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Abstract Each service is struggling to validate its respective role in the current era of military mission uncertainty. Decreased Department of Defense budgets have forced each branch of the military to redefine its mission, capability, future focus in order to compete for money and support national strategies. Each service is leaning to an expeditionary airpower capability in order to rapidly respond to the full spectrum of crisis in order to protect our national interests. If each service is developing or currently possesses an expeditionary airpower capability, then what differentiates one services capability from the next? Why should each service maintain an expeditionary airpower capability at a time when money is scarce? This study is important to determine if each service has an expeditionary airpower capability and why that is important for national security.		
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Preface

Each service is struggling to validate its respective role in the current era of military mission uncertainty. Decreased Department of Defense budgets have forced each branch of the military to redefine its mission, capability, future focus in order to compete for money and support national strategies. Each service is leaning to an expeditionary airpower capability in order to rapidly respond to the full spectrum of crisis in order to protect our national interests. If each service is developing or currently possesses an expeditionary airpower capability, then what differentiates one services capability from the next? Why should each service maintain an expeditionary airpower capability at a time when money is scarce? This study is important to determine if each service has an expeditionary airpower capability and why that is important for national security.

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Chapter 1

Introduction

“While we no longer face the threat of a rival superpower, there are states and other actors who can challenge us and our allies conventionally and by asymmetric means.”

- Gen. John M. Shalikashvili, Chairman of the Joint Chiefs of Staff

The end of the Cold War early in the 1990's marked the end of the bipolar strategic environment that had existed for decades. The National Security and Military Strategies that had defined and shaped doctrine and defense priorities for years shifted dramatically as each service and the Department of Defense (DoD) struggled to redefine their role. With the Cold War over and the specter of communism fading, the DoD was forced to draw down each service to peacetime levels. This traditional American response left the military services scrambling to redefine themselves in an attempt to justify their existence in an uncertain future and guarantee their portion of the DoD budget.

Although the threat of Soviet aggression has vanished, it remains clear that the strategic environment is still threatened by hostile forces. The difference in the Post Cold War era is the types of threats that now confront American national interests. These new threats cover a wide range of capabilities and generally reside at the limited conflict end of the spectrum of military operations.

In an attempt to transform the American Armed Forces, the Joint Chiefs of Staff (JCS)

issued *Joint Vision 2010: Preparing for the Future* in 1996, and in 2000 followed with *Joint Vision 2020: Preparing for Tomorrow*. These documents recognized the threats facing American national interests and outlined a vision to guide its DoD in meeting these challenges. The overarching focus of this vision is full spectrum dominance - achieved through the interdependent application of dominant maneuver, precision engagement, focused logistics and full dimensional protection. The overall vision of the capabilities America will require...rests on its assessment of the strategic context in which its forces will operate. ¹

The label “**full spectrum dominance**,” implies the United States (U.S.) forces are able to conduct prompt, sustained, and synchronized operations with combinations of forces tailored to specific situations and with access to and freedom to operate in all domains - space, sea, land, air and information. Additionally, given the global nature of American interests and obligations, the United States must maintain overseas presence forces and the ability to rapidly project power worldwide in order to achieve full spectrum dominance. ²

One of the four pillars of full spectrum dominance is dominant maneuver. Dominant maneuver is defined as the ability

...to gain positional advantage with decisive speed and overwhelming operational tempo in the achievement of assigned military tasks. Widely dispersed joint air, land, sea, amphibious, special operations and space forces, capable of scaling and massing force or forces and the effects of fires as required for either combat or noncombat operations, will secure advantage across the range of military operations. ³

¹ Chairman of the Joints Chiefs of Staff. *Joint Vision 2020*. Washington, DC: The Pentagon, June 2000. 3.

² Ibid, 6.

³ Chairman of the Joints Chiefs of Staff. *Joint Vision 2020*. Washington, DC: The Pentagon, June 2000. 6.

Joint Vision 2010 and *2020* (JV 2010/2020) outline the capabilities that the military services are expected to develop and maintain in the post Cold War era. In an effort to accomplish dominant maneuver as defined above, each service is embracing the expeditionary concept that has existed for years. Comparatively, the Marine Corps has historically claimed to be an expeditionary force in readiness and is continuing this capability, the Navy has revised its naval expeditionary force concept, the Army is undergoing dramatic changes in order to increase its own rapid response capability, and the Air Force has completely redefined its forces into an Expeditionary Aerospace Force concept.

If each service is claiming to be expeditionary, or moving in that direction, what are their motivations? Is each service attempting to develop unique capabilities to contribute to JV 2010/2020 or are they simply competing for funding? What are the advantages of service specific expeditionary capabilities and how do they individually support dominant maneuver? What is expeditionary and more specifically what is expeditionary airpower?

This paper will study the capability of the Army, Air Force, Navy, and the Marine Corps to deploy and sustain expeditionary airpower in the post Cold War period. The study will begin with a definition of the expeditionary concept and expand that concept to expeditionary airpower. As a method of analysis, service organization and doctrine will be examined and compared against the expeditionary definition and four scenarios in order to determine their capability. Additionally, real world operations will be used to highlight service expeditionary airpower employment.

Highlights of this study include a comparison of each services expeditionary airpower capability with the developed expeditionary airpower definition, a comparison of each services capability, and an analysis of how each service supports dominant maneuver as stated in Joint Doctrine, National Security Strategy, and National Military Strategy. The study will conclude by proving the only true expeditionary airpower capability lies in the flexibility and power inherent in the Navy.

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Chapter 2

Expeditionary

“The arrival of Marine aircraft on 20 August was the turning point of the operation. Without their continuous support our survival would have been impossible.”

- Gen. Merrill B. Twining USMC (Ret), Guadalcanal

The term “expeditionary” brings to mind an image of amphibious forces storming the shores of some far-off island in an attempt to dislodge an enemy or to secure a beachhead for follow-on operations. Much of the emerging strategic doctrine and concepts coin phrases like, “Dominant Maneuver,” “Engagement and Enlargement,” and “Forward...From the Sea.” All of these terms conjure up the same beach storming image from the past.

Each service is either claiming to be expeditionary or moving towards that capability. Is there a need for each service to be expeditionary in nature? To answer this question, it is important to first define the meaning of expeditionary and expeditionary airpower. Several rough definitions for expeditionary exist; however, there is no definition for expeditionary airpower. This paper will use the existing definitions for expeditionary, expeditionary force, and expeditionary operations and develop a working definition for expeditionary airpower that can be applied in a later analysis.

Expeditionary Defined

The dictionary offers no clear definition for expeditionary other than, “sent on military

service abroad.”⁴ This broad definition can apply to any military activity outside the Continental United States (CONUS) and is too general for this paper. The United States Navy Dictionary and the Dictionary of Military Terms both define expeditionary forces as “those forces organized to accomplish a specific objective in a foreign country.”⁵ Marine Corps Doctrinal Publication (MCDP) 3 defines an expedition as, “a military operation conducted by an armed force to accomplish a specific objective in a foreign country.”⁶ Again, all of these definitions provide only a very general explanation for expeditionary.

Of all the military services, only the Marine Corps has published any material regarding expeditionary operations. According to Marine Corps doctrine, expeditionary operations involve the projection of military power outside of CONUS; and the establishment of forward bases, land or sea, from which military power can be brought to bear on the situation. An expeditionary operation thus requires the temporary creation of a support apparatus necessary to sustain the operation to its conclusion.⁷

In an article on expeditionary warfare, Lt Gen Charles E. Wilhelm outlined 15 characteristics of an expeditionary force. Many of these points express Marine Corps policy and are obviously self-serving, but several of the points are helpful in developing a clearer and more precise definition of the term expeditionary. According to the article, expeditionary is:

- Quickly and easily going where there is no infrastructure and operating on

⁴ *Merriam-Webster's Collegiate Dictionary*. 10th ed., under the word “expeditionary.”

⁵ Watson, Bruce W. and Susan M. Watson, *The United States Navy: A Dictionary*. New York and London: Garland publishing, Inc., 1991. 313.

⁶ Marine Corps Doctrinal Publication (MCDP) 3, *Expeditionary Operations*. Washington, DC: Department of the Navy, Headquarters United States Marine Corps, 1998. 31.

⁷ *Ibid*, 32.

- arrival. Expeditionary forces can do this because they are not infrastructure dependent; they carry their infrastructure on their backs or in their holds.
- Deploying and employing tailored economical forces and accomplishing the mission without having to wait for additional assets or personnel.
 - Immediate operational availability without reserve mobilization.
 - Force structure dedicated to deployability, self-reliant and self-sustaining for all functions.
 - Immediately deploying and employing balanced, combined arms and integrated air-ground components of almost any size and configuration.⁸

Taking the basic definition and combining these amplifying points provides a clearer and more useful definition: expeditionary forces are those forces that can quickly project power into foreign settings by immediately deploying and employing self-reliant and self-sustaining forces for a specified period of time to accomplish a wide range of missions.⁹

Expeditionary Airpower Defined

Since airpower has contemporarily been a component of any force, it follows that expeditionary airpower is a component of an expeditionary force. Accordingly, a definition for expeditionary airpower may be written as: airpower that can quickly project power into foreign settings and capable of deploying and employing as a self-reliant force without Host Nation support; capable of sustaining itself for a period of time to cover its assigned mission.

