66] The major limiting factor during that operation was the limited range of the main helicopter force (CH-46s). The MAGTF had the normal detachment of CH-53Es but not enough for concurrent operations at both objectives. Given a helicopter package of 14 CH-53Es, and a smaller number of CH-46s, the MAGTF could have easily conducted operations in both objective areas. Granted, the MV-22 will greatly increase the Marine Corps' capability to operate from blue water to an objective deep inside the littoral area, but the view of most fleet pilots and future commanders is that the year 2004 may be too long of a wait to conduct deep littoral operations.[67]

The CH-53E has proven its ability to effectively operate in an urban environment. During operations in Lebanon, the CH-53E was used extensively for troop and cargo movement from offshore to areas deep inside the coastal area. The only limiting factor for some of the urban operations was the lack of precision navigation gear. This deficiency was alleviated through the joint employment of CH-53Es and MH-53Js (the MH-53J possessing an extensive navigation package).[68] During Operation Just Cause, the MH-53J was used extensively for troop inserts and extracts deep inside the urban areas. With landing zone restrictions limiting the number of aircraft going into a zone at the same time, the 53J allowed ground commanders to mass more troops per aircraft thus effectively building up

their combat power and not having to rely on numerous aircraft in a formation or several shuttle flights. During Military Operations in Urban Terrain (MOUT) at Camp Lejuene, typical fast rope inserts entailed a sniper team fastroping down the rope out the right door onto the rooftop while simultaneously (out of the same aircraft) the clearing teams fastroped down the 2 ropes off the ramp to the ground level of the building. Extracts were conducted off of the same building using rope ladder and hoist. The mission involved a long range 'In Extremis Hostage Rescue MOUT' operation at night, low light illumination, culminating to a time on target of within 10 seconds. The H-53 was the only aircraft available to go the distance, carry the 20 plus troops, and loiter for extract without having to refuel.[69]

The large loads capable of being carried by the CH-53E, coupled by the extensive fuel endurance, allows combatant commanders to operate freely in these littoral areas without having the restrictions and security risks of a FARP. It also reduces the number of aircraft flying in and around an urban area at night reducing the potential for mid-airs and also reducing the traffic signature which can be detected by the enemy.

In Extremis Hostage Rescue (IHR)

HMM (Rein)

IHR reaction times may not afford the ability of the ATF or Naval Expeditionary Force (NEF) to close within a reasonable distance of the objective. Therefore, long range helicopter platforms will be required; platforms that do not require the use of a FARP and platforms that carry the required number of troops. This mission has normally been reserved for the CH-46s and UH-ls, but again the distances involved were less than 50 miles. Loiter time built in to allow time for the rescue teams to accomplish their mission was limited.

HMH (Rein)

CH-53Es give commanders twice the flexibility than other helicopter platforms in

executing IHR. The H-53 is used extensively by special operations forces for IHR.[70] Many options come with this package: fastrope (4 stations); rope ladder; hoist; water inserts; and Special Insertion and Extraction (SPIE). The H-53 gives the ground force commander the option of being inserted long range into the water by means of soft duck insertion, long range fastrope insertion to a submarine (the sub then makes movement to the objective area), long range vehicle insertion short of the objective area, or by conventional shock action insert by helos in the objective area. The CH-53E is the only aircraft capable of carrying the Rigid Raider craft internally and will remain the only aircraft capable of doing so even when the V-22 comes on line due to cabin space limitations. Once the teams are inserted, the CH-53Es do not restrain the teams' operations due to aircraft loiter time limitations.

SHIP REINFORCEMENT/VISIT BOARD SEARCH AND SEIZURE (VBSS)

Friendly unarmed ship reinforcement has been part of the MEUs mission since 1986. VBSS has become a mission for the MEUs only in the past few years. Unarmed ship reinforcement/VBSS has not only been practiced by the MEUs but also by special operations forces. Although initial workups for this mission indicated that smaller helicopter platforms were more desirable due to obstructions on the ship, it has been discovered that less flexibility is achieved with smaller helicopters due to limited range (it is difficult to establish a FARP on the open sea) and the limited number of troops that can be carried. Given a long range unarmed ship reinforcement! VBSS mission, the CH-53E is the platform of choice due to range, speed, and lift capacity.

The Forward Looking Infrared (FLIR), similar to the one being installed on the CH-53E, will assist in locating the ship's position on a low light night and in locating potentially hostile personnel on the ship. Using the 53E, ground teams are able to fastrope from potentially 4 different ropes, one on the hoist, one through the center cargo hole, and two off of the ramp. The H-53 has also been used as a stable platform for snipers during this mission.

From this author's experience in the mission, the ship's crew was unable to determine that a helicopter force was approaching the ship until the aircraft was established in a hover and troops were already fastroping down onto the deck.[71]

If the mission required more covertness than a helicopter insertion onto the ship itself, the CH-53Es can conduct a long range soft duck or rigid raider insertion of teams 3 miles short of the ship and then allow the teams to make movement more covertly. Once the objective is secured, the aircraft can move in for extract.

MISSION ESSENTIAL TASKS
Command, Control, Communication, Computers, and Intelligence

HMM (Rein)

Normal concept of employment for supplying a command and control platform for amphibious operations is through the UH-1N. This has normally been the aircraft of choice due to its command and control package that is installed in the back of the aircraft. Increasing mission distances has presented a mission deficiency in the UH- 1 requiring it to load up additional fuel, trading passengers for fuel or in requiring the constant use of FARPS. Until the FARPS become operational, the Command and Control aircraft is forced to cycle back and forth to the ship to refuel often at an inconvenient time in the mission sequence. In addition, the slower speed of the UH-l prevented the aircraft from flying in the same formation as the rest of the flight.[72]

HMH (Rein)

The CH-53E has already proven it can assume the role as a command and control aircraft as demonstrated during the rescue of Capt O’Grady. During the rescue mission, Brigadier General (Col during the mission) Berndt orchestrated the mission from in back of the CH-53E. Using the CH-53E afforded the mission commander the same range and speed that the rescue platforms had.

