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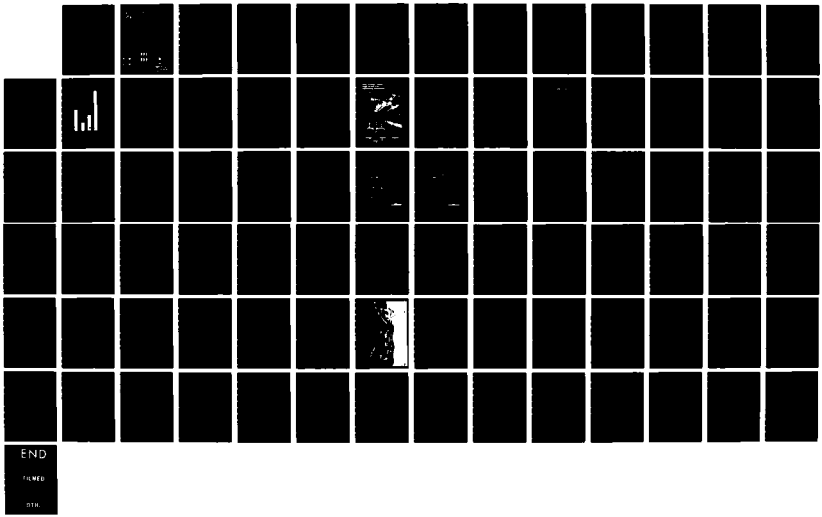

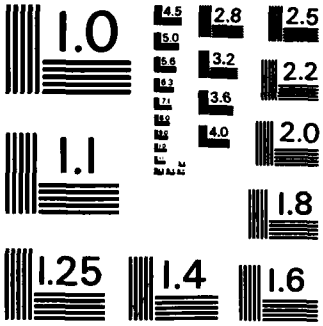

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RESEARCH REPORT

No. AU-AWC-85-228

AD-A159 291

A CONCEPT FOR THE FUTURE DEPLOYMENT AND EMPLOYMENT OF JVX

BY THE U.S. MARINE CORPS

By LIEUTENANT COLONEL THOMAS D. WALTERS, USMC

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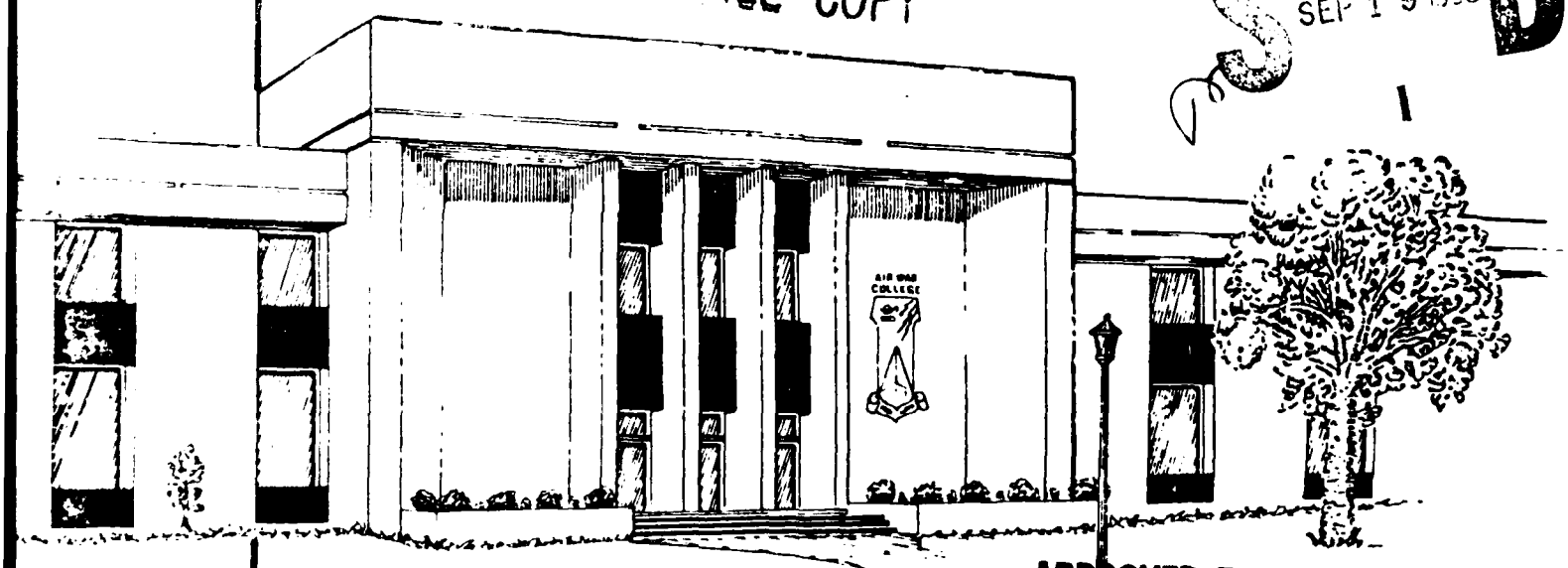

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MAXWELL AIR FORCE BASE, ALABAMA

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A CONCEPT FOR THE FUTURE DEPLOYMENT AND EMPLOYMENT OF JVX BY THE U.S. MARINE CORPS

by

Thomas D. Walters
Lieutenant Colonel, USMC

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE RESEARCH

REQUIREMENT

Research Advisor: Colonel Richard L. Upchurch, USMC

MAXWELL AIR FORCE BASE, ALABAMA

March 1985

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AIR WAR COLLEGE RESEARCH REPORT ABSTRACT

TITLE: A Concept for the Future Deployment and Employment of JVX by the U.S. Marine Corps

AUTHOR: Thomas D. Walters, Lieutenant Colonel, USMC

Remarks on the tremendous potential of JVX as a versatile airpower and amphibious operation enhancement precede the author's stated intent to introduce a rudimentary JVX deployment/employment plan which will serve as the basis for future concepts. A brief review of the JVX program and the future features and capabilities of JVX are presented followed by an historical study of the effectiveness of assault support airpower. Next follows an examination of political and military trends that may favorably or adversely impact the future use of JVX. After revealing additional considerations for the deployment and employment of JVX in the future, the author proposes his deployment and employment plan. This plan capitalizes on JVX's projected strategic and tactical mobility while emphasizing the derived benefit of increased deterrence against aggression.