Each service has different air capabilities inherent in each aircraft platform, but the platform and mission do not define expeditionary; deployability and sustainability are the critical factors. For airpower to be truly expeditionary it must be able to operate across the spectrum of infrastructure availability.

In the following analysis of each services' expeditionary capability, four scenarios will be

⁸ Wilhelm, Charles E., Lt Gen, USMC. "Expeditionary Warfare." *Marine Corps Gazette* 79, no. 6 (June 1995). 29.

⁹ Ibid, 29-30.

considered to determine the effectiveness of each service within those scenarios. The first or best case scenario consists of a host nation, in the Area of Operations (AO), that can provide full airfield requirements and capabilities with little or no requirement for additional support. The second scenario would be a host nation, in the AO, with some airfield capability, but requiring additional support in the form of water, fuel, or runway/airfield expansion. The third scenario would consist of a host nation, in the AO, with no existing airfields, requiring the construction of some level of expeditionary airfield from which to mount air operations. The fourth or worse case scenario would be neither access to an existing airfield nor access to any area suitable for airfield construction.

History offers numerous examples of the capability and usefulness of expeditionary airpower. In World War II, during Operation Cartwheel in the Pacific Theater, Marines and soldiers were able to either capture enemy airfields quickly or construct suitable airfields from which Marine Corps, Navy, and Army Air Forces were able to conduct sustained, if not continuous, operations until the Japanese were defeated. This entire campaign pivoted around the capability to provide expeditionary airpower in order to support the ground forces. In Korea, during the breakout from the Chosin Reservoir, Marine and Naval air enabled the encircled ground forces to withdraw by providing critical Close Air Support (CAS), resupply, and medical evacuation missions from various expeditionary airfields. The uncompleted airfield at Hagaru allowed resupply of ground forces and medical evacuation of casualties, the existing airfields at Yonpo, Wonsan, and aircraft carriers enable airpower to provide CAS for the withdrawing forces, and carrier-based air was again able to provide critical support when the airfield at Yonpo

and Wonson were evacuated. In Vietnam, an expeditionary airfield 4,000 feet long with 1,000 feet of taxiway, constructed from aluminum matting, was completed in 24 days at Chu Lai, allowing Marine airpower to conduct operations in support of ground forces.¹⁰

In today's environment, it is difficult to imagine American forces storming ashore and capturing or constructing an airfield, but it is that basic capability of conducting air operations in austere environments that is the foundation of expeditionary airpower. If a force is capable of conducting and supporting that level of expeditionary airpower, then it is conceivable that this expeditionary air force could conduct operations across the other spectrums. Expeditionary airpower must be able to provide rapid response in every scenario. Any service that is unable to sustain that base level of expeditionary airpower capability is not truly expeditionary.

The following chapters will examine the capability of the Army, Air Force, Navy, and the Marine Corps to deploy and sustain expeditionary airpower. Each service's expeditionary airpower capability will be compared with the developed expeditionary airpower definition and the four scenarios outlined above.

¹⁰ Shulimson, Jack and Charles M. Johnson, Maj, USMC. *U.S. Marines in Vietnam: The Landing and the Buildup, 1965*. Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1978. 40-42.

Chapter 3

United States Army

Our challenge is that many of the places we are asked to go, that magnificent heavy division has trouble getting to and operating once it gets there.

- Gen Eric K. Shinseki, Army Chief of Staff

Background

The end of the Cold War brought an end to the traditional role the Army planned to play to support national strategy. Although there are many uncertainties concerning the nature of future threats and crises, the need for a large land army seems in doubt. Strategic agility and power projection, both articulated in the National Military Strategy (NMS), can be primarily carried out through precision strikes and advanced air and naval forces. While the NMS outlines the ability to fight and win major theater wars, this strategy also advocates the ability to, “rapidly defeat initial enemy advances short of their objectives in two theaters in close succession, one followed almost immediately by another...Failure to halt an enemy invasion rapidly would make the subsequent campaign to evict enemy forces from captured territory much more difficult, lengthy, and costly.” ¹¹

The stated objective - to fight and win two major theater wars - depends on the ability to rapidly respond to a crisis before it becomes a major war. The Army vision to support this strategy is to transform itself into a “lighter” force that is easier to deploy and sustain. Gen. Eric K. Shinseki, the Army Chief of Staff states, “We have the requirement for prompt and sustained land combat...the milepost is being able to put a brigade anywhere in the world within 96 hours,

¹¹ Chairman of the Joints Chiefs of Staff. *National Military Strategy of the United States of America: Shape, Respond, Prepare Now: A Military Strategy for a New Era*. Washington, DC: The Pentagon, September 1997. URL: <<http://www.dtic.mil/jcs/nms/strategy.htm>. accessed 9 Jan 01.

a division within 120 hours, and five divisions anywhere in the world within 30 days.”¹² The Army does not claim to be an expeditionary force and is not task organized like a Marine Air-Ground Task Force (MAGTF), but, in reality, the Army has been exercising a combined arms concept and is presently building its force to be expeditionary.

Doctrine

The Army’s AirLand Battle doctrine requires worldwide strategic mobility and warfighting capabilities across the spectrum of conflict.¹³ This doctrine stresses the three-dimensional nature of modern warfare. Airpower has added air mobility and increased the combined arms power that are pivotal to conducting any size of engagement.

Recently the Army has been undergoing a transformation to enable its forces to respond to the full spectrum of crisis that might face America in this century. The Army’s “Objective Force” is envisioned to be more responsive, deployable, and sustainable. Along with the Army’s response milestones outlined by Gen Shinseki, the Objective Force is designed to be able to expand its sustainability by increasing its logistics capability through an extensive prepositioning system built around naval vessels.

Organization

In general, the Army does not refer to its force structure as an Air-Ground unit, but that is exactly what it is designed around. Although the Army is built around the corps-system, made

¹² Siemieniec, Jack, Staff Sergeant, USA. “Transformation,” *Army not trying to be Marines, chief tells AUSA*, URL: http://www.tradoc.army.mil/transformation/dta%20.../army_not_trying_to_be_marines.ht> accessed 9 Jan 01.

¹³ Field Manual (FM) 1-111, *Aviation Brigades*. Washington, DC: Headquarters, Department of the Army, 27 Aug 1990. 1-1.

up of a maneuver element, a combat support element, and a combat service support element. Each of these elements contains an aviation element which is essential for the success of the entire organization.¹⁴ For example, the 101st Airborne Division (Air Assault) totally merges and integrates its ground and aviation units. In Desert Storm, the Commanding General of the 101st commanded 330 helicopters in three assault battalions, two attack battalions, a medium helicopter battalion, a command aviation battalion, a air reconnaissance squadron, and an attached apache regiment.¹⁵

Army aviation provides air defense, maneuver, fire support, command and control, intelligence, combat support, mobility, countermobility, and survivability to at corps-size structure. Each corps can be composed of heavy, light, airborne, or air assault divisions. Each of these divisions has an aviation brigade consisting of a mix of AH-1 Cobras, OH-58 Kiowas, UH-1 Hueys, AH-64 Apaches, CH-47 Chinooks, and UH/EH-60 Blackhawks. A heavy division has 119 helos, a light division has 97 helos, and airborne division has 117 helos, and an air assault division has 360 helos.¹⁶

Logistics

The Army has been dependent on the strategic airlift provided by the Air Force. The new Army vision recognizes this dependency and over the last decade has been making changing to increase its deployability and sustainability by investing in naval vessels to provide a

¹⁴ Field Manual (FM) 1-111, 1-6.

¹⁵ Flanagan, Edward M. Jr., Lt Gen, USA (Ret.) "Lightning: The 101st in the Gulf War" Washington, DC: Brassey's Inc., 1994. 67-68.

¹⁶ Field Manual (FM) 1-111, 1-6, 1-11.

prepositioning capability similar to the Marine Corps.

The Army War Reserve (AWR) stocks are contained in prepositioned brigade sets located in CONUS, Central Europe, the Netherlands, Korea, Southwest Asia (SWA), Diego Garcia, and Japan.¹⁷ Along with the AWR, the Army's Strategic Mobility Program (ASMP) is developing the prepositioning capability that will allow the Army to project power rapidly in the littoral areas. The Army Prepositioned Stock Three (APS-3) is located to support operations in SWA and supports deployment of:

- a light or airborne brigade-size force into theater by C+4, with a division following by C+12.
- a heavy brigade: two armored, two mechanized battalions plus support by C+15, with 30 days of sustainment stocks.
- two heavy divisions, mechanized, armor, or air assault by C+30, with a following two divisions by C+75.¹⁸

This capability allows a CINC the flexibility to quickly deploy a substantial force and coupled with the Army's capability provides an expeditionary alternative to the Marines.

Desert Storm

The deployment to support Operation Desert Shield/ Desert Storm provides a clear example of the problems that prompted the Army transformation and it also indicates the problems that the Army transformation is not addressing. Continuing with the 101st Airborne Division example, it received a warning order for deployment on 8 August 1990 to SWA. The Division knew it would have to move the majority of its equipment by sealift and their soldiers by airlift. Sealift was not available for the first unit of the 101st, the 229th Aviation Regiment,

¹⁷ Military Analysis Network, "US Navy Ships," *Sealift*. <<http://www.fas.org/man/dod-101/sys/ship/sealift-htm>> accessed 8 Jan 01.