Even prior to this event, the H-53 has proven its utility in the command and control mode. Special Operations has long used the H-53 for command control purposes due to its long range capability, endurance, stability in flight, and spacious room in back allowing room for the mission commanders and planners in back. A 'roll-on, roll-off' communications suite (employing the same package as installed on the UH-1) easily converts any CH-53E on the flight deck into a command and control aircraft. The commanders now have the option of bringing a 'battle staff forward with them, setting up a planning table in back of the aircraft, and run the battle from in back of the CH-53E. Air Force Special Operations has procured a C4I (command, control, communications, computers and intelligence) suite called 'Commando Matt'. The Army's Task Force-160 is working on a similar program.[73] It is essentially a moving map display that allows the commander in back to follow the progress of the battle and maintain excellent battlefield situational awareness. It uses data linked information to receive real time intelligence and current force disposition allowing the commander a full view of the close/deep battlefield from in back of his command and control helicopter. This allows the commander to make critical decisions affording him the ability to get inside the enemy's OODA-LOOP (Observation-Orientation-Decision-Action)[74] and maneuvering the MAGTFs battlefield systems to exploit critical vulnerabilities depicted on the MATT system. This capability is absolutely essential on a rapidly maneuvering battlefield. This author's experience as the Airborne Mission Commander with Special Operations during operations in support of Operation Deny Flight/Provide Promise and classified operations, found great utility in utilizing the H-53 as a C4I platform. Without an extensive communications suite, the CH-53E will still provide the mission commander UHF, VHF, FM, and HF radio communications with the option of a plug in PSC-3 Satellite Communications capability.[75] Employment of the CH-53Es new FLIR system will greatly enhance the commanders situational awareness at night. Hard wire hook ups are available today which would project a FLIR image to the people in back of the aircraft allowing them

to view the same FLIR picture the pilots up front are viewing providing critical battlefield situational awareness at night and in marginal weather.

With the MAGTF Commander's 'futile quest for certainty on the battlefield', the H-53 can be used also as an intelligence gathering platform during the conduct of its primary mission. Signals Intelligence personnel can utilize their signals gathering equipment on board the C4I aircraft to determine enemy actions and the information contained in the opposing force's OODA-LOOP.

The CH-53E provides the air and ground mission commanders the best platform available today to conduct planning, establish and maintain communications, and maintain excellent battlefield situational awareness.

FORWARD ARMING AND REFUELING POINT (FARP)

HMM (Rein)

The FARP has been a integral part and burden of the MEU for several years. It has also been a misused tool for mission accomplishment. During the early 1980's, it was not uncommon for the CH-53Es to be used solely for FARP missions to allow medium lift aircraft to conduct the main assault mission. Mission modification using only the CH-53Es as the main effort would have allowed mission execution without the additional burden of a FARP. Setting up a FARP exposed one or two aircraft with crew to enemy attack requiring additional security personnel to protect the area. This mind set has not changed for many traditional planners throughout the Marine Corps. During the planning of the evacuation of American citizens from Ethiopia, planning cells from the 4th MEB were conducting concurrent 'stovepipe planning'. One group of planners devised a plan to use 8 CH-53Es to proceed to the objective, a distance of approximately 350 miles (air refueling enroute) and transport the citizens to a nearby airfield for C-130 transload or take them directly back to the ship, another group of planners were devising their own plan of using an entire CH-46

squadron to proceed to the objective area for passenger pickup. The plan also called for 6-8 CH-53Es to be used exclusively for establishing a myriad of FARPS across the entire countryside to support the movement of the helicopter force. It should be obvious to the casual observer when FARPs are required for transport helicopters, the plan quickly becomes more complicated and hinged on additional requirements for success.

The new Robertson Forward and Arming and Refueling System (FARE) recently procured by the Marine Corps gives the MAGTF Commander additional flexibility if used the right way. Rather than restricting assets to refuel other troop transports, use the CH-53Es to transport the troops and the FARE. The FARE can then be used to refuel gunship escorts. This gives the ACE a long range escort package to accompany the main lift force of GH-53Es. This concept has been tested and proven at MAWTS-l during their own initial testing and during recent WTI classes. The concept has involved long range infiltration of troops and air refueling by the CH-53Es followed by FARPing of the AH-l strike package. This concept could also be applied to refueling AV-8s if they were the strike escort. This concept would work for any type of long range mission assuming you could land to establish a FARP. This type of Farp employment would also work for refueling LAVs during a long range LAV raid or reconnaissance mission.

MEDICAL EVACUATION (MEDEVAC)

The key to MEDEVAC is capitalizing on the golden moment and using speed to transport the injured personnel. The 53E gives the commander speed not only through knots of airspeed but in the amount of injured that can be carried--24 pole type litters can be carried on the aircraft. During conflicts of massive casualties this will reduce the number of shuttles the medevac aircraft will have to make. The 53E also provides a
more stable platform for the assisting medical personnel in back. It also gives the medical department the long range capability to transport injured personnel to a more capable medical

facility. During the Gulf War conflict, the CH-53E was the only aircraft capable of transporting injured personnel from the USS Iwo Jima to the hospital ship positioned miles off the coast of Bahrain.[76]

ASSAULT SUPPORT 'CALL FOR FIRE'

Those readers with a traditional mindset may roll their eyes if anyone ever proposed the idea that an H-53 could provide gunship support for ground personnel. The concept is being used today and has been highly successful in supporting Special Operations Forces (SOF) ground commanders. The Soviets saw the flexibility in arming nearly every helicopter in their inventory. Soviet assault helicopters are some of their most heavily armed helicopters and extremely combat effective in support of ground forces. This study is not proposing an offensive gunship role for the CH-53E but rather using the aircraft as a long range defensive fire support platform to provide an 'in extremis capability' for the ground forces on the ground. There will be missions where escort either will not be available or cannot travel the distances required to execute the mission.