BIOGRAPHICAL SKETCH

Lieutenant Colonel Thomas D. Walters (M.A., Texas A&I University) has been interested in the potential uses for JVX since the program's inception. Having flown both fixed-wing aircraft and helicopters, Lieutenant Colonel Walters appreciates the capabilities that both types of aircraft possess for tactical deployment and employment. Commissioned in 1967 and designated a Naval Aviator in 1969, Lieutenant Colonel Walters' career has included duty as an air liaison officer with the Third Marine Division, a mathematics instructor at the U.S. Naval Academy, and both a helicopter squadron Executive Officer and Commanding Officer. The majority of his assignments have been with Marine tactical squadrons in both the First and the Third Marine Air Wings stationed in Southeast Asia and Southern California respectively. He is a graduate of both the Marine Corps Amphibious Warfare School and the Marine Corps Command and Staff College. Lieutenant Colonel Walters is a graduate of the Air War College, class of 1985.

TABLE OF CONTENTS

CHAPTER		PAGE
	DISCLAIMER-ABSTAINER	ii
	ABSTRACT	iii
	BIOGRAPHICAL SKETCH	iv
	LIST OF FIGURES	vii
I	INTRODUCTION	1
II	THE JVX PROGRAM-PAST, PRESENT, AND FUTURE	4
III	AN HISTORICAL REVIEW OF ASSAULT SUPPORT AIRPOWER	14
	1920-1940	14
	WWII	16
	Post WWII	17
	The Iranian Rescue Attempt	21
	The War in the Falklands	23
	The Invasion of Grenada	23
	Conclusions	26
IV	POLITICAL/MILITARY TRENDS THAT MIGHT IMPACT ON THE USE OF JVX	28
V	PRESENT AND FUTURE CONSIDERATIONS FOR DEPLOYING/ EMPLOYING MARINE ASSAULT SUPPORT AIRPOWER	34
	Present	34
	Future	39
	Marine Corps doctrinal guidelines for the employment of JVX	41
VI	A PROPOSED CONCEPT FOR THE DEPLOYMENT AND EMPLOYMENT OF JVX	45
	Deployment	45
	Employment	51
	Four crisis situations scenarios for JVX	51
	Southwest Asia	55
	Korea	56
	North Flank of NATO	57
	Central America	58
VII	SUMMARY	60
VIII	CONCLUSION	63

NOTES..... 65

BIBLIOGRAPHY..... 71

LIST OF FIGURES

FIGURE		PAGE
NO. 1	Self-Deployment Capabilities Comparison: JVX vs. Helicopters	5
NO. 2	JVX Worldwide Self-Deployability Flight Times	9
NO. 3	JVX Features and Dimensions	10
NO. 4	JVX Program Status	13
NO. 5	Iranian Rescue Attempt with RH-53D Helicopters	24
NO. 6	Iranian Rescue Attempt with JVX	25
NO. 7	The MAU	36
NO. 8	The MAB	38
NO. 9	The MAF	38
NO. 10	MPS 7-Day Strategic Range	42
NO. 11	USMC Air Station Locations Worldwide	46
NO. 12	JVX Flight Route to SWA	48
NO. 13	JVX In The Assault Support Role	52

CHAPTER I

INTRODUCTION

With the advent of the Joint Services Advanced Vertical Lift (JVX) aircraft will come a unique and versatile airpower enhancement. While being able to hover like a helicopter and rapidly accelerate to cruise airspeeds comparable to an airplane, JVX will provide an extended range capability for both tactical and strategic deployments. JVX will also facilitate the rapid build-up ashore for amphibious operations; further reduce reliance on already overtaxed strategic and tactical cargo airplanes for long range deployments; and significantly aid military planners by simplifying deployment requirements while simultaneously complicating enemy plans to thwart our flexibility.

How can we combine the advantages of JVX with future military programs and policies to best deploy this aircraft in order to deter or defeat threats to our vital national interests? What are the lessons of the past that we must remember for employing JVX in the future? What trends must we consider before devising any plans for JVX? These are the principal questions that must be answered before formulating a plan for the deployment and eventual employment of JVX.

The purpose of this paper is to provide military planners with a rudimentary JVX deployment/employment plan which can serve as the basis for more sophisticated concepts. This plan will also serve to stimulate increased interest in this new dimension in airpower. This paper will also illustrate that there is a real need for a substantially improved assault support aircraft and that JVX will fulfill that requirement.

Before devising a concept for the deployment and employment of JVX, I will review those operational factors that determine the requirement for an improved assault support aircraft. An examination of the evolution and potential of JVX is also appropriate if we are to appreciate the flexibility this new aircraft will provide military planners. In this regard an analysis of the history of assault support airpower is in order. A selective study of relevant conflicts will examine a variety of elements which influenced the effectiveness of airpower in general and assault air support in particular. Although we acknowledge that history seldom repeats itself, there is merit in reviewing its lessons.

We will next study political and military trends that could either enhance or degrade an effective deployment or employment of JVX. Reliance upon expensive revolutionary programs to dramatically improve our strategic airlift ability would be risky given the current congressional

climate for imposing defense budget constraints. Technological advances that afford real time battlefield surveillance and a global navigational system are just two innovations that would assist JVX in the future.