¹⁸ Ibid.

until the 19th of August. It was going to take 10 ships to transport the majority of the helicopters belonging to the unit, and the last ship did not depart until the 10th of September. By the completion of the movement an impressive 296 helicopters were transported to Saudi Arabia, but the movement took 46 days.¹⁹ The use of both sealift and airlift enabled the 101st to reach SWA, but the entire division was not mission ready until October 1st, just short of two months from receiving the warning order to deploy.

In contrast, other elements were able to utilize strategic airlift. The 2nd Air Assault Brigade deployed by C-5s and C-141s between the 17th and the 30th of August. It took 60 C-141s and 50 C-5s to transport 117 soldiers and 117 helicopters, with the entire unit arriving in theater in less than two weeks.²⁰

Analysis

The Army has not traditionally thought of itself as either an air-ground force or an expeditionary force, but it is apparent from Army doctrine, organization, and vision statements that both of these concepts are embedded in the Army's future. The Army views deployability and sustainability of its aviation and ground assets as key to its future effectiveness.

Moving an Army corps or division into an airfield is a major undertaking, but like the Marine Corps, the Army can tailor its units to specific tasks at smaller levels. As far as moving

¹⁹ Flanagan, 53.

²⁰ Flanagan, 55.

into an operational airfield outlined in scenario one, the Army brings its own equipment and support and does not have to rely on host nation support. Airfield improvements, force protection, and the other service support functions necessary to operate an airfield can be provided internally by the Army or by the Air Force.

In scenario two, where a host nation in the AO offers some airfield capability, but requires additional support in the form of water, fuel, or runway/airfield expansion; and scenario three where there are no existing airfields, requiring the construction of some level of airfield, improvements or complete airfield construction can be accomplished by Army engineering assets. The Army is capable of building any size air facility from a drop zone to a full airfield capable of sustaining large transport operations. Depending on the size of facility required, the Army can mobilize any number of construction battalions to meet the engineering needs. A small facility can be constructed in as little as ten days, but a large facility could take several months to construct.²¹

In scenario four, where neither access to an existing airfield nor access to any area suitable for airfield construction is afforded, the Army would be prevented from operating from any land based airfield. Unlike the Marine Corps and the Navy, the Army does not have a naval platform to launch aviation assets in support of operations; however, the Army has utilized Navy carrier platforms in past operations. This practice is not standard operating procedures for the Navy or the Army and it is unlikely this support will be exercised in the future or embraced by the Navy-

²¹ Field Manual (FM) 5-430-00-2, *Construction of Airfields, Roads and Ports*. Washington, DC: Headquarters, Department of the Army, 29 Sept 1984. 10-2,10-14.

Marine Corps team if the Army attempted to put this practice into doctrine.

The Army does have an enormous expeditionary aviation capability, but it is dependent on strategic airlift, sealift, and in theater airfield availability. The Army is also moving to a lighter force and has invested heavily in a huge prepositioning capability. However, this transformation only reduces the Army's strategic lift requirement for its heavier equipment and sustainability. Each sealift ship can load 4 AH-1 Cobras, 26 CH-47 Chinooks, and 8 UH/EH-60 Blackhawks; each C-5 can carry 6 AH-1s, 6 UN-60s, or 13 OH-58 Kiowas; and each C-141 can carry 2 AH-64s, 2 UH-60s, or 3 Kiowas.²²

There is a perception that the service that gets to the fight first is going to "win". That "win" is achieved both on the battlefield and in continued funding. In its attempt to be the "winner," the Army is moving to a lighter force and building its prepositioning capability; however, the Army's prepositioning force does not reduce its need to transport aviation assets or any of its soldiers to a crisis. The real concern should be the fact that the Army is reducing its "heavy firepower" capability in order to get to the fight quicker. In the final analysis, whether it is a heavy force or a light force, the Army is only as expeditionary as the lift required to transport it to the fight. Instead of reducing its traditional strength, the Army should focus on increasing the ability to get its heavier assets to the fight.

²² Flanagan, 53-55.

Chapter 4

United States Air Force

The expeditionary nature of the Air Force we are molding today differs from its historical predecessors. Rather than being reactive, it must be proactive to meet the needs of a rapidly changing world.

- Gen. Michael E. Ryan, US Air Force Chief of Staff

Background

The end of the Cold War caused a drawdown in all of the military services. The Air Force shrank from 600,000 personnel in the mid-1980's to a projected 370,000 by 2003. Unfortunately, the dismantling of the Soviet Union did not bring about a more stable world environment. The rise of instability throughout Africa, Southwest Asia, and Europe, forced American involvement at a time when all the services were reducing their force structure. As the Air Force became more involved in regional crises it became clear the operational tempo was placing dangerous stresses upon its personnel.

After Desert Storm, the United States removed the majority of its assets from the Persian Gulf theater, but in 1994 the United States Air Force (USAF) had to redeploy more than 400 aircraft to the area in response to an unexpected Iraqi armor buildup along the Kuwaiti border. The arrival of these assets in theater, prompted the Iraqi forces to withdraw.

From this deployment the Air Force concluded two things: a relatively small, well rounded combat force capable of immediate reaction from the U.S., was necessary to deal with unexpected, fast-breaking contingencies; and such a force could actually have the same deterrent value as a much larger, less agile force.²³ If these forces were unable to deter an enemy, they would need the capability to actively engage any aggressor to buy time for follow-on forces.

Doctrine

These conclusions gave birth to the Expeditionary Aerospace Force (EAF) concept. The

²³ Wages, Brian E., Col. USAF (Ret.) "The First with the Most: USAF's Air Expeditionary Forces Takes The Offensive On Power Projection" *Armed Forces Journal International* 134, No. 2 (Sept 1996). 68.

EAF is a resurrection of the Composite Air Strike Force (CASF) concept which was created in response to the slow response by the Air Force to the Korean conflict.²⁴ Like the CASF, the EAF is a doctrinal change that would create a small, tactical force composed of a command element; fighter, reconnaissance, tanker, and troop carrying aircraft; and communications support units.²⁵ Its mission is to give regional Commanders-in-Chief (CINC) rapid, responsive, and reliable airpower capabilities and options that meet specific theater needs.²⁶ The key is that this force must be able to arrive in-theater and generate combat sorties within 48 hours of arrival.

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Organization

The EAF is a change to doctrine while the Aerospace Expeditionary Force (AEF) is the organization that puts the doctrine into place. The original AEF comprised 30 aircraft with the basic capabilities of: air superiority (12 aircraft), strike (12 aircraft), and suppression of enemy air defenses (SEAD) (6 aircraft). Tankers could be added as needed. The goal was to launch combat sorties in-theater 48 hours after being issued an execute order and be able to generate between 40 and 60 sorties a day.²⁸

The continued closure of Air Force bases and drawdown of personnel added to the increased deployment tempo. This tempo was straining the readiness of the Air Force and led to

²⁴ Dowdy, William L., PhD. *Testing the Aerospace Expeditionary Force Concept: An Analysis of AEFs I-IV (1995-97) and the Way Ahead*. Maxwell AFB, AL: Airpower Research Institute, 2000. 1.

²⁵ Ibid.

²⁶ Looney, William R, III, BGen, USAF. "The Air Expeditionary Force: Taking the Air Force into The Twenty-first Century" *Airpower Journal* 10, No. 4 (Winter 1996). 6.

²⁷ Wages, 68.

²⁸ Looney, 6.

the revamping of the AEF system. The new AEF system has 10 numbered AEFs. Each of them with about 120-150 aircraft, including B-1, B-2, and B-52 bombers; F-16 air superiority fighters; F-15 strike fighters, and SEAD aircraft. These aircraft are permanently based in the existing USAF structure of type-related wings and squadrons, but the aircraft and aircrews are assigned to a specific AEF.²⁹ Additionally, tanker support and airborne early warning assets can be added as needed. Any strategic lift would have to come from outside the AEF structure.

The AEFs operate in pairs on a five-step, 15 month cycle. For 10 months of the cycle, the squadrons train as they normally do. The AEF then enters a two-month “spin-up” period of training and preparation. This training is orientated towards the AEF’s area of operation (AOR). Immediately after this period, the AEF deploys to take over an operation outside CONUS or assembles at a US base as an on-call force. The deployment or on-call period would last for 90 days, then the units return to their home base.³⁰

This restructured AEF system provides a CINC with a large, sustained force that can be tailored to meet specific needs within a theater. Additionally, the pairing of AEFs offers much more flexibility and firepower that a single AEF would not possess.

Logistics

The Air Force has historically relied on its strategic airlift capability. Most of its deployment is accomplished through strategic airlift or contracted commercial airlift. In addition to this capability, the Logistics Prepositioning Ships (LPS) program operates several

²⁹ Ibid.