Air Force Special Operations employ what they term "Call for Fire", used as a defensive fire support procedure should a ground team be compromised such as a Force Recon Team or quite possibly the insertion/extraction of Sea Dragon Teams. The Air Force has armed its MH-53J Pavelow armed with its two side firing .50 cal machine guns (same as the CH-53E) or 2 side firing 7.62 mini-guns coupled with a tail firing .50 cal or mini-gun. This concept has been proven highly effective in support of classified and unclassified units. In many cases, the Pavelow is used for continuous fire support missions providing an effective base of fire at night to allow the ground teams to move to the extraction zone. In conducting long range CSAR operations, the H-53 may be the only rotary wing platform that can go the distance, therefore will have to rely on its own defensive fire support systems to suppress enemy fire. Recent CSAR operations in Bosnia conducted by

JSOTF-2 proved the utility in having effective gun systems on the MH-53J.[77] Figure 8 depicts the type of RWCAS that could be provided by the CH-53E.

Figure 8.—Assault Support Call For Fire Employment[78]

IMAGE

The installation and use of the ramp mounted weapon system, such as the one depicted in Figure 9, proved successful in defeating fires directed at the aircraft's vulnerable rear area. In addition, the author's proposal[79] is in progress to mount a 40 MM grenade launcher on the tail mount increasing the shock effect of the fire support provided by aircraft.

IMAGE

A tail mounted gun would easily adapt on the CH-53E using a ramp mount that can easily be mounted or dismounted in less than 2 minutes.[80] Not only would it provide additional fire support capability for ground forces, but it would also give the helicopters protection in their most vulnerable area, the 4 o'clock to the 8 o'clock position. This would provide mutually supporting coverage of the flight enroute and on the egress portion of the mission and would enhance any emergency extract that might be executed. Had the CH-53Es had a tail ramp mounted gun during the rescue of Capt O'Grady, they may have been better protected against the small arms fire engaging them during the egress from the objective area. Your average opposing force gunner on the ground knows the critical vulnerability of a helicopter is at the 6 o'clock; (1) because normal transport helicopters can not shoot backwards; and (2) the aircraft probably does not have a scanner positioned back on the ramp to ID and/or engage a threat from the rear. Having a rear gunner/scanner would also alleviate the blind spot transport helicopters have against spotting MANPADS launches.

Operational employment has shown that a tail mounted ramp gun does not inhibit troop egress or ingress off the helicopter. It has also had no effect on being able to fastrope

off the ramp, in fact it has provided a means of protecting their vulnerability on the rope going down.

Special Patrol Insertion/Extraction (SPIE) Rig Operations

Certainly the H-53 has never been thought of as a means of conducting SPIE for teams such as Force Recon or the SEALS (Sea Air Land). During operations in support of special forces in the Bosnia area, the H-53 adopted this mission due to requests made by the SEAL TEAM Officer in Charge (OIC).

Using the Naval Special Warfare, Air Operations Manual the MH-53J was able to rig the aircraft through the center cargo hole.[81] Using their standard configuration, the Pavelow conducted successful SPIE operations. Given an area of mountainous terrain or in a case of urban terrain where a suitable landing zone cannot be located in close proximity of the ground team, SPIE will allow a safe extraction of the team to a point where the aircraft can land, and reposition the team inside the aircraft. Rotor wash and static electricity had no effect on the ground team.[82] Figure 10 demonstrates the SPIE RIG operations conducted during Operation Deny Flight/Provide Promise employing an MH-53J for the pickup of the CSAR recovery force from the objective LZ. As the extraction was being executed, an MH-53J overhead provided RWCAS.

Figure 10.—SPIE RIG operations during Operation Deny Flight/Provide Promise

IMAGE

Helicopter Rappelling Operations

Rappelling from a helicopter would constitute a mission that would be more of the extreme vice the norm. This capability proved extremely useful for ground team members who were carrying loads too heavy for fast rope operations. Carrying heavy loads often led to

an increase of injuries because of 'burning into the ground'. When the mission required the teams to carry heavy loads, they requested to have the capability of rappelling off the helicopter.[83] The rappelling operations were conducted off the ramp using the fast rope bar with great success and to the utmost satisfaction of the ground teams..

Rope Ladder Operations

Rope ladder operations over land, over water, and in an urban terrain environment have been routinely used by MH-53Js providing a necessary capability for those occasions when a suitable LZ can not be found especially in an urban environment or over water. The H-53 helicopter is capable of using 3 rope ladder stations simultaneously; 2 off of the ramp and 1 out the right door. Highly effective when a traditional landing can not be made such as over water or on top of a building.

SUPPORTING THE NAVAL EXPEDITIONARY FORCE (NEF)

By having additional CH-53Es as part of a MEU or Special MAGTF, the Marine Corps has the flexibility to better support NEF operations through Adaptive Joint Force Packaging (AJFP).[84] USSOCOM is currently conducting AJEP on board Navy carriers. The concept involved ground teams being flown to the carrier using a C-2 COD (carrier on board delivery), and the MH-53Js flying out to the ship positioned off the coast to link up with the ground teams. The package can then plan and execute their mission. There may be times when the ground teams can be flown to the carrier in an expeditious manner, but the Pavelows cannot 'get there from here'. Having additional CH-53Es available with the Amphibious Readiness Group (ARG), would afford the ability of the commander to send a detachment of CH-53Es to the carrier in order to conduct the mission without sacrificing his total heavy lift capable package to support the ARG.[85]

Summary

The Marine Corps' measure of success with the MEU (SOC) is the ability to effectively carry out the missions stated in this chapter. Effectiveness is measured through tactically sound maneuver to the objective. It was clearly shown in this chapter, through the comparison of the HMM (Rein) and the HMH (Rein) capabilities, that a greater chance of mission success could be achieved through a restructure of the MEU ACE. A restructured MEU ACE would greatly enhance the assault capabilities of the MAGTF Commander. Adoption of the UMII (Rein) concept adds stability to Marine Corps helicopter units and provides the lift capabilities required by MAGTF Commanders today. not ten years from now.