The last portion of this paper will review current Marine assault air support capabilities for deployment and applicable Marine Corps doctrine. The current capability is limited and is highly dependent upon national airlift and sealift assets. Marine assault support plays an important role and performs a number of significant tasks in the employment of Marine air. The majority of these tasks are in direct support of the ground forces. JVX's versatility is well suited to current doctrine but an expansion of tasks may be appropriate. Finally, I will propose a concept for the effective deployment and employment of JVX for the U.S. Marine Corps.

maintenance support required a long and cumbersome logistic effort. With the advantage of overwhelming numbers of aircraft, the Allies overcame many of their difficulties with sheer mass and continual replacements.[5] The desire to deploy rapidly and for great distances would remain the military planner's elusive dream for years to come.

POST WW II

With the advent of helicopters, assault support airpower was revolutionized. Runways were no longer required. Helicopters could land on assault ships as well as on flat-top carriers. These capabilities gave ground commanders added flexibility in tactical planning and execution. However, the deployment of helicopters to far corners of the globe required either airlift, sealift, or foreign basing. In short, while helicopters facilitated intra-theater deployment, they created a dilemma for inter-theater movement because of their limited range.

Waging wars of national liberation became commonplace as communist support of insurgencies spread world-wide. Terrorists became pervasive as they threatened civilian as well as military targets. As surface-to-air missiles and anti-aircraft artillery (AAA) became more accurate, aircraft, especially those that flew low and slow, became more vulnerable. The need to rapidly and effectively counter these threats became both obvious and critical.

with dispersing units in the heavy canopied jungle, the insurgents (like the North Vietnamese units in South Vietnam) were able to minimize the effectiveness of airpower. Marine aircraft then concentrated on flying observation, medical evacuation, and logistical support missions for the duration of the conflict.[4]

Although Marine air was involved in other conflicts in Haiti, China, and the Dominican Republic, it was in Nicaragua where aviation concepts for the Marine Corps in general, and assault support air power in particular took form. The employment of Marine air for assault support-troop lift, resupply, and evacuation became an important aspect of the Marine air-ground team concept. Assault support added mobility and flexibility to ground campaigns. However, the use of hit-and-run tactics coupled with the advantage of jungle terrain for refuge were two factors that reduced the effectiveness of airpower. Since helicopters did not yet exist, the need to carve out airfields amidst dense vegetation was a further limiting factor.

WW II

Although assault support airpower was used in many different campaigns during WW II, I shall focus both on problems and advantages encountered. The lack of a VTOL aircraft complicated mission accomplishment, especially in jungle terrain, while inclement weather also curtailed assault support missions. The deployment of aircraft and

There were a number of crucial factors that contributed to the remarkable success of airpower in these two conflicts. Capitalizing on favorable weather and desert terrain, the British aircraft enjoyed unrestricted operations and excellent observation. Anti-air weapons were few, unsophisticated, and therefore ineffective. Compared to land armies, airpower in its infancy was considerably less expensive. But the key to their success stemmed from excellent intelligence, effective and timely communucations, and the authority for on-the-scene commanders to act independently. Interestingly, because of airpower the British were able to use the minimum force necessary to neutralize insurgents in a short fashion.[3]

With the outbreak of civil war in Nicaragua in 1927, the United States deployed Marine troops and two aircraft squadrons to stabilize the situation. After a negotiated truce, General Augusto C. Sandino, a Nicaraguan rebel leader, ignored the settlement and declared war against the new Nicaraguan government and the United States. A seven year guerrilla war ensued in which the employment of assault support airpower proved initially very effective. The insurgents made the initial mistake of conducting prolonged mass attacks which were vulnerable to airpower and it became the crucial factor in their heavy losses. However, General Sandino learned quickly from his mistake and subsequently conducted a hit-and-run war. With this new tactic combined

CHAPTER III

AN HISTORICAL REVIEW OF ASSAULT SUPPORT AIRPOWER

Seeking to find lessons from the past, one is compelled to review those conflicts in which assault support airpower played an important role. I have selected a number of conflicts which provide adequate lessons. Although the preponderance of these conflicts are low intensity, or very small wars, larger conflicts such as WW II, Korea, and Vietnam have also been included.

1920-1940

The early employment of assault support airpower occurred predominantly in low intensity conflicts. During this period of little or no air defense, airpower enjoyed relative invulnerability and a new type of mobility that easily overcame topographical obstacles. It also had limited but precise firepower.[1] When applied against primitive people and undeveloped nations, airpower invariably proved successful.

After the British conducted a long and frustrating campaign to defeat an illusive band of Muslim insurgents in Somaliland, they finally employed aircraft about 1920. Within three weeks, the British successfully supressed the insurgency. In 1922 the British again opted to employ aircraft to defeat a much larger insurrection of 131,000 armed men in Iraq.[2]

JVX PROGRAM STATUS

- PROGRAM INITIATION . . , DECEMBER 1981
- MILESTONE ONE APPAROVAL . . . DECEMBER 1982
- JAN '83 FIVE YEAR DEFENSE PLAN

  FULLY FUNDED THROUGH 1988 (3 SERVICE BUDGETS)
- PRELIMINARY DESIGN PHASE (6.3) CONTRACT

  SIGNED APRIL 1983
- JAN '84 FIVE YEAR DEFENSE PLAN

  FULLY FUNDED THROUGH 1989 (NAVY BUDGET)
- MILESTONE TWO, FULL SYSTEMS DEVELOPMENT (6.4),

  DECISION MID-1985
- FIRST FLIGHT . . . 1987
- LIMITED PRODUCTION DECISION . . . 1989
- USMC DELIVERIES COMMENCE . . . 1991

FIGURE NO. (4) JVX PROGRAM STATUS [12]

team of Boeing Vertol-Bell Textron.[11] For highlights of the JVX program status see Figure No. 4. Presently, the long-range prospects for continuation of the program are bright as congressional support remains steadfast despite growing presures for cutbacks on defense spending.