³⁰ Sweetman, Bill. “Expeditionary USAF Sets Course.” *Jane’s International Defense Review*, no. 33 (May 2000): 31

prepositioning vessels in support of the Air Force. Two prepositioned (PREPO) ships, combination roll-on/ roll-off container vessels, carry USAF munitions for the Air Force. These vessels are under Maritime Prepositioning Squadron Two's (MPSRON-2) operational control in Diego Garcia. A third Air Force vessel operates under MPSRON-1 in the Mediterranean.³¹

The Air Force has a system of air transportable sets of equipment designed to turn a bare-base aircraft strip into an operational base. A bare-base must have a minimal infrastructure such as a usable runway, taxiways, parking areas, and a drinkable water source. This system of bare-base equipment includes 93 sets prepositioned in SWA, 8 sets in Korea, and 8 sets in Europe. These sets are all positioned to augment existing operational airfields.³²

Employment

The EAF system has been employed in SWA since December 1995 to evaluate the effectiveness of the 10 AEF's. Initially the AEFs started out slowly, only deploying 18 fighters and 576 personnel to Bahrain in 1995; 28 fighters, 4 tankers, and 1,200 personnel to Jordan in the first quarter of 1996; and 34 fighters, 4 tankers, and 1,200 personnel to Qatar in the summer of 1996.³³

Initial challenges included logistics and force protection. Site surveys were inadequate or

³¹ Military Analysis Network, "US Navy Ships," *Sealift*. <<http://www.fas.org/man/dod-101/sys/ship/sealift-htm>> accessed 8 Jan 01.

³² General Accounting Office (GAO). *Military prepositioning: Army and Air Force Programs Need to be Reassessed: Report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, U.S. Senate*. Washington, DC: GAO Publication NSIAD-99-6, 1998. 19.

³³ Dowdy, 15.

late; enroute breakdowns of transport without backups delayed arrival of equipment and personnel; equipment arrived late, out of sequence, or not at all. Despite the difficulties the AEF concept continued to be employed and each deployment gained valuable experience. Presently each of the five pairs of AEF's are full force deployments which split Northern Watch and Southern Watch operational responsibilities in SWA.

Analysis

Although AEFs have successfully deployed to Southwest Asia since December 1995, there are significant failings in this "expeditionary" system. To analyze the AEFs expeditionary capability we need to look back at the four scenarios.

The AEF is essentially designed around the best case scenario of moving into a host nation operational airfield. The AEF needs an established base (usually an operational host-nation) to furnish a runway, an area for a tent city, and some basic water and fuel infrastructure.³⁴ With an airfield ready to use, the AEF is an extremely powerful expeditionary tool and affords the CINC a wide range of quick and sustainable options.

The U.S. military can deliver equipment and supplies in four ways: air, sea, or land or sea prepositioning. In the best case scenario, the AEF can be sustained by all methods but has chosen land prepositioning as the less expensive method. Unfortunately, land prepositioning implies some forewarning of a crisis or a reliance that a crisis will occur in a specific area.

In the past, AEF exercises have been conducted in SWA where the majority of the Air Force's land prepositioning sets are located. In fact, the EAF concept of operations is dependent

³⁴ Looney, 7.

on prepositioned equipment. General Looney stated that personnel would, “pull prepositioned equipment out of expandable shelters, otherwise known as K-spans...the members of the AEF would live out of the K-spans and eat meals ready to eat (MRE) until either there is a lull in action or time permits erecting a tent city.”³⁵ All follow-on supplies and munitions will have to be airlifted into the theater of operations. Although the AEF is centered around responding to an operation in the Persian Gulf, it could certainly fall into an airfield in another theater. The biggest difference would be that it would not have access to any pre-positioned supplies and would have to rely entirely on strategic airlift for sustainment.

In 1997, General Looney stated, “It would be impossible to fly into a nonoperational field and expect to be able to launch and sustain combat sorties shortly after landing.”³⁶ The ability of an AEF to deploy and conduct operations is directly related to the status of the available airfield. Minor expansions could be handled in a short amount of time, but significant engineering would require a considerable amount time and the expeditionary response of the AEF would be negated. Like moving into an unfamiliar, but operational airfield, all support would have to be airlifted in and that ability is directly affected by the condition and size of the runway and ramp space. If the Air Force were required to construct an expeditionary airfield it would need access to an airfield or a port facility to bring in equipment for construction.

In the worse case scenario, there would neither be access to an airfield or an area suitable for airfield construction. In this case, airpower would have to originate from CONUS, an allied

³⁵ Looney, 7.

³⁶ Ibid., 7.

airfield far from the theater of operations, or a sea-based platform; the AEF would not be able to be employed. The only airpower the Air Force could provide would be long range bombing which might be the only airpower required, but could not provide a wide range of capabilities needed by a CINC.

Considering the definition of expeditionary, it is clear that the AEF is only responsive at the upper end of the infrastructure scale. Rather than focusing on gaining an elusive assured access to specific bases around the world, the Air Force requires developing a robust and flexible capability to move swiftly into, and operate effectively out of, whatever locations become available during a crisis.³⁷

³⁷ Dowdy, 32.

Chapter 5

United States Navy

The Navy was the first military force to respond to the invasion of Kuwait, establishing immediate sea superiority. And the Navy was also the first air power on the scene. Both of these firsts...I believe, stopped Iraq from marching into Saudi Arabia.

- Gen. H. Norman Schwarzkopf, CINC USCENTCOM

Background

Although the end of the Cold War shifted the focus of the United States Navy, it did not reduce its global involvement. From 1990 to 1997, the Navy was called upon to respond to crises and combat in nearly 80 instances, approximately one operation every four weeks. In 1997, that period was reduced even further; one crisis response every three weeks.³⁸ In the future, the DoD expects the Navy will continue to be involved in more crises around the world.

³⁸ Navy Doctrine Publication (NDP) 1, *Naval Warfare*. Washington, DC: Department of the Navy, Headquarters United States Marine Corps, 1994.

Therefore, the importance of Naval expeditionary airpower capability is essential considering the geographical settings of the past crisis. The worlds littoral areas, where the land and the sea meet, will be the battlegrounds of the future as they have been in the past. The majority of the crisis in the last hundred years occurred in the littoral regions due to the following facts,

- 70 percent of the planet is cover by water.
- 80 percent of national capitals are located in the littorals.
- 80 percent of the worlds' nations are in the littorals,
- 60 percent of the worlds population live within 200 miles of the sea.
- 125 cities with a population of over 1 million are located in the littorals, and within a decade that number will rise to 300 cities.³⁹

The change in the strategic environment, along with the increasing littoral responsibility, shifted the Navy away from a global threat to regional crises and commitments. The National Security Strategy directed the Navy away from open ocean warfighting towards joint operations conducted from the sea. The Navy will now respond to crises by providing the nation an “enabling” capability for joint operations in conflict as well as continued participation in any sustained effort.⁴⁰

Doctrine

This new mindset is expressed in the Naval Expeditionary Force (NEF) concept, a shift designed to continue the relevance of the Naval forces in the post Cold War era. The capabilities set forth by the Chief of Naval Operations (CNO) include being able to swiftly respond to crises in distant lands, on short notice; build power from the sea when required; sustain support through

³⁹ Wilhelm, Charles E., Lt Gen, USMC. “Expeditionary Warfare.” *Marine Corps Gazette* 79, no. 6 (June 1995): 28.

⁴⁰ Schlagheck, James E., and James M. Smith, *Introduction to Joint and Multinational Operations*. New York, NY: American Heritage Custom Publishing, 1997. 160.

long term operations; and operate unrestricted from foreign governments in order to enter the scene of action.⁴¹

The key tenants of this doctrine are flexibility and self-sufficiency, both of which allow the Navy to project expeditionary airpower in the littorals. The flexibility of expeditionary airpower is provided by the Aircraft Carrier Battle Group (CVBG) and the Amphibious Ready Group (ARG). Both of these groups provide inherent self-sufficiency that allow them to operate without outside support.

Organization

The expeditionary airpower capability of the NEF is comprised of the CVBG; the ARG, with its embarked Marine Expeditionary Unit (MEU); and the Maritime Prepositioned Ship Squadrons (MPSRONS).⁴²

The Navy currently has 12 CVBGs, with a stated need for 15, to meet the increased requirements for full-time carrier presence throughout the world. Over the next two decades, four more carriers will be built, but these carriers are planned to replace the existing aging carriers.⁴³ The fact that the Navy cannot afford to build and maintain more than 12 carriers increases the importance and the utilization of the present expeditionary airpower capability as the anticipated crises stretch these forces.

Carrier-based aircraft offer a multitude of expeditionary airpower capability and during an

⁴¹ Ibid, 161.

⁴² Quist, Burton C., Col, USMC. "Operationalizing the NEF Concept." *Marine Corps Gazette* 79, no. 6 (June 1995). 31.

⁴³ Chief of Naval Operations. *Forward: Vision... Presence... Power: A Program Guide to the U.S. Navy, 1999 Edition*. Washington, DC: The Pentagon, 1999. 13-15.

impending crisis they are often the only U.S. response available. Each aircraft carrier generally contains a carrier air wing with over 80 tactical aircraft: three F/A-18 squadrons and one squadron each of F-14s, EA-6Bs, S-3s, SH-60s, C-2s, and E-2s.⁴⁴ The combined capability of the carrier air wing includes day and night ground attack, air superiority, reconnaissance, forward air control, SEAD, aerial refueling, anti-submarine warfare and surveillance, airborne early warning and command and control (C2), search and rescue (SAR), anti-ship warfare, cargo lift, and special operations.⁴⁵

The regular operating schedule of a carrier generates up to 100 strike sorties and 20 support sorties a day in cycles of 1 hour and 40 minutes. The number of aircraft per cycle is between 15 and 17. This rate is for a single carrier, which is capable of operating for only 12 hours, and is less for longer sortie duration's. The Navy was able to generate up to 200 sorties during a recent exercise, but in order to do so, the sortie duration was cut to one hour. With this sortie duration, the carrier was able to conduct 24 hour operations for 96 hours. By adding an additional carrier, sustained 24 hour operations can be expected.⁴⁶ These carrier assets are critical in preparing and shaping the battlespace for decisive actions during the power projection phase.