CHAPTER 3

PROPOSED CONCEPT OF EMPLOYMENT

THE HMH (REIN)

> There is no doubt that some of the changes coming in our Corps will be painful for one or another group of us. Some communities will feel threatened,…What is neither natural or healthy is to turn away from change because it is difficult or because we refuse to admit that there could be a better or smarter way to operate. Think about it.
>
> MajGen Michael W. Williams

"The traditional mind set in the Marine Corps views the CH-53E as a pure heavy lift platform used for behind the lines heavy resupply, aircraft recovery, AV-8B support, engineering support and transshipment of MPS equipment and supplies."[86]Although it was not the intent of the CH-53E program to use the 53E as a front line assault support platform, the current assault support capabilities gap has forced the MAGTF Commanders to use the aircraft in this role much like Vietnam saw with the CH-53A/D. The difference between now and Vietnam, is that the Marine Corps is trying to accomplish missions much more envisionary and futuristic (OMFTS, ship to objective maneuver, and Sea Dragon) requiring maximum multi-mission performance from its rotor lift assets.

If the Marine Corps' goal is to utilize assets that are multi-mission capable exploiting capabilities that exist today, then the logical choice for the Marine Corps is to change its rotor lift employment strategy to make the maximum use of the CH-53E Super Stallion.

As discussed earlier, MAGTF Commanders on MEU (SOC)s are taking matters into their own hands by demanding larger CH-53E dets on their ACE's. It was also addressed that the price paid for this will soon deplete the bank of assets. The current MEU ACE structure was built around the previous workhorse of the MEU, the CH-46. Since most MAGTF Commanders and operators agree today that the new workhorse of the MEU is the CH-53E,

which comprises one of the smallest ratios of assault lift aircraft in the current composite squadron;[87] a smart task organization would build the ACE around its greatest multi-mission lift strength--the CH-53E. By implementing a modification of the ACE composite ratio, this would capitalize on a strength and allow the CH-46 to get healthy again (if that is possible) and to make an effective transition to the MV-22. Adjust the aircraft ratios so that the most utilized helo asset on the MEU has the highest number of ratio assets to use. In effect, make the HMM (Rein) an HMH (Rein). This concept of employment would also hedge our capabilities if for some unforeseen (but not impossible) reason the MY-22 did not arrive when anticipated. Currently, the east coast has 2 CH-53E squadrons and the west coast has 4 squadrons, each having a Primary Aircraft Authorized (PAA) of 16-18 aircraft. The table of organization for equipment and manning still reflect 16 as the PAA.[88]

Current Marine Corps heavy lift is structured with 4 HMH squadrons on the west coast and 2 on the east coast. The east coast and west coast HMH squadrons support concurrent Marine Corps Expeditionary Force (MEF) and MEU (SOC) mission requirements. The unequal number of squadrons distributed between the two coasts has created a disparity of lift support for those missions. This disparity of lift assets to lift requirements is depicted in Figure 11.

Figure 11.--Current HMH Lift Assets vs. MEF/MEU Requirements[89]

LOCATION	**HMH LIFT TO MEUs**	**HMH LIFT TO BATTALIONS**
WEST COAST	108% *4/3	33% 10 BATTALIONS
EAST COAST	>66% *2/3	>25% 8 BATTALIONS
OKINAWA	75% *1(+)UDP/1	4 UDP BATTALIONS

*Note: Percentage of lift available vs lift required *Number of squadrons supporting number of ME Us. >indicates severe shortfall compared to the rest of the Fleet Marine Force*

An obvious shortfall of lift per MEU exists on the east coast. Therefore, a plan to spread load the heavy lift disparity between the east and west coast would be the first objective. A seven HMFI plan has been proposed before. In fact, the Department of Navy Lift Study II, had forecasted that the Marine Corps would need seven squadrons of 16 CH-53Es to meet the lift needs of the Marine Corps.[90] In addition to this, various forms of CH-53E squadron restructure have been proposed in periodicals and in HQMC briefings. The proposals have been disapproved or ignored either due to politics (deviating from status quo) or budgetary reasons. A seven CH-53E squadron option makes sense in the long run because it maximizes the capabilities of current multi-mission long range capable assets; makes the best use of current constraints on the budget, hedges our rotor lift capabilities for at least the next 20 years, and supports the Marine Corps' Operational Maneuver From The Sea.

THE SEVEN HMH PLAN

The Seven HMH Plan would incorporate a 14 aircraft PAA for each squadron (7 squadrons total). This equates to 98 aircraft, with the required 21 pipeline aircraft (17%), and an attrition plan (0.8%) of 30 aircraft, totaling 149 aircraft. With 20 53Es assigned to the training squadron, 7 aircraft for RDT&E and HMX-1, this makes a grand total of 176 aircraft. Aircraft required operating would be 125, and a required inventory of 146 aircraft. Currently the Marine Corps is contracted to buy 172 aircraft. Sikorsky numbers indicate 178.[91] In either case, the current numbers are within the required inventory. In addition, the Navy has begun to preserve a large number of CH-53Es that could easily be restored to service with minimal cost.

A 'slice' of assets from the west coast would be transferred to stand-up a third east coast HMH squadron. This would leave 3 squadrons of 14 aircraft on the east coast and 4 squadrons of 14 aircraft on the west coast. Should the need or desire surface again, the fourth west coast squadron could be transferred to Okinawa to eliminate the need for UDP.[92]

If the Marine Corps is truly pursuing a neck down strategy, then it should eliminate 'modernization' projects that are proposing installing state of the art equipment in aircraft close to or beyond retirement. These diverted funds take away moneys required to support 'modernization' on aircraft which will be supporting the Marine Corps until the year 2025. In a 'fiscally constrained environment', MODERNIZATION[93] of additional money should be directed towards aircraft that will still be supporting the Marine Corps beyond the year 2010. The CH-53E will be supporting the Marine Corps beyond the year 2015; the CH-46 and the UH-1 will not.[94] Modernization efforts on aircraft that fulfill the current lift requirements of the Marine Corps better serve the needs of the MAGTF commander now and for the future. If the Marine Corps' aviation plan is to neck down and capitalize on multi-mission aircraft, aviation projects should reflect the same strategy.