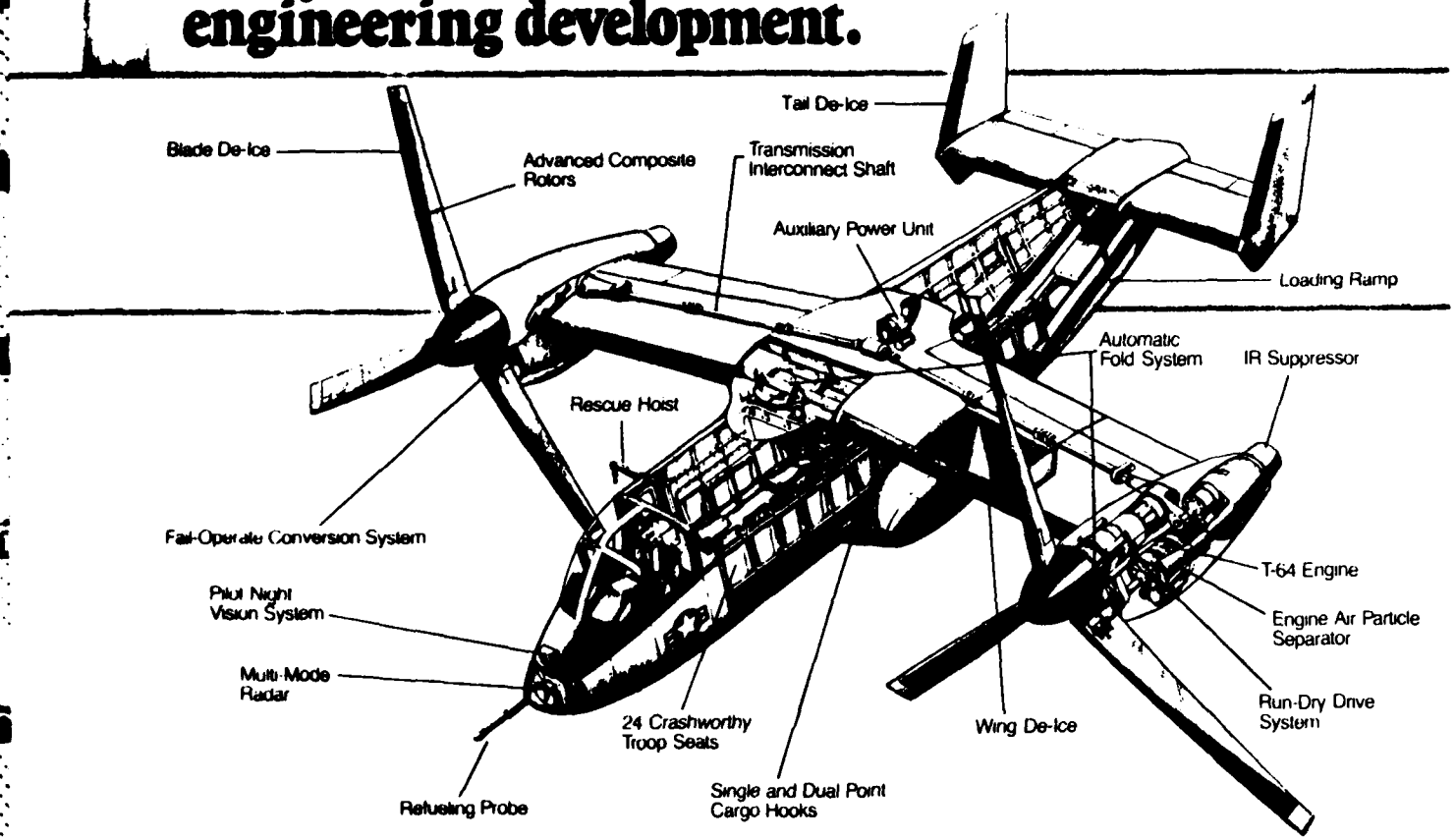
The strongest proponents of JVX, namely the U.S. Navy and Marine Corps, are keenly aware of the technological, tactical, and strategic advances that this aircraft portends. The biggest challenge will be to determine how to optimize the effectiveness and use of such a remarkable aircraft. A brief history of assault air support will illuminate the deployment and employment problems of the past. These difficulties should be taken into consideration before developing plans for JVX employment. They also provide food for thought to military planners as they devise new doctrine and tactics for JVX.