The amphibious assault ships are the critical force for any forcible entry operations. A large deck amphibious ship, like the U.S.S. Kearsarge, can carry CH-46s, AV-8Bs, and SH-60s providing day and night ground attack, offensive air support, anti-submarine warfare, troop

⁴⁴ United States Navy Home Page, "The Carriers," *The Navy*, URL: <<http://www.navy.mil/homepage/cvn75/char.html#>>. accessed 26 Dec 00.

⁴⁵ United States Navy Home Page, "The Carriers."

⁴⁶ Starr, Barbara. "USN seeks 24-hour, 200-strike carriers." *Jane's Defense Weekly*, 23 July 1997, 22-23.

transport, SAR, and cargo lift.⁴⁷ These aircraft along with the amphibious forces form the centerpiece of a balanced Naval expeditionary capability.

Logistics

The Navy CVBGs and ARGs offer a versatile and responsive force in readiness for any CINC. Additionally, the Navy has a unique sustainment capability. Assets include Combat Logistics Force (CLF) ships, Strategic Sealift Ships, Forward Logistic Support Sites (FLSS), and Maritime Prepositioning Ships (MPS). The MPFs is a combination of the MAGTF fly-in-echelon and the equipment and supplies prepositioned on a fleet of 13 prepositioning ships (MPS). This fleet is organized into three squadrons kept afloat near Guam, Diego Garcia, and in the Mediterranean. Each squadron is designed to support and sustain 17,300 marines and 2,100 sailors for 30 days.⁴⁸

Desert Storm

On 2 August 1990, Iraqi forces invaded Kuwait. Five days after this invasion both the aircraft carrier Independence and Dwight D. Eisenhower arrived in theater ready to conduct sustained air operations. Carrier airpower was able to stop the Iraqi advance and covered the

⁴⁷ United States Navy Fact File, "Amphibious Assault Ships," URL: <<http://www.chinfo.navy.mil/navpalib/factfile/ships/ship-lha.html>>. accessed 26 Dec 00.

⁴⁸ General Accounting Office (GAO). *Military prepositioning: Army and Air Force Programs Need to be Reassessed: Report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, U.S. Senate*. Washington, DC: GAO Publication NSIAD-99-6, 1998. 60.

arrival of land based forces. The combined airpower of these two carriers provided 24 hour air operations at a time when no other forces were present in the area of operations. These two carriers were joined by the Saratoga and Kennedy, and by February four carriers were operating out of the Persian Gulf while two more carriers were operating out of the Red Sea. This combined carrier air capability along with naval air operating from other ships and from land bases, provided the full range of capabilities outlined above.⁴⁹

Analysis

The NEF, comprised of a CVBG or an ARG, more accurately represents a true expeditionary air force. The CVBG and ARG are continuously forward deployed and offer a sustainability that is unmatched in the armed services, but how does expeditionary airpower measure up to the expeditionary definition and scenarios outlined in Chapter One?

The mobility, flexibility, capability, and adaptability of the CVBGs and the ARGs are going to be the same in all four scenarios. Both of these Naval forces provide a mobile expeditionary airfield ready to conduct expeditionary operations upon arrival in theater. In the first or best case scenario, where the host nation provides an operational airfield, the options would be one of moving an AEF into that airfield with prepositioned supplies, or maneuvering a CVBG and/or an ARG into theater. Considering all variables, both the NEF and the AEF are on an equal level. The significant inequality would be the force protection issue that would have to be addressed by the AEF. The second scenario, where a host nation provides access to an

⁴⁹ The Association of Naval Aviation. *The Shield and the Storm, Naval and Marine Corps Aviation in the Gulf War*. Falls Church, VA: 1991.

airfield requiring additional support in the form of water, fuel, or runway/airfield expansion requires an increased effort on the part of the AEF, whereas the NEF would not have to alter its concept of operations or response time. The third scenario, where the host nation does not have any existing airfields, requiring the construction of some level of expeditionary airfield, would still not affect the NEF but would have a huge impact upon the AEF. The last or worse case scenario, where there is neither access to an existing airfield nor access to any area suitable for airfield construction, essentially negates the capability of the AEF, but again would have no impact on the NEF.

Since World War Two, the Navy has continuously been the premier practitioner of expeditionary airpower. From providing air support during the initial amphibious landings on Guadalcanal to being the first forces in theater after the Iraqi invasion of Kuwait, naval airpower clearly demonstrates the continuing focus of effort on the Navy in executing expeditionary airpower. The CVBGs/ARGs offers expeditionary airpower that is responsive, flexible, sustainable, and because the NEF carries its own infrastructure, it is able to function at the same level of effectiveness and is not affected by in-theater infrastructure.

Chapter 6

United States Marine Corps

I expect the future will bring more operations where the Marines fly from carriers and Navy aircraft fly from austere fields operated by Marines

- MajGen. Terrance R. Dake

Background

The Marine Corps has traditionally been an expeditionary force in readiness. As directed by law, the Marine Corps shall be organized to provide fleet marine forces of combined arms, together with supporting air components, for service with the fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign.⁵⁰

Prior to WWII, the Marine expeditionary capability centered around the amphibious assault concept in order to secure port facilities for follow-on forces. Since WWII, that capability was expanded to secure airfields, or areas conducive to airfield construction, as well as port facilities.

⁵⁰ Schlagheck et al. 181.

If either of these objectives needed additional infrastructure, the Marine Corps and the Navy possessed the engineering capability to improve and expand ports and airfields. Additionally, the aircraft during this period required much less quality and sized infrastructure as aircraft of today. Both of these objectives became increasing more vital for subsequent operations as the logistical and operational requirements of the marine expeditionary forces grew.

In 1956, the Commandant of the Marine Corps (CMC), formally established an operational requirement for an Expeditionary Airfield System. By 1978, the CMC described a series of building blocks configurations which supported the operational capabilities required by the Air Combat Element (ACE) of the Marine Air Ground Task Force (MAGTF). Each Marine Air Wing (MAW) would have the capability to build the following Expeditionary airfields.

- Six 72' x 72' vertical take-off and landing (VTOL) sites.
- One 1,800' vertical/short take-off and landing (VSTOL) airbase or three 600' VSTOL facilities.
- One 5,200' Expeditionary Airfield.
- One 8,000' Strategic Expeditionary Landing Field (SELF) ⁵¹

In 1980 this MAW capability was expanded to include,

- Eight 96' x 96' VTOL sites
- Two Bare Bases ⁵²

An analysis of the availability of permanent type runways within the predicted threat areas of future Marine Corps operations showed that an abundance of adequate bare bases existed throughout the anticipated AORs. There was a question of whether the Marine Corps should

⁵¹ United States Marine Corps Development and Education Command. *Development of an Operational Concept for the Marine Corps Expeditionary Airfield (AEF) System 1985 - 1995 Final Report*. Quantico, VA: 1985. 2.

⁵² Ibid, 6.

retain the expeditionary airfield capability. It was concluded that the MAW should retain this capability in the event of “worse case” scenarios.

Doctrine

Like the Navy, the Marine Corps doctrine centers around operations in the littorals. The Marine Corps strategy outlined in *Operational Maneuver from the Sea*, is fully compatible with the other Marine concept of *Maneuver Warfare*. Principles highlighted in these doctrines, that advance expeditionary warfare, focus on maneuver from the sea, flexibility and combined assets. Crucial capabilities include speed, mobility, and combined arms. Traditionally the foundation of this expeditionary concept is the MAGTF, but it may consist of only aviation assets flying missions out of expeditionary airfields, as was demonstrated in 1999 when MAG-31 Forward (FWD) operated out of a bare base in Tazsar, Hungary, in support of Operation Allied Force/Noble Anvil.

The Expeditionary Airfield System is designed to provide air support near force beachheads, offshore islands, or friendly areas in close proximity to ground actions, when local air facilities do not exist or are inadequate. An expeditionary airfield installation may be effected in incremental phases based on tactical conditions and may be altered or modified as conditions dictate.⁵³

Organization

⁵³ United States Marine Corps Development and Education Command. *Development of an Operational Concept for the Marine Corps Expeditionary Airfield (AEF) System 1985 - 1995 Final Report*. Quantico, VA: 1985. 187-188.

The Marine expeditionary concept is built around the MAGTF. This unique organization offers a combined fixed wing and rotary wing aviation capability not present in any other force. The MAGTF contains a Command Element (CE), a Ground Combat Element (GCE), a Combat Service Support Element (CSSE), and an ACE. The size of the MAGTF can vary depending on the mission. The largest MAGTF is a Marine Expeditionary Force (MEF), which contains one to two MAWs and is capable of 60 days of sustainment. The MAW is trained, equipped, and organized to operate from the sea or land in support of MAGTF expeditionary operations. Each MAW is comprised of three to four flying groups, an aviation support group, and a control group.⁵⁴

As an example, 2nd MAW has over 320 tactical and support aircraft contained in four groups: four F/A-18A/C squadrons, three F/A-18D squadrons, one KC-130 squadron, six CH-46 squadrons, two CH-53 squadrons, two UH-1/AH-1W squadrons, three AV-8B squadrons, four EA-6B squadrons, and one Unmanned Aerial Vehicle (UAV) squadron. The combined capability of the MAW includes day and night ground attack, air superiority, reconnaissance, forward air control, SEAD, aerial refueling, SAR, cargo lift, and special operations.⁵⁵

Each successive MAGTF has an appropriately sized ACE. The Marine Expeditionary Brigade (MEB) is supported by a composite group of approximately 80 fixed and rotary-winged aircraft capable of sustained operations for 30 days. The Marine Expeditionary Unit (MEU) is

⁵⁴ Marine Corps Reference Publication (MCRP) 5-12D, *Organization of Marine Corps Forces*. Washington, DC: Department of the Navy, Headquarters United States Marine Corps, 1998. 2-1,2-5.