An effective neck down strategy should take advantage of productive mission capable aircraft to enhance MAGTF capabilities. The current concept of helicopter employment is eroding away the effectiveness of the HMH squadrons, in particular, the east coast. This erosion will soon lead to the east coast HMHs being unable to perform their conflicting missions of supporting the MEF and supporting the MEUs. Supporting the MEUs has now become the number one priority for these squadrons.[95]

THE 7 HMH (REIN) MEU ACE CONCEPT OF EMPLOYMENT

The MEU ACE would be task organized around a 14 plane (PAA) CH-53E squadron. Detachments from other squadrons would attach to the HMH squadron forming the HMH (Rein): a 4-plane CH-46 detachment (provides short range utility, VIP and assault missions), a 6 AH-l det (provides short medium range escort), and a 6 plane AV-8B det (provides CAS and long range helo escort if no FARP is available for the AH-1s). A stand-by C- 130 detachment would provide support during the workups and as needed during the MEU deployments augmented by special operations HC/MC-130s in the Mediterranean or Pacific

area. This concept would now place the burden of the MEU ACE requirements upon the composite squadron ratio majority vice the minority as is the case today. The MEU ACE would now be certainly capable of increased capabilities across the board.

This concept of employment will stabilize a deteriorating heavy lift community, stabilize a deteriorating medium lift rotor capability that is infesting our MEU ACE, and provide an improved maneuver capability to the MEU and MEF. When the MV-22 arrives, this concept will also assist the CH-46 community into an easier transition phase without sacrificing rotor lift support for the MEUs and MEF. As the MV-22 readies for operational employment, this concept would deploy initially with 4- MV-22s replacing the 4 plane CH-46 det. This will allow aircrews and MAGTF Commanders to walk before they run with the MV-22. As the MV-22 progresses in tested and proven fleet capabilities, the MV-22 would then replace the 53E as the majority of assets on the deployments--task organizing to take advantage of its then proven capabilities. Figure 12 depicts a 36 plus month layout for supporting the MEU ACE.

Figure 12.—36+ Month Plan for HMH (REIN)

IMAGE

Figure 13 depicts the multmission flexibility that could be achieved through the HMH (Rein) concept of employment using the mission requirements stated in Chapter 2.

Figure 13.--Multi-mission Determinant

AIRCRAFT	EXTERNAL OPS	FASTROPE	SPIE RIG	*SD	LONG RANGE	FARP	C4I	ROPE LADDER	AIR REFUEL
CH53 E	YES	YES	YES	YES	YES	YES	YES	YES	YES
CH-46	LIMITED	YES	YES	YES	NO	NO	LIMITED	YES	NO
UH-l	NO	YES	YES	NO	NO	NO	LIMITED	YES	NO

Note: Soft Duck water operations utilizing boats and personnel (night capable with FLIR)

The equalization of lift distribution that could be achieved through the activation of a seventh HMH squadron is depicted in Figure 14.

Figure 14.-- 7 HMH Plan Lift Distribution[96]

LOCATION	HMH LIFT TO MEUs	HMH LIFT TO BATTALIONS
WEST COAST	100%	30%
EAST COAST	100%	38%
OKINAWA	100%	25%

Summary

This chapter clearly shows the equalization of heavy lift assets that could be achieved through the Seven HMH Plan. The Seven HMH Plan increases the helicopter lift support for the Marine Corps and the MAGTF Commanders across the spectrum. This chapter also shows the increase of multi-mission capable assets available to the MAGTF Commanders. The concept is easily achievable using current assets available to the Marine Corps. The Seven HMH Plan could solve the current lift deficiencies experienced by the Marine Corps, by making more lift capable assets available to the MAGTF.

CHAPTER 4

OPPOSING VIEWS AND ANALYSIS TO THE HMH (REIN)

"The only thing harder than getting an new idea into the military mind is to get the old one out."

B. H. LIDDELL HART

As with any plan~ there are challenges associated with the proposal. The key consideration is do the benefits outweigh the associated drawbacks. This chapter will deal with the drawbacks associated with the 7 HMH Plan and if applicable, a solution for the challenge.

MANNING

Before the cost incurred for a seven squadron option is discussed, the current manning dilemma should be addressed. Because of the recent demand for additional CH-53Es on the MEU deployments, the manning levels fall well short of a workable staffing goal therefore creating a severe gap in the manning structure; the HMH squadrons were never designed to support two simultaneous 6-8 plane detachments. Although this issue has reached the Commandant of the Marine Corps' attention, the fix will not take effect for at least 3 years and will not support any increased flexibility of larger (more than 4 aircraft) HMH detachments on the MEUs. In addition to supporting the MEUs and MEF commitments, the east coast HMH's are required to support a JTF contingency commitment.[97] Only through air station sourcing of aircraft and personnel are the two squadrons able to meet commitments of CAX and the JTF. WTI participation will

probably be the rare exception vice the norm and will effect the supply of WTIs for the MEUs.

The manpower shortage has to be fixed and will incur additional funding regardless of what solution is used. A major reason for the manpower shortage experienced by the HMHs is due to the extreme lack of continuity in the squadrons. The squadrons consistently have one or two 4, 6, or even 8 aircraft detachments gone at any given time. This creates an obvious shortfall in manpower. By using a 7 HMH plan, continuity would be added to the squadrons, decreasing the deployment turmoil currently experienced.