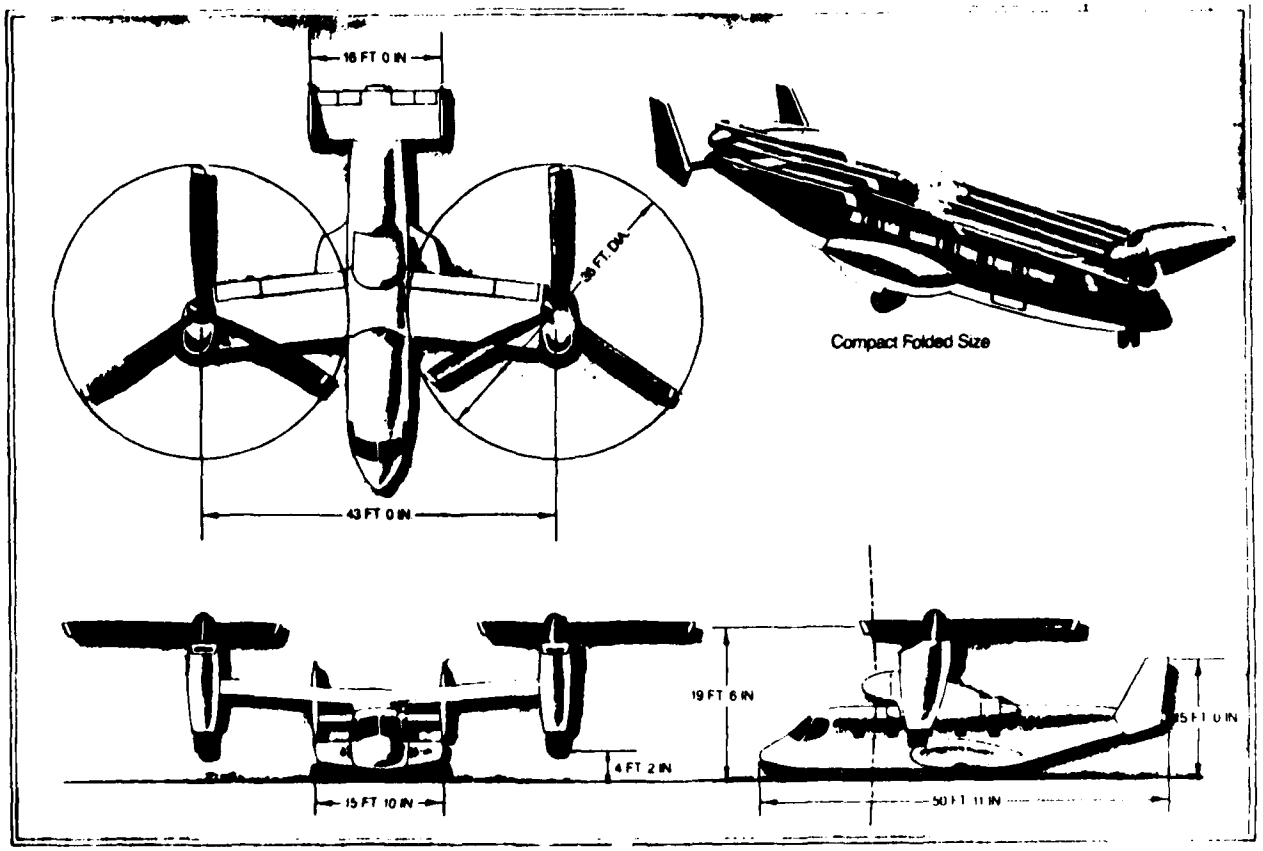
The relatively short history of tilt-rotor technology has had disappointments interspersed with successes. The McDonnell XHJD-1 extended rotor helicopter of 1944 was proved a failure because of instability problems that plagued the project.[8] In 1955, Bell Textron flew a prototype tilt-rotor aircraft, the XV-3. Although a number of technological problems were encountered, the program still accumulated valuable technical data for future tilt-rotor designs and operations. Later, Bell Textron was awarded a contract by the Army and the National Aeronauticas and Space Agency (NASA) to build and test a full sized tilt-rotor technology demonstrator. This aircraft became the XV-15 which began flying in 1977. Overcoming many of the earlier technological problems of earlier prototypes, the XV-15 is now demonstrating the impressive capabilities of the tilt-rotor concept.[9]

Our current JVX program stems from a December 1981 Secretary of Defense Decision Memorandum which directed a concept definition and formulation of joint requirements for a multi-mission advanced vertical lift aircraft for the 1990's and beyond. The Preliminary design phase contract was signed in April of 1983. Currently, the program is preparing to enter into the full-scale development phase. With the first flight expected in the late 1980's, the first delivery is scheduled in 1991 to the U.S. Marine Corps.[10] The Pentagon awarded the preliminary design contract to the

FIGURE NO. (3) JVX FEATURES AND DIMENSIONS

Multi-Mission TiltRotor-ready for full scale engineering development.





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NEW YORK--2070--AZORES--765--LISBON--2050--CAIRO