⁵⁵ Ibid, 3-1,3-35.

typically supported by one detachments of AV-8Bs, and a detachment each of CH-53s, CH-46s, and UH-1s/AH-1Ws. The MEU is organized for 15 days of sustainment. The MEU is deployed in the Navy's ARG which was discussed above.⁵⁶

The final MAGTF considered, the Special Purpose MAGTF (SPMAGTF), may be any size but is normally the size of a MEU or smaller. The nature of its mission dictates it supporting aviation assets and sustainability.⁵⁷

While not considered a MAGTF, several Marine F/A-18 squadrons are routinely assigned to Carrier Air Wings, but the majority of Marine fixed wing aviation use land bases in friendly countries, from seized airfields, or from airfields constructed or enlarged under the Expeditionary Airfield System. The expeditionary airfield greatly enhances the flexibility and options for airpower projection in an AOR. The system is designed to allow Marine and Navy aircraft phase ashore in areas where a suitable airfield either does not exist or needs to be expanded or repaired. The system can be used to as an alternate basing site for carrier aircraft, an emergency divert field, an advanced refueling and arming site, or simply as an additional site for an ACE to launch operations.

The airfield system comes in a variety of configurations as outlined above. It is constructed from AM-2 matting, a 2' x 12' and 2' x 6' aluminum panels coated with an epoxy nonskid surface. These mats are interlocked and assembly in the required configuration needed.

⁵⁸ A study by the Marine Corps estimated the sortie capabilities for several of these

⁵⁶ Marine Corps Reference Publication (MCRP) 5-12D, 3-1,3-35.

⁵⁷ Ibid, 3-20-3-31

⁵⁸ Dake, Terrence R., Maj Gen, USMC. "Expeditionary Airfields." *Marine Corps Gazette* 78,

configurations. The study was generated sorties into day and night with 67 percent being flown during the day and 33 percent being flown at night.

- A VSTOL airbase could generate 90 sorties per day.
- A SELF airbase could generate 350 sorties per day.
- A Bare Base could generate between 300 and 450 sorties per day.⁵⁹

These figures are conservative and do not reflect the addition of newer aircraft that have replaced the A-6 and OV-10.

The same study estimated the time it would take to construct the same systems described above.

- Two VSTOL facilities could be constructed in one week.
- The SELF airbase would require 46 days.
- A Bare Base could be ready in 14 to 23 days depending on the existing infrastructure.

These estimates include time to build or prepare the field, fuel storage, munitions sites, and ramp space.⁶⁰

Logistics

Getting the aviation sustainment supplies to the ACE supporting the MAGTF in the AOR is presently the mission of the strategic sealift force, which includes the Maritime Prepositioning Ships (MPS), the Fast Sealift Ships (FSS), and other ships like the Aviation Logistics Support (AVB) ships containing aviation maintenance equipment.⁶¹

As discussed above The MPFs consists of equipment and supplies prepositioned on a fleet

no. 8 (August 1994): 38.

⁵⁹ United States Marine Corps Development and Education Command. *Development of an Operational Concept for the Marine Corps Expeditionary Airfield (AEF) System 1985 - 1995 Final Report*. Quantico, VA: 1985. 121.

⁶⁰ Ibid, 100-101.

⁶¹ Military Analysis Network, "US Navy Ships."

of prepositioning ships. This fleet is organized into three squadrons dedicated to the Marine Corps. Each ship can discharge cargo either pierside or while anchored offshore using lighterage carried aboard, supporting expeditionary operations in both developed and undeveloped areas of the world.⁶²

The Maritime Prepositioning Force (Enhanced) (MPFE) has recently added three ships to the current force of thirteen ships which will allow each MPSRON to carry a full expeditionary airfield system as well as other essential equipment.⁶³

Both MPSRON Two and Three have enough AM-2 matting to build either a 1,000' x 72' or a 1,500' x 54' runway with 11 tactical parking spaces. Larger expeditionary airfields would require strategic airlift, approximately six C-141s, or other maritime shipping.⁶⁴ The Marine Corps is adding two ships to the MPF which will allow each squadron to add a full expeditionary airfield.⁶⁵

The Marine Corps also uses strategic airlift to marry the fly-in-echelon of the MPF with the prepositioned equipment and supplies on the MPS. Generally a MEB size MAGTF requires up to 250 C-141 airlift sorties to move its equipment and personnel.⁶⁶

Desert Storm

On 6 August 1990, after the Iraqi invaded Kuwait, 3rd MAW received its warning order to

⁶² Military Analysis Network, "US Navy Ships."

⁶³ Ibid.

⁶⁴ Dake, 39.

⁶⁵ GAO, 60.

⁶⁶ Ibid.

support Operation Desert Storm. Initially the lack of tanker support prevented MAG-70 from rapidly deploying. It was not until 21 August before the first squadron started to deploy. By the 17th of August all of MAG-70s rotary-winged aircraft had arrived at Jubayl Naval Air Facility (JNAF) and by the 24th , all of the fixed-winged aircraft had arrived at Shaihk Isa Air Base. On the 26th, MAG-70 started running 24 hour combat operations.⁶⁷

The airfield conditions and supportability ranged from nearly fully operational to non-existent, in the case of needed Forward Aviation Refueling Points (FARP). On 15 August MPSRON-2 and later -3 arrived in Jubayl and started off-loading ACE cargo. Over the next several months, Marines and Seabees expanded all the facilities throughout the theater.

On September 4th, At King Abdul Aziz Naval Base (KNAAB), Marines and Seabees started work on expanding the rampspace. Over the next two months, they laid AM-2 matting for a 3,600' x 72' parallel taxiway which would include 20 "hides" for aircraft parking and two access taxiways; a 150 square foot VTOL pad for AV-8Bs; a second 42' x 620' taxiway; eight parking hides for OV-10 reconnaissance aircraft; a 96' x 316' helicopter refueling pad; and an AM-2 mat for AV-8B engine power test stand.⁶⁸ At Jubayl, teams constructed parking aprons covering 1.8 million square feet of desert.⁶⁹ The capability of the ACE supporting units along with the cargo offload from the MPS's allowed the Marines and Seabees to construct fully

⁶⁷ Stearns, LeRoy D., LtCol, USMC. *U.S. Marines in the Persian Gulf, 1990-1991 The 3rd Marine Aircraft Wing in Desert Shield and Desert Storm*. Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1999. 34.

⁶⁸ Ibid. 54.

⁶⁹ Zimmeck, Steven M., Maj, USMC(Ret). *U.S. Marines in the Persian Gulf, 1990-1991 Combat Service Support in Desert Shield and Desert Storm*. Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1999. p 42.

operational expeditionary air facilities while the ACE conducted 24 hour operations.

Analysis

The unique nature of the MAGTF brings with it a wide range of expeditionary airpower capabilities. Marine aviation routinely operates from full-service expeditionary airfields at Marine Corps Base (MCB) Twentynine Palms, CA and Marine Corps Auxiliary Landing Field, Bogue Field, NC. Additionally, Marines are accustomed to rapid deployments to austere locations, but how does Marine aviation measure up to the four scenarios outlined in Chapter One?

Moving an ACE into an existing operational airfield as outlined in the first or best case scenario provides the same advantages as moving any service air assets into the same facilities. Marine airpower always brings its own equipment either loaded on the tanker support or on the passenger/cargo airlift. Additionally, an ACE is generally supported by an aviation logistics element and an aviation service support element. Combined, these units are capable of making the needed improvements to the field, provide force protection, maintain munitions, and provide all the additional service support functions.

For an airfield that need major expansion, repairs, or full construction as outlined in the second and third scenarios, the ACE is dependent on the MPSRONS that contain the equipment necessary to affect those changes. Additionally, construction of a large expeditionary airfield would require the support of Navy Seabees. In the fourth or worse case scenario, where neither access to an existing airfield nor access to any area suitable for airfield construction is available, Marine aviation is fully capable of supporting MAGTF/Joint Forces Air Component Commander

(JFACC)/Naval missions from the CVBG or ARG.