Individual Material Readiness List (IMRL)

Fleet squadrons often state IMRL is a problem experienced today and that a seventh squadron would only complicate matters more. The concept of seven HMIH squadrons taking over the role of the Composite Ace would actually stabilize the IMRL situation. According to data from HQMC; the Marine Corps possesses enough IMRL today to outfit seven HMH squadrons and in addition; support a one det capability within each squadron. The current challenge is IMRL is being cross decked or air station sourced to meet the 3 concurrent MEU commitments--one outgoing, one ingoing, and one in workups. If a seven HMH squadron with a two det capability was required, it would cost approximately seven million dollars. The lead/lag time for this IIMRL procurement, however, would be 3-5 years.[98]

COST

The Marine Corps can ill afford additional projects incurring monetary costs. However, the costs associated with the 7 HMH Plan can be funded through money saved by proper task organization, necking down, and prudent modernization aviation programs. Total cost for the restructure of the HMH squadrons (restructure from 6 to 7 squadrons) would be $12 million.[99] A price that is easily affordable with proper re-prioritization of aviation

funding. Redirection of money associated with projects such as the enhanced CH-46 cockpit and the 4-bladed UH-1 should be channeled into funding the 7 HMH plan~ Neither an enhanced CH-46 cockpit nor a 4 bladed UH-1 will fix the major show stopper which faces the Marine Corps today; the lack of adequate long range capable troop lift helicopters.

Landing Zone Requirements

Arguments against the H-53 as a multi-mission aircraft often state landing zone size could be an inhibiting factor in the mission scenario. Landing zone requirements as stated in FMFM 5-3 Assault Support, specify that the LZ requirements for the CH-46 and the CH-53E is 350 feet (with 80 foot obstruction--standard tree or building height).

Ship Deck Space Requirements

Deck spacing requirements would be increased above what is currently associated with the standard HMM (Rein). Although the ship flight deck space requirements would be increased, the space requirements would not pose an unworkable challenge for MAGTF and naval planners. The Seven HMH Plan would still support the current deck space limitations and would not inhibit the conducting of efficient flight operations. The current deck space requirements for the HMM (Rein) compared to the space requirements for the proposed HMH (Rein) are depicted in Figure 15.

Figure 15--Ship Deck Spacing Requirements vs. Availability[100]

TYPE SQUADRON	SPACE REQUIREMENTS
HMM (REIN)	42
HMH (REIN)	52.4
HMH (REIN) PLUS 4 MV-22s	54.64

Note: HMM (Rein) figures use 12 CH-46s, 6 CH-53Es(beefed up detachment), 4 AH-ls, 3 UH-Is, and 6 AV-8Bs. HMH (Rein) figures use 14 CH-53Es, 4 CH-46s, 6 AH-Is, and 6 AV-8Bs.
Deck space available-- (LPH is 70) (LHA is 80).

Cost per Flight Hour and Maintenance Reliability

When measured in cost per flight hour the CH-53E far exceeds that of the CH-46. The CH-53E costs $3086 per flight hour flown.[101]The CH-46 costs $1946 per flight hour flown.[102] However, when measured in terms of efficiency the CH-53E is the better choice. When measured in cost per pound of payload the CH-53E costs $.18 compared to $1.54 for the CH-46.[103]

The maintenance reliability of the CH-53E has improved steadily throughout the years. Even when it experienced maintenance problems in the earlier years, the CH-53E was not beyond what every aircraft experienced during its introduction years.[104] The mission capable rate of the CH-53E rests at 79% which is above the required rate specified by the Department of the Navy and Chief of Naval Operations.

Aircraft Survivability

The CH-53E was originally designed to be a support aircraft and would not be utilized on the forward edge of the battle area, therefore it was not equipped with combat survivability equipment such as armor plating, infrared missile jammers, and engine exhaust suppressers. This is the same equipment the CH-46 and the CH-53D are outfitted with. Studies have shown that the engine exhaust of the 53 can be suppressed with off the shelf equipment and that armor plating will greatly improve the combat survivability of the CH-53E.[105] History has shown the CH-53E will be operating at the forward edge of the battle regardless of the survival equipment installed.[106] It is the Marine Corps' responsibility to equip this aircraft with the right gear (with minimal cost) to protect the Marines riding on board.

Summary

The 7 HMH Plan comes with some challenges,, however, despite the shortcomings of the plan, the gains far exceed the drawbacks. The bottomline is that the 7 HMH plan solves the current problem of helo lift shortfalls in the Marine Corps.

CHAPTER 5

CONCLUSIONS

THE MARINE CORPS' ENVISIONED END STATE FOR ASSAULT SUPPORT

The Marine Corps has a deficiency in its assault support capabilities as stated and referenced throughout this study. MAGTF Commanders have expressed discontent with the current MEU ACE structure.

The Marine Corps' envisioned end state for its rotary wing assault support capabilities is 'over the horizon' and "Operational Maneuver From The Sea". The Marine Corps' 'yardstick of measure' for assault support is based on the MV-22 and what can be potentially achieved in the year 2010. However, the Marine Corps should not fall in love with its yardstick. We have a tremendous capability today with the operational heavy lift capable CH-53E assets. The concept of a seventh CH-53E squadron has proven it would enhance the capabilities of the MAGTF Commander across the spectrum of requirements. The HMH (Rein) would allow the MEU Commanders to deploy with the mobility lift assets they require today, not in the year 2010. The HMH (Rein) concept will also lessen the burden on the CH-46 squadrons and allow them to quicken their transition into the MV-22. The proposal would also lessen the burden on the CH-53E community allowing the units to reconstitute their current disjointed state of readiness; providing a long range "Operational Maneuver From The Sea" capability to the MAGTF commander today, not a decade from now. The interim restructure of the MEU ACE would also assist the Marine Corps in establishing sound procedures and tactics for OMFTS and "Sea Dragon" so when the MV-22 becomes operational, some of these tactics would already be tested and proven. By implementing an HMH (Rein), the concept would provide a proven backup for the MV-22 if and when it

encounters the normal problems associated with any new aircraft introduced to a military environment. The seventh squadron option supports the Marine Corps' 'Necking Down' objectives and makes maximum usage of multi-mission assets. Additionally, the plan adds equilibrium to an obvious disparity of the current heavy lift capable assets distributed between the east and west coasts. The seventh squadron option supports the Marine Corps' strategy of operating in a 'fiscally constrained' environment. Changing the concept of employment of our helicopter assets supports all of the objectives the Marine Corps is striving for and this concept will support operations well into the year 2025.