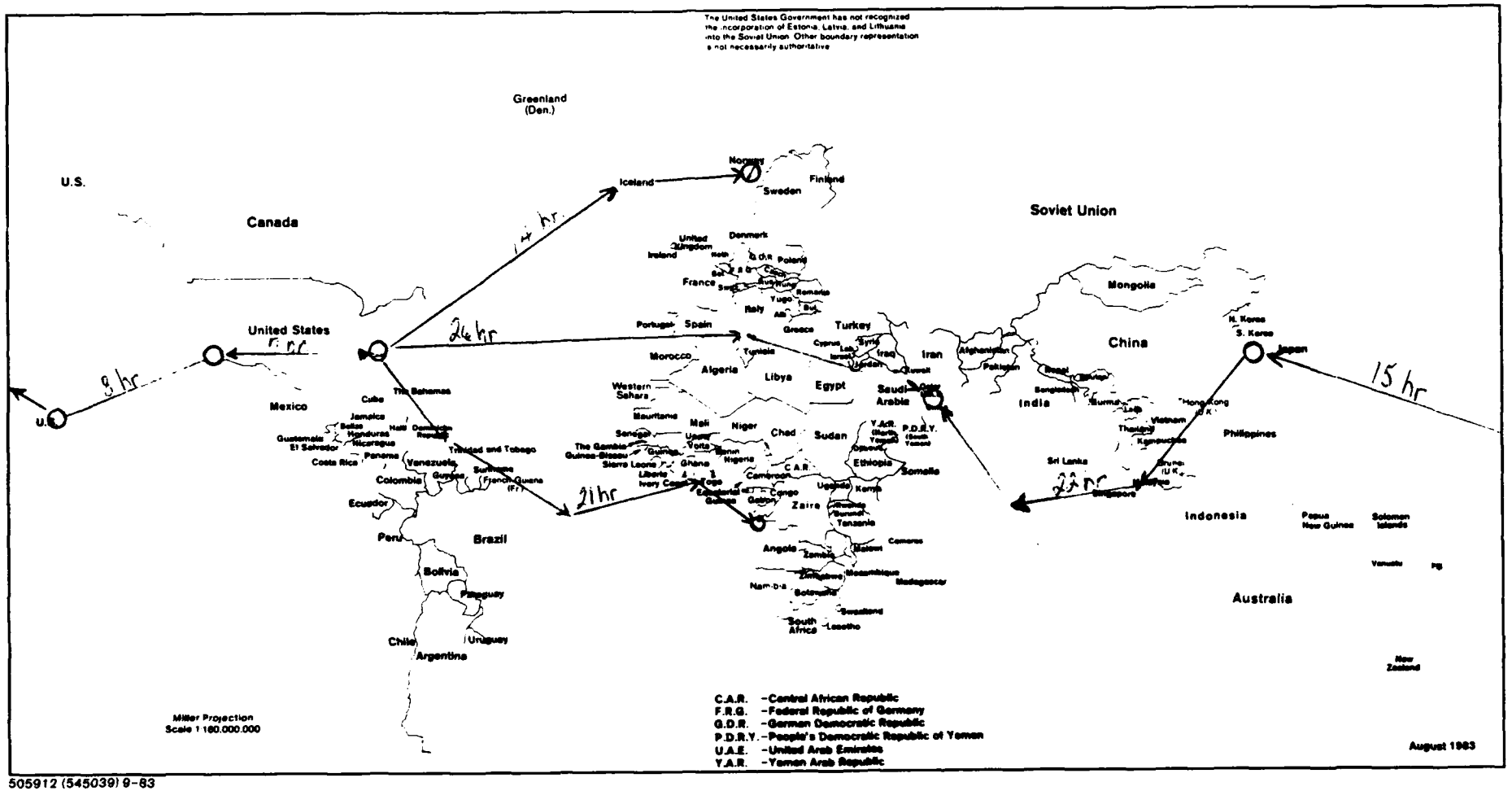

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FIGURE NO. (2) JVX WORLDWIDE SELF-DEPLOYABILITY FLIGHT TIMES[6]

most attractive feature for military planners will be its strategic mobility. JVX will be capable of self-deploying worldwide with a minimum range of 2100 nautical miles unrefueled. For examples of JVX flight hour requirements see Figure No. 2. With an aerial refueling feature, JVX will be able to increase its range to account for transoceanic flights. Some other features will include shipboard compatability; all weather instrumentation; state-of-the-art avionics to include secure communications; cargo hook and hoist for external lifts; hoist; a pressurized cockpit for NBC protection; an oxygen support system; an aft loading ramp; and seating for 24 combat troops. For a graphic example of JVX features see Figure No. 3. Depending upon the special mission, additional features can be incorporated such as a fold/stow ability for shipboard operations, Forward Looking Infrared (FLIR), and a flight data and voice recorder with crash position indicator. JVX will also possess features that will give it a high degree of survivability and crashworthiness. What is also admirable is that JVX will be built with an emphasis on readiness: reliability, maintainability, and supportability.[5] Finally, JVX will be able to operate in the entire spectrum of environments, from the arctic to tropical jungles.

cushion. Besides being capable of landing on over 70 percent of the world's beaches versus 17 percent in conventional land craft, LCAC provides the much desired over-the-horizon launch capability making the landing force much less vulnerable. With its 40 knot plus speed ability, LCAC combined with JVX will complicate the enemy's defense problem considerably.[4]

An examination of JVX's potential for rapidly projecting power ashore is required if one is to gain appreciation of the Marine Corps' eagerness to acquire this revolutionary aircraft. JVX squadrons will land the assault elements of an entire Marine Amphibious Force (MAF) ashore in two waves within 90 minutes -- a feat that almost defies the imagination when considering the magnitude of the force and the complexity of amphibious operations. JVX squadrons will be capable of supporting battalion size units with standoff, rapid reinforcement, and resupply capability while being able to circumnavigate high threat areas in deep battle scenarios. In short, JVX will give the ground commander greater support while permitting him more tactical flexibility on the battlefield.

There are several features and capabilities of JVX that make it impressive. This aircraft will have the ability to land in a small, confined area like a helicopter while being able to transition to an airplane mode in which it will cruise at speeds in excess of 250 knots. But its

helicopter (LHX). The Army will still be able to purchase JVX should its priority change.[3] The U.S. Marine Corps is the driving force behind the acquisition of JVX. It is seeking a much needed replacement for the aging medium lift troop and logistics support helicopter, the CH-46. In addition, the JVX would serve to complement the Landing Craft Air Cushion (LCAC) vehicle, a high-speed, over the beach, ship-to-shore amphibious landing platform capable of carrying a 60-ton payload.

Although the CH-46 is considered the workhorse of Marine assault support, the Marines are faced with a declining inventory of these helicopters. They are literally worn out and are becoming increasingly more costly to operate and maintain because of obsolescence. By FY-91 a critical shortfall will occur due to service life expiration. JVX will not only fill the void as the mainstay of the Marine VTOL force, but this revolutionary aircraft will be a quantum improvement over current assault support aircraft. JVX will not only modernize and replace an outdated medium-lift helicopter, it will significantly enhance amphibious operations, the primary mission of the Marine Corps. And this is where LCAC enters the picture. In an amphibious assault, it is critical that a rapid buildup of combat power ashore occur. LCAC will provide a rapid ship-to-shore buildup while giving the amphibious ships stand-off range which is a necessary and protective