The Marine ACE brings a wide range of capabilities with each sized MAGTF associated with it, but the Marine Corps is restricted by several requirements. First, a MEB or MEF-sized unit is going to require Naval shipping and Strategic airlift. In Desert Storm, airlift accounted for 15 percent of the total cargo that arrived in theater, while shipping handled the remaining 85 percent. Airlift transported 99.45 percent of the personnel that arrived in theater while shipping only accounted for a minor .55 percent.⁷⁰

Although the Marine Corps has MPF shipping dedicated to its needs, an estimated 250 airlift sorties are required to move the troops and equipment to employ the expeditionary forces (MEB) associated with the MPF squadron. The 250 sorties requirement would be filled by a combination of C-5, C-141, C-17, and Civil Reserve Air Fleet aircraft.⁷¹ Marine Corps Headquarters recently stated that number is probably as high as 350.⁷² Additionally, rotary-winged assets require C-5 transportation and fixed-winged assets, if not on the aircraft carrier, require tanker support to transit to the area of operations. Both of these lift requirements mean the Marine Corps, at the MEB or MEF level, is completely dependent on the Navy and the Air Force to get to the fight.

Second, if there is not an airfield available, and a SELF or some other expeditionary

⁷⁰ Matthews, James K., and Holt, Cora J., *So Many, So Much, So far, So Fast: United States Transportation Command and Strategic Deployment for operation Desert Shield/Desert Storm*. Washington, DC: Office of the Chairman of the Joints Chiefs of Staff and the United States Transportation Command, 1992. p 13.

⁷¹ Ibid. 131-132.

⁷² GAO, 60.

airfield needs to be constructed, there is a considerable amount of time required for this type of facility to be built. MPSRONS can take one to two weeks to arrive in theater, then there is offloading time and the minimum construction time for a SELF is 46 days. Once an expeditionary airfield is constructed, the Marine Corps is still dependent on that same airlift described above.

At the MEU level, Marine expeditionary airpower is much more responsive. A MEU is forward deployed and thus closer to any crisis. Additionally, an ARG is not dependent on outside logistic support. Marine airpower operating from a carrier can not really be considered Marine expeditionary airpower unless it is in direct support of a MAGTF. Marine squadrons operating from a carrier are attached to a Carrier Air Wing and can essentially be defined as Naval Expeditionary Airpower.

Chapter 7

Conclusion

To have command of the air means to be in a position to wield offensive power so great it defies human imagination. It means to be able to cut an enemy's army and navy off from their bases of operation and nullify their chances of winning the war.

- Giulio Douhet

The National Military Strategy: *Shape, Respond, Prepare Now* along with *Joint Vision 2010/2020* provides advice and a conceptual template for America's Armed Forces as they prepare for the future and support the National Security Strategy. An important requirement as it relates to expeditionary airpower is the ability to rapidly **Respond** to the full spectrum of crisis in order to protect American national interests. **Preparing Now** for an uncertain future requires **Overseas Presence** with emphasis on **Power Projection**. **Power Projection** is the ability to rapidly and effectively deploy and sustain U.S. military power in and from multiple dispersed locations until conflict resolution and has its foundation in expeditionary operations.

Expeditionary airpower was earlier defined as airpower that can quickly project power into foreign settings. It should be able to deploy and employ as a self-reliant force and be able to sustain itself for a period of time to cover its assigned missions. Quickly projecting power into a foreign setting implies that expeditionary airpower has the ability to deploy from CONUS and project airpower into any environment regardless of the infrastructure available. Once in this environment, expeditionary airpower has to be able to be self-sufficient and self-sustaining for a period of time to complete the mission without further support or to "hold the line" until follow-

on forces and support could flow in-theater. Each service is adopting this expeditionary concept in an attempt to support the requirements set forth by the DoD and the Chairman of the Joints Chiefs of Staff (CJCS).

The airpower and associated doctrine for the each of the services span a wide range of capabilities spanning day and night ground attack, air superiority, assault support, reconnaissance, search and rescue, electronic warfare, and anti-submarine warfare to name a few.

The Army has an extensive expeditionary airpower capabilities that is critical for the employment of any major land conflict. Additionally, the Army is capable of constructing air facilities for every need as long as there is sufficient airlift or sealift.

The Air Force has an expeditionary airpower capability that is entirely dependent on the infrastructure in-theater. The Air Force has enormous deployment and sustainment capabilities which are essentially limited by specific bed-down requirements. For the present, the AEF structure is built around a SWA scenario and a crisis in another region of the world would truly challenge the Air Force's ability to rapidly deploy. There would have to be a significant bare base airfield in the region to facilitate any AEF employment. Long range strike capability from CONUS is an added strength that only the Air Force can execute, but is not extensive enough for any sustained campaign and not flexible enough to meet the full spectrum of airpower requirements for full spectrum dominance.

Marine aviation also has a wide range of expeditionary capabilities and its ability to operate from the carrier or from an ARG gives the Marine Corps the ability to project power in regions of the world where airfields do not exist or are not sufficient enough to support operations.

Additionally, the Marine Expeditionary Airfield System can be constructed to facilitate the needs of the MAGTF.

The Navy has the power projection and expeditionary capability unique to the Carrier Battle Group. This flexible and mobile platform gives the Navy the ability to operate anywhere in the littorals without any outside support.

How each service supports Joint Vision 2020 is directly related to its expeditionary capability. In the first scenario, where a fully operational airfield is available, each service has a fairly equal ability to move in and conduct air operations. In scenario two, where some repair or modification of an airfield is required, each service has the ability to make modifications and operate. If full construction is required, as in scenario three, each service has a capability to construct various expeditionary airfields, but rarely would a service act independently. It would either be a joint endeavor or the Navy and Marines would work together to complete the job. In the last or worse case scenario where neither access to an existing airfield nor access to any area suitable for airfield construction is available, only the Navy and the Marine air operating from naval vessels would have the ability to project sustainable airpower.

Considering the combat power and missions of the NEF compared to the AEF shows that the AEF offers approximately twice the assets as a CVBG, but if the situation required a force the size of an AEF, the Navy could easily deploy more than one CVBG into the theater. Both the AEF and the CVBG/ARG offer a wide range of capabilities. In the best case scenario the AEF can be much more responsive, but only if the AEF is moving into an operational airfield with prepositioned supplies. This example only exists in SWA. A crisis anywhere else in the

world would truly test the responsiveness of the AEF whereas an NEF would still have the same response rate.

All the services have Prepositioning Ships for sustainment in-theater and more of these ships are being constructed. Being able to sustain aviation operations in-theater is critical and that capability is being addressed by all the services. The ability to construct an expeditionary airfield is secondary to the ability to get in-theater. Any large operation in the future is going to be Joint and the combined engineering capabilities of all the services will be utilized to meet the aviation construction requirements of the CINC's aviation assets.

Despite these great capabilities, the real weak link for the Air Force, Army, and the Marine Corps is their reliance upon sealift and airlift. It all comes down to the actual ability to get aviation assets and personnel in-theater and that is totally dependent on strategic airlift, sealift, and tanker support for tactical aircraft.

It can be concluded that each service has at least a partial expeditionary airpower capability, but being partially expeditionary does not meet the developed definition. The Navy, with its carriers, is the only service that has a truly expeditionary airpower capability as defined earlier. Considering this fact and the actual expeditionary airpower capabilities of all the services, the first question a CINC or the National Command Authority should ask is, "Where are the Carriers or where is the MEU?" If this is the case, are the other services failing to support Joint Vision 2020 and is there really a need for each service to have a expeditionary airpower capability? The answer to both questions is "no." By definition, dominant maneuver seeks to gain positional advantage with decisive speed and overwhelming operational tempo in

the achievement of assigned military tasks.⁷³ Neither dominant maneuver nor full spectrum dominance state the need for each service to have an expeditionary airpower capability; however, there is the perception by services that the capability to respond the fastest to crises ensures continued funding. This perception has led services to label certain capabilities “expeditionary” even when those capabilities do not fit the expeditionary definition. The danger is that in an attempt to become “expeditionary,” services may limit their existing capabilities. The vision for the future is joint, and the bottom line is each service will always have unique strengths and weaknesses requiring them to depend on one another to meet full spectrum dominance to meet future challenges.

Appendix A

Glossary

A

⁷³ Chairman of the Joints Chiefs of Staff. *Joint Vision 2020*. Washington, DC: The Pentagon, June 2000. 6.

ACE	Air Combat Element
AEF	Aerospace Expeditionary Force
AO	Area of Operations
AOR	Area of Responsibility
APS-3	Army Prepositioned Stock Three
ARG	Amphibious Ready Group
ASMP	Army Strategic Mobility Program
AVB	Aviation Logistics Support Ship
AWR	Army War Reserve

C

C2	Command and Control
CASF	Composite Air Strike Force
CE	Command Element
CJCS	Chairman of the Joint Chiefs of Staff
CINC	Commander in Chief
CLF	Combat Logistics Force
CMC	Commandant of the Marine Corps
CNO	Chief of Naval Operations
CONUS	Continental United States
CSSE	Combat Service Support Element
CVBG	Carrier Battle Group

D

DoD	Department of Defense
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E

EAf	Expeditionary Aerospace Force
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F

FARP	Forward Aviation Refueling Point
FLSS	Forward Logistic Support Sites
FSS	Fast Sealift Ships
FWD	Forward

G

GCE Ground Combat Element

J

JNAF Jubayl Naval Air Facility
JCS Joint Chiefs of Staff
JFACC Joint Forces Air Component Commander
JV 2010/2020 Joint Vision 2010/2020

K

KNAAB King Abdul Aziz Naval Base

L

LPS Logistics Prepositioning Ships

M

MAG-31 Marine Air Group 31
MAGTF Marine Air Ground Task Force
MAW Marine Air Wing
MCB Marine Corps Base
MEF Marine Expeditionary Force
MEB Marine Expeditionary Brigade
MEU Marine Expeditionary Unit
MPFE Maritime Prepositioning Force Enhanced
MPS Maritime Prepositioning Ship
MPSron-2 Maritime Prepositioning Squadron Two
MRE Meals Ready to Eat

N

NEF Naval Expeditionary Force
NMS National Military Strategy

P

PREPO Prepositioned

S

SAR Search and Rescue
SEAD Suppression of Enemy Air Defenses
SELF Strategic Expeditionary Landing Field
SPMAGTF Special Purpose Marine Air Ground Task Force

STRATCOM Strategic Command
SWA Southwest Asia

U

UAV Unmanned Aerial Vehicle
US United States
USAF United States Air Force
USCENTCOM United States Central Command

V

VSTOL Vertical/Short Take-Off and Landing
VTOL Vertical Take-Off and Landing

W

WWII World War Two

Bibliography

The Association of Naval Aviation. *The Shield and the Storm, Naval and Marine Corps Aviation in the Gulf War*. Falls Church, VA: 1991.