Restructure of the HMH fleet by activating a seventh HMH squadron and employing the HMH (Rein) as the MEU ACE, will fix the helicopter lift deficiencies currently experienced by the Marine Corps' assault support rotor lift employment. The seventh HMH squadron balances the 'heavy capable' lift on both coasts. The HMH (Rein) restores speed, lift capacity, long distance mission radius, and multi-mission flexibility to the MEU MAGTF commander. The seventh HMH and HMH (Rein) concept add stability to deteriorating resources (manpower and aircraft). This concept supports all of the Marine Corps' current plans for the future--Operational Maneuver From The Sea, Sea Dragon, and Marine Aviation's Necking Down Strategy.

The CH-53E Super Stallion is a highly capable asset available today and can perform the task at hand, better than any other current asset—if only given the opportunity to do so.

The proposed restructure of the MEU ACE using the HMH (Rein) supports all of the current and immediate future requirements of the Marine Corps. Most importantly, this study has proven the thesis of the Marine Corps cannot maintain nor improve its warfighting capabilities utilizing the CH-46 as the backbone of the assault support lift for the MEU ACE. An interim solution is required now to restore the operational maneuver capabilities of the MEU. The interim solution that is available today to the MAGTF Commander is the restructure of the MEU ACE through the HMH (Rein) concept. Restructure of the MEU

ACE places the requirement for assault lift on the most capable aircraft available to the Marine Corps; the CH-53E. The HMH (Rein) will allow the Marine Corps to 'ride the dragon of change' for the interim period.

Notes

[1] V-22 IOC dates taken from FY 96-FY 05 Marine Aviation Plan (FY 96 AV Plan) Draft

[2] Former MEU Commander, who wishes to remain anonymous, interview by author 28 November 1995

[3] Articles Addressing this subject have been written by Maj Joel Kane, "Another Look at Helicopter Lift, *Marine Corps Gazette,* August 1995; Maj William Jay Anderson, "Filling The Capabilities Gap", *Proceedings,* November 1995

[4] In order to promote candid answers during personal interviews conducted by author, interviewees names were withheld for non-attribution purposes.

[5] John G. Roos, "General Charles C. Krulak," *Armed Forces Journal,* January 1996,10.

[6] Maj Kenneth Bergman, "A Ticket To Ride The Dragon," *Marine Corps Gazette,* February 1996,12.

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[8] Ibid.

[9] MajGen Hany W. Jenkins, "A Practical Solution For the Future," *Marine Corps Gazette,* March 1995,37.

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[11] Maj G.K. Wilcutt, "The Medium Lift Replacement," *MCU Papers #251* 1993:1.

[12] HQMC APW, interview by author 20 November 1995.

[13] Ibid.

[14] HQMC APW Talking Paper January 1996.

[15] Ibid.

[16] Former CH-46 Squadron Maintenance Officer, interview by author 15 January 1996.

[17] Ibid.

[18] After Action E-Mail received from deployed Squadron Operations Officer, who wishes to remain anonymous, 26 MEU.

[19] HQMC, Marine Corps Manual, FMVM 5-30, Assault Support", 1-1.

[20] Navy Aviation Report to the Chairman, Committee on Armed Services, House of Representatives on V-22 Development, January 1994.

[21] Ibid.

[22] HQMC Aviation Plan for FY 95-06 (Draft)

[23] Ibid.

[24] Ibid. Requirement for future aircraft capabilities in the Marine Corps.

[25] Mission statements for Marine Corps helicopters has changed little in the past decade to reflect current mission requirements.

[26] HQMC Aviation Plan for FY 95-06 (Draft)

[27] Ibid.

[28] MEU Briefing presentation delivered to MAWTS-l Staff by former MEU Commander.

[29] Current limitation in conducting OMFTS as briefed to Marine Corps Command and Staff College AY 95.

[30] Requirement set forth by latest COEA based on traditional opposed landing against Soviet forces.

[31] Author's experience during LF-6F deployment 1987.

[32] Questionnaires of former Company Commanders conducted by author, January 1996.