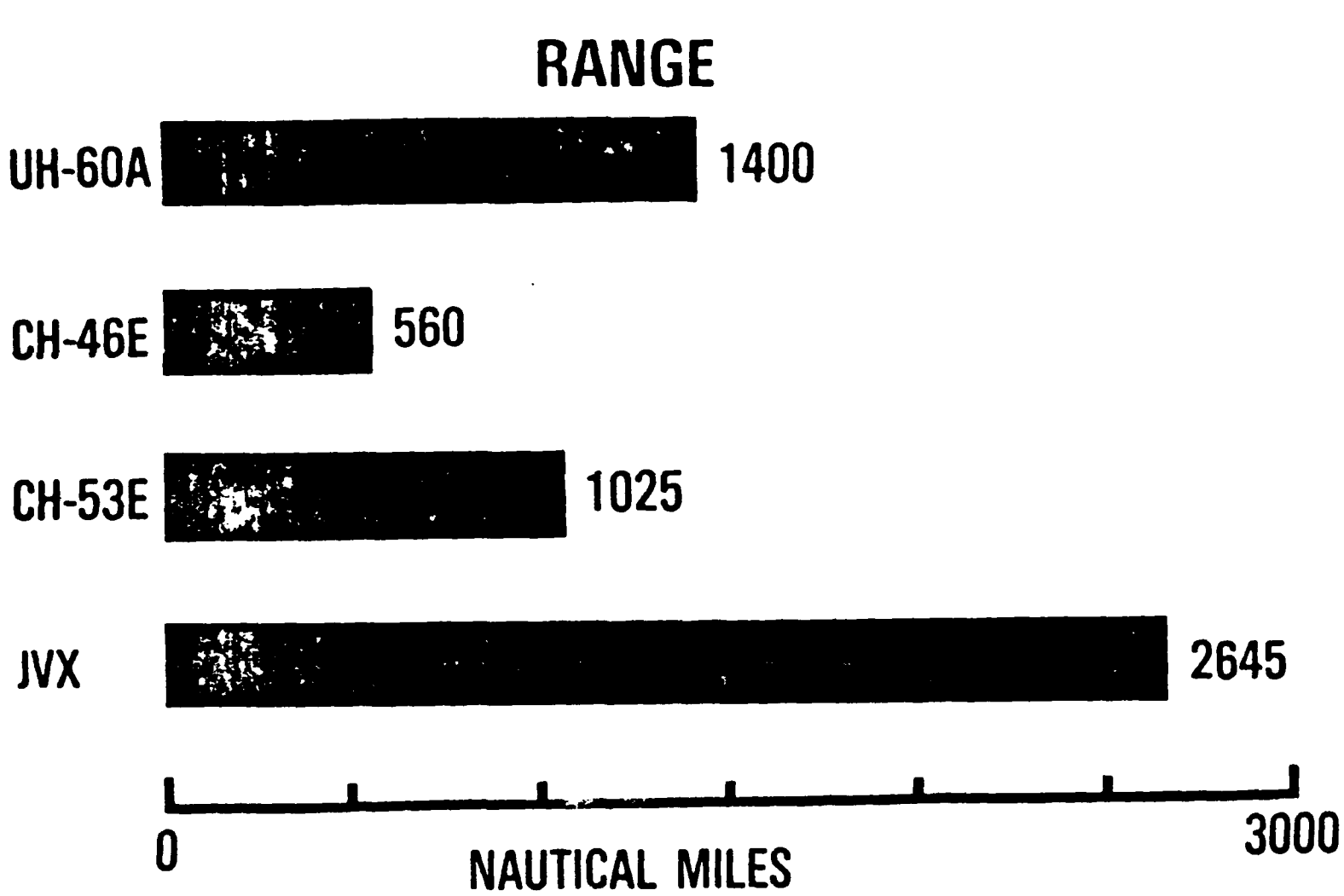

FIGURE NO. (1) SELF-DEPLOYMENT CAPABILITIES COMPARISON: JVX VS. HELICOPTERS[2]

CHAPTER II

THE JVX PROGRAM-PAST, PRESENT, AND FUTURE

What exactly is the JVX program and why is it viewed with importance by the Armed Forces, especially the U.S. Marine Corps? The JVX program is a Joint Service venture which will satisfy the requirement for a common, self-deployable transport. While being capable of Vertical Take-Off and Landing (VTOL), JVX will also be able to conduct operations in conventional, unconventional, and contingency combat scenarios. These scenarios include tactical Nuclear, Biological, and Chemical (NBC) warfare conditions. The ability to operate effectively in such diverse and demanding arenas make JVX a highly attractive military aircraft.[1]

Each of the armed services have expressed an interest in acquiring JVX for use in a variety of missions to include combat, combat support, and combat service support. More specifically, the Air Force desires JVX as a long range Special Operations Force (SOF) transport which will complement their MC-130 aircraft. For a range comparison of JVX vs. helicopters see Figure No. 1. The Navy is interested in a multi-mission aircraft for combat search and rescue, fleet logistics, and special warfare requirements. While Army planners initially expressed an interest in JVX as a medium lift troop and logistics support transport, they now favor the new, all-purpose light

In both the Malayan and Philippine communist insurgencies assault support aircraft gave government forces a decided advantage in mobility.[6] The need for VTOL aircraft became more apparent in order to enhance this limited mobility.

The introduction of helicopters during the Korean War opened a new era for assault support aircraft. Helicopters were able to perform a multitude of tasks with relative ease that were otherwise very difficult or impossible by surface vehicles. The ability to traverse mountainous terrain and then land in a small, confined area proved especially appealing to ground commanders. Both tactical mobility and response time were greatly enhanced with the helicopters. While the severe Korean winter was a formidable challenge, helicopters did not have to contend with jungle terrain, sophisticated AAA, or SAMs. Helicopters gave tactical ground commanders an advantage over the enemy in this conflict. In essence, the Korean War gave the development of the helicopter a new impetus. The helicopter became widely recognized for adding a new dimension to battlefield flexibility and maneuverability.[7]

With the increased mobility afforded by the helicopter, Marine Corps leaders saw a tremendous potential for improving amphibious operations. They began visualizing concepts for employing helicopters aboard naval vessels which would serve as elements of a seaborne aerial assault.

Not only would this new method of aerial assault be faster than the conventional landing craft, but more flexible as well. Marine troops and supplies could be deployed rapidly ashore and at a considerable distance inland. The helicopter's performance in Korea served as a catalyst that generated new concepts for the employment of helicopters in support of amphibious operations. A rapid succession of research groups and planning boards were followed by innovative proposals for employment and doctrine.[8]

The role of helicopters in combat gradually increased after Korea. But they played only a minor role until the Vietnam conflict. During this conflict American forces relied heavily upon assault support airpower for mobility in the jungle and mountainous terrain. The use of helicopters increased steadily, especially for the movement of troops and supplies. Superior American firepower and the mobility of helicopters gave U.S. forces victory after victory. However, the enemy enjoyed the advantage of sanctuaries. The flow of supplies and troops from North Vietnam, therefore, was never permanently stopped. But the helicopter had once again made its mark as an invaluable tool for battlefield mobility.[9]

While assault support airpower with helicopters as its primary vehicle was reaching a new height, greater demands were being placed on helicopters in view of a changing world situation and improved anti-air weapons. It

became apparent that there was an increasing need for rotary winged aircraft that had increased range, greater speed, and better survivability against sophisticated anti-air weapons. The Mayaguez incident in May of 1975 exemplifies some of these needs. The lack of range and the slow speed of helicopters contributed to the large numbers of Americans lost. Since this operation required a rapid response, the Marines were employed aboard Air Force helicopters which were stationed within range of the target area. Thus, the Marine air-ground team concept was not employed. As a result, there was considerable confusion during the landing of the Marines. The limitations of rotary winged aircraft were again apparent. The slow speed of the helicopters precluded the rapid buildup of firepower ashore. The use of JVX with its inherent self-deployability, extended range, and high airspeeds would have solved most of these problems. Rapid buildup of firepower and troops would have been guaranteed.[10]

Recognizing the need to defeat American airpower with surface weapons, the Soviets accelerated their development of more accurate anti-air weapons. These weapons posed greater danger to helicopters which flew slower and lower than high performance aircraft. In the 1973 Yom Kippur War the deadly accuracy of sophisticated anti-air weapons made a profound impact on military planners. In essence, the Arabs were initially able to

neutralize the superiority of the Israeli Air Force with a well-coordinated and sophisticated air-defense system.[11] The race to counter these anti-air weapons had already commenced in earnest. The Israeli air force demonstrated their ability to overcome the air defense obstacle by achieving a stunning victory in the 1982 Bekaa Valley air campaign. By employing well coordinated countermeasures, the Israelis systematically destroyed Syrian SAM radar sites and missiles.[12] This counter to sophisticated air defense also impacted on assault support aircraft survivability. JVX with its greater speed and range will further reduce the vulnerability that helicopters face despite advances in countermeasures such as those used by Arabs in the recent Mideast wars.

THE IRANIAN RESCUE ATTEMPT

On April 24, 1980 the U.S. launched a joint rescue force with the intent of extricating Americans being held hostage in Teheran, the capital of Iran. This force consisted of EC-130, MC-130, and RH-53D aircraft plus members from all four services. All six of the C-130 aircraft and six of the eight helicopters rendezvoused at night on a remote salt flat code named Desert One. From the original eight helicopters, two were forced to abort enroute. One helicopter returned to an aircraft carrier while the second landed in a desert far short of the rendezvous point. The personnel were transferred to another

helicopter. After the remaining six helicopters landed at Desert One, it was discovered that one of the six helicopters had a severe hydraulic problem. The ill-fated rescue mission was promptly cancelled. As one of the helicopters was repositioning to take fuel from a C-130, it collided with the tanker. The explosion and fire took eight lives. The five helicopters were abandoned and the aircrews safely departed Desert One aboard the five C-130 aircraft.[13]

Although there were numerous reasons for the failure of the mission, I shall concentrate on those that were related to the limitations of the helicopters. Because of the restricted speed, range, and the payload limitations, the entire mission grew in complexity. Conseqeuntly, the need for refueling at Desert One and final extraction by C-141 aircraft became apparent. As these requirements expanded, the chance of failure also increased. If JVX had been available, requirements would have been reduced and the entire mission considerably simplified. JVX would have eliminated the need for Desert One, the C-130 aircraft, and the C-141 extraction. Unlike the planned abandoning of the helicopters, JVX would launch and recover aboard an aircraft carrier. Other advantages would have been shorter enroute times, less chance of exposure, reduced command and control requirements, and the ability to complete the entire mission in one night.[14] A graphic comparison of this mission with helicopters and then with JVX as far as times, distances,

and simplicity is depicted in Figure No. 5 and Figure No. 6.

THE WAR IN THE FALKLANDS

The British responded bravely to a 2 April 1982 invasion by Argentina of the Falkland Islands by waging a masterful amphibious campaign which ended in a British victory on 14 June 1982. Helicopters played an important role in the amphibious campaign by flying such missions as resupply, casualty evacuation, reconnaissance, and search and rescue. Boosting the mobility of the British troops ashore, they were highly acclaimed for their high utilization rates when they were in heavy demand.[15] But their slow speed and lack of long range hampered the helicopters from conducting over-the-horizon assaults or rapid buildup of firepower ashore. With JVX, American forces would have had the option of self-deploying instead of having to rely exclusively on slower sealift.

THE INVASION OF GRENADA

Although a very brief campaign, assault air support in the form of U.S. Marine and Army helicopters contributed to the American success in the invasion of Grenada. While the Marine helicopters operated from amphibious ships, the Army helicopters were airlifted to a nearby Caribbean island for staging. Both the Marine and Army helicopters performed admirably while sustaining minor losses to small arms fire