Boorda, J. M., ADM, USN. "The Navy-Marine Corps Team: Looking." *Marine Corps Gazette* 79, no. 3 (March 1995): 22-25.

Brady, Roger A., Maj Gen, USAF. "Building and Commanding Expeditionary Units: Lessons from Kosovo." *Aerospace Power Journal* 14, no. 1 (Spring 2000): 12-21.

Chairman of the Joints Chiefs of Staff. *National Military Strategy of the United States of America: Shape, Respond, Prepare Now: A Military Strategy for a New Era*. Washington, DC: The Pentagon, September 1997. URL: <<http://www.dtic.mil/jcs/nms/strategy.htm>. 9 Jan 01.

Chairman of the Joints Chiefs of Staff. *Joint Vision 2020*. Washington, DC: The Pentagon, June 2000.

Chairman of the Joints Chiefs of Staff. *Joint Vision 2010*. Washington, DC: The Pentagon, July 1996.

Chief of Naval Operations. ...*From the Sea: Preparing the Naval Service for the 21st Century*. Washington, DC: The Pentagon, 1993.

Chief of Naval Operations. *Forward: Vision... Presence... Power: A Program Guide to the U.S. Navy, 1999 Edition*. Washington, DC: The Pentagon, 1999.

Dake, Terrence R., Maj Gen, USMC. "Expeditionary Airfields." *Marine Corps Gazette* 78, no. 8 (August 1994): 37-39.

Dowdy, William L., PhD. *Testing the Aerospace Expeditionary Force Concept: An Analysis of AEFs I-IV (1995-97) and the Way Ahead*. Maxwell AFB, AL: Airpower Research Institute, 2000.

Fippinger, Eric K., Capt, USMC. "Naval Aviation's Expeditionary Airfield Capability: Power Projection for the Future." *Marine Corps Gazette* 77, no. 10 (October 1993): 66-71.

Flanagan, Edward M. Jr, LTG., USA (Ret.) "Lightning: The 101st in the Gulf War." Washington, DC: Brassey's Inc., 1994.

Field Manual (FM) 1-111, *Aviation Brigades*. Washington, DC: Headquarters, Department of the Army, 27 Aug 1990.

Field Manual (FM) 1-100, *Army Aviation in Combat Operations*. Washington, DC: Headquarters, Department of the Army, Feb 1989.

Field Manual (FM) 5-430-00-2, *Construction of Airfields, Roads and Ports*. Washington, DC: Headquarters, Department of the Army, 29 Sept 1984.

Ganyard, Stephen T., Lt Col, USMC. "The Price of Convention." *Marine Corps Gazette* 84, no. 1 (January 2000): 63-64.

General Accounting Office (GAO). *Military prepositioning: Army and Air Force Programs*

Need to be Reassessed: Report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, U.S. Senate. Washington, DC: GAO Publication NSIAD-99-6, 1998.

General Accounting Office (GAO). *Desert Shield/Storm Logistics: Observations by U. S. Military Personnel: Report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, U.S. Senate.* Washington, DC: GAO Publication NSIAD-92-26, 1991.

Hacker, Diana. *A Writer's Reference*. 3rd ed. Boston, MA: Bedford Books, 1995.

Hoffman, F. G., Maj, USMC. "Stepping Forward Smartly: 'Forward . . . From the Sea,' The Emerging Expanded Naval Strategy." *Marine Corps Gazette* 79, no. 3 (March 1995): 30-34.

Looney, William R, III, Brig Gen, USAF. "The Air Expeditionary Force: Taking the Air Force into The Twenty-first Century" *Airpower Journal* 10, No. 4 (Winter 1996): 4-9.

Major, James S. *The Style Guide: Research and Writing at the Joint Military Intelligence College*. 2nd ed. Washington, DC: Defense Intelligence Agency, 1993.

_____. *Citation: Note and Bibliography Form*. Washington, DC: Defense Intelligence Agency, 2000.

Marine Corps Doctrinal Publication (MCDP) 3, *Expeditionary Operations*. Washington, DC: Department of the Navy, Headquarters United States Marine Corps, 1998.

Marine Corps Reference Publication (MCRP) 5-12D, *Organization of Marine Corps Forces*. Washington DC: Department of the Navy, Headquarters United States Marine Corps, 1998.

Matthews, James K., and Holt, Cora J., *So Many, So Much, So far, So Fast: United States Transportation Command and Strategic Deployment for operation Desert Shield/Desert Storm*. Washington, DC: Office of the Chairman of the Joints Chiefs of Staff and the United States Transportation Command, 1992.

Merriam-Webster's Collegiate Dictionary. 10th ed. Springfield, MA: Merriam-Webster, 1993.

Military Analysis Network, "US Navy Ships," *Sealift*. <<http://www.fas.org/man/dod-101/sys/ship/sealift-htm>> accessed 8 Jan 01.

Moore, Scott R., Maj, USMC. "Looking Back at the Future: The Practice and Patterns of Expeditionary Operations in the 20th Century." *Marine Corps Gazette* 77, no. 8 (August 1993): 73-77.

Mundy, Carl E., Gen, USMC. "Reflections on the Corps: Some thoughts on Expeditionary Warfare." *Marine Corps Gazette* 79, no. 3 (March 1995): 26-29.

Navy Doctrine Publication (NDP) 1, *Naval Warfare*. Washington, DC: Department of the

Navy, Headquarters United States Marine Corps, 1994.

Nowak, Michael J., Lt Col, USAF. *The Air Expeditionary Force, A Strategy for an Uncertain Future?* Maxwell AFB, AL: Air War College, 1999.

Quist, Burton C., Col, USMC. "Operationalizing the NEF Concept." *Marine Corps Gazette* 79, no. 6 (June 1995): 30-33.

Roncolato, Gerard, CDR, USN. "An Era of Expeditionary Warfare." *Marine Corps Gazette* 79, no. 3 (March 1995): 40-42.

Schlagheck, James E., and James M. Smith, *Introduction to Joint and Multinational Operations.*, New York, NY: American Heritage Custom Publishing, 1997.

Shulimson, Jack and Charles M. Johnson, Maj, USMC. *U.S. Marines in Vietnam: The Landing and the Buildup, 1965.* Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1978.

Siemieniec, Jack, Staff Sergeant, USA. "Transformation," *Army not trying to be Marines, chief tells AUSA*, URL: http://www.tradoc.army.mil/transformation/dta%20.../army_not_trying_to_be_marines.ht> accessed 9 Jan 01.

Starr, Barbara. "USN seeks 24-hour, 200-strike carriers." *Jane's Defense Weekly*, 23 July 1997, 22-23.

Stearns, LeRoy D., Lt Col, USMC. *U.S. Marines in the Persian Gulf, 1990-1991 The 3rd Marine Aircraft Wing in Desert Shield and Desert Storm.* Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1999.

Sweetman, Bill. "Expeditionary USAF Sets Course." *Jane's International Defense Review*, no. 33 (May 2000): 30-37.

U.S. Department of Defense. *Dictionary of Military Terms.* London: Greehill Books, 1999.

United States Marine Corps Development and Education Command. *Development of an Operational Concept for the Marine Corps Expeditionary Airfield (AEF) System 1985 - 1995 Final Report.* Quantico, VA: 1985.

United States Navy Home Page, "The Carriers," *The Navy*, URL: <<http://www.navy.mil/homepage/cvn75/char.html#>>. accessed 26 Dec 00.

U.S. President. *A National Security Strategy for a New Century.* Washington, DC: The White House, December 1999.

Wages, Brian E., Col. USAF (Ret.) "The First with the Most: USAF's Air Expeditionary

Forces Takes The Offensive On Power Projection” *Armed Forces Journal International* 134, No. 2 (Sept 1996): 68-71.

Watson, Bruce W. and Susan M. Watson, *The United States Navy: A Dictionary*, New York and London: Garland publishing, Inc., 1991.

Wilhelm, Charles E., Lt Gen, USMC. “Expeditionary Warfare.” *Marine Corps Gazette* 79, no. 6 (June 1995): 28-30.

Zimmeck, Steven M., Maj, USMC(Ret). *U.S. Marines in the Persian Gulf, 1990-1991 Combat Service Support in Desert Shield and Desert Storm*. Washington, DC: History and Museums Division, Headquarters, U.S. Marine Corps, 1999.