[33] ibid.
[34] HQMC APW Briefing Paper, August *1995.*
[35] Questionnaires of senior HMH fleet pilots and Squadron Department Heads who wish to remain anonymous.
[36] Ibid.
[37] Personal conversation between Marine Aircraft Group Staff Officer, who wishes to remain anonymous, and author December 15, 1995.
[38] Ibid.
[39] Future Squadron Commander phone interview, who wishes to remain anonymous, by author January 18, 1996.
[40] Air Station sourcing' is a term used to describe the current piecemeal status of the heavy lift assets at MCAS New River. Pooling of air station assets is required to meet commitments across the board due to the increased LF6F detachment requirements imposed.
[41] Former MEU Commander interview, anonymous.
[42] HMH Operations Officer phone interview, who wishes to remain anonymous, by author February 10 1996.
[43] MEU Briefing Presentation.
[44] Marine Corps Aviation Plan FY *95-05.*
[45] Marine Aviation Equipment and Systems, FMRP *5-85,* D-2.
[46] HQMC APP E-Mail data February 1996.
[47] NAVAIR Desk Officer interview by author 17 December 1995.
[48] MCO 3120., "Policy for MEU (SOC).
[49] MEU Briefing Presentation.
[50] Planning considerations being taught at Marine Corps Command and Staff College AY 95.
[51] The term precious cargo refers to the equipment, cargo or personnel that is the objective of the mission.
[52] After action debriefs from wargamers during AAAV Wargame Exercise at Marine Corps Command and Staff College 13 February 1996.
[53] Former LAV company commander interview by author 16 January 1996.
[54] Ibid.
[55] Desert Shield/Desert Storm After Action reports from the 20th Special Operations Squadron.
[56] Maj Phillips B. Hardy, "Heavy Helicopter: the Past, the Present, and the Future," *Marine Corps Gazette,* May 1989,70.
[57] Mission requirements as stated by CSAR ground team OIC during mission planning/rehearsal in support of Operation Deny Flight/Provide Promise Spring 1994.
[58] HQMC APW Heavy LiftICH-46 Briefing sheet.
[59] Alternate seating configuration is used by other services during troop transport missions. It has proven to be a reliable, safe, and extremely efficient means of securing troops during movement. The configuration received favorable reports from marines that used the system during mission rehearsals for contingency operations in the Haiti area.
[60] Col Howard M. Whitfield, USMC (Ret.), "Heavy Lift for the 90's", *Amphibious Warfare Review,* Winter 1987-'88, 44-48.
[61] Major Dave Curry, "Operation Restore Hope", Marine Corps lessons Learned System".
[62] Major G.K. Wilcutt, *The Medium Lift Replacement,* diss., Marine Corps University, 1993 (Command and Staff College), 1-4.
[63] HMH-464 conducted a long range retrieval of a downed Dominican Republic
[64] UH-1 helicopter off of a 9,600 foot mountain in the spring of 1987. Former MEU Commander interview, anonymous.
[65] Gen Charles C. Krulak, *Operational Maneuver From The Sea,* HQMC, 1995.

[66] Ibid.
[67] Senior HMH pilot interview, who wishes to remain anonymous, by author 15 November 1995.
[68] Briefing with MH-53J pilot involved in the mission and with former MEU ACE Commander spring 1995.
[69] After Action reports from the 20th Special Operations Squadron Fall 1993.
[70] Author's personal experience from exchange tour with the 20th SOS.
[71] Author's experience as the mission commander during AJFP exercises spring 1994. Using the same ramp mounted fastrope bar that is used by the Marine Corps' CH-53D would provide a total of 4 fastrope stations off of the CH-53E.
[72] Debriefing items from AAAV Wargame Exercise.
[73] Liaison trip conducted by author August 1993 to TF-160. Army is procuring a state of the art airborne C4I mission commander station giving the commander a FLIR projection and display of forces on the battlefield. System fits in back of a UH-60.
[74] U.S. Marine Corps, *Command and Control*, 12 December 1995.
[75] HMH Operations officer interview, anonymous.
[76] The CH-53E was used for Medevac of 4 injured Navy personnel that needed to be transported immediately to the USN Comfort. The ship's UH-1 was not utilized due to the distance involved, number of injured personnel, and speed required.
Long range capable helicopters were used for medevac during recent AAAV Wargame Exercise.
[77] During an attempted rescue of downed French aviators, Pavelow helicopters came under intense ground fire. The ground fire was suppressed by the onboard weapon systems.
[78] AFSOC Regulation 55-18, Chapter 10. Rotary Wing CAS is a term applied to the Special Operations Call For Fire procedures. Provides in extremis defensive fire support when escort is not immediately available.
[79] MK-19 is a proposed weapon system for the MH-53J.
[80] Time required to install/remove platform on the MH-53J.
[81] 20th SOS and NAVSPEC WARGRU SPIE SOP, 30 Apr 1994.
[82] After Action reports from Operation Deny Flight/Provide Promise spring 1994.
[83] Mission requirements set forth by ground team members during Operation Deny Flight/Provide Promise spring 1994.
[84] Adaptive Joint Force Packaging refers to employing helicopters and ground forces on board a carrier to carry out NEF operations. The package provides an added maneuver capability to the NEF.
[85] MEU ACE restructure would provide the capability to conduct NEF operations without sacrificing ARG assault capabilities.
[86] Former MEU Commander interview, anonymous.
[87] FMFRP 5-85,D-2.
[88] Questionnaire of senior HMH pilots, who wish to remain anonymous, by the author February 1996.
[89] HQMC APP Briefing guide for rotary wing employment.
[90] Sikorsky Helicopter Corporation Statistical Data Briefing
[91] NAVAIR Planning Guidance Information Sheet December 1995. Sikorsky contracting indicates a higher number lot buy for the Marine Corps. The issue is still unclear as to which number the Marine Corps will use for purchase purposes.
[92] MCCDC HMH Background Briefing November 1995.
HQMC APP Briefing Sheet
[93] Modernization refers to projects designed to improve the state of the art capabilities of existing aircraft (glass cockpits, FUR, etc...). Recapitalization refers to replacing existing aircraft with a new aircraft (MV-22 replaces the CH-46).

[94] Ibid.
[95] HMH Operations Officer interview, anonymous.
[96] HQMC APP Briefing
[97] HMH Operations Officer interview, anonymous.
[98] Information provided by Aviation Branch HQMC.
[99] MCCDC WDU) HMH Briefing November 1995.
[100] FMFRP5-85,D-2.
[101] Information provided by Sikorsky Helicopter Corporation
[102] NAVAIR CH-46 Desk data sheet for flight hour history.
[103] Sikorsky MH-53E Briefing Guide for AFSOC Spring 1995.
Chief of Naval Operations Budget Analysis Report 13 February 1996.
[104] HQMC Briefing Paper, November 1995.
[105] Studies conducted by MAWTS-l have shown that the infrared signature of the CH-53E is reduced to a survivable level through the use of a 'Whale Tail' suppresser. After action reports from Operation Deny Flight have shown the survivability of the H-53 in a combat environment outfitted with ALQ infrared jammers, armor plating, and kevlar blankets positioned on the floor of the aircraft.
[106] Combat operations utilizing the CH-53 as a front line aircraft: operations off the coast of Beirut; Operation Urgent Fury; Operation Desert Shield/Desert Storm; Operation Eastern Exit; and Operation Uphold/Restore Democracy.

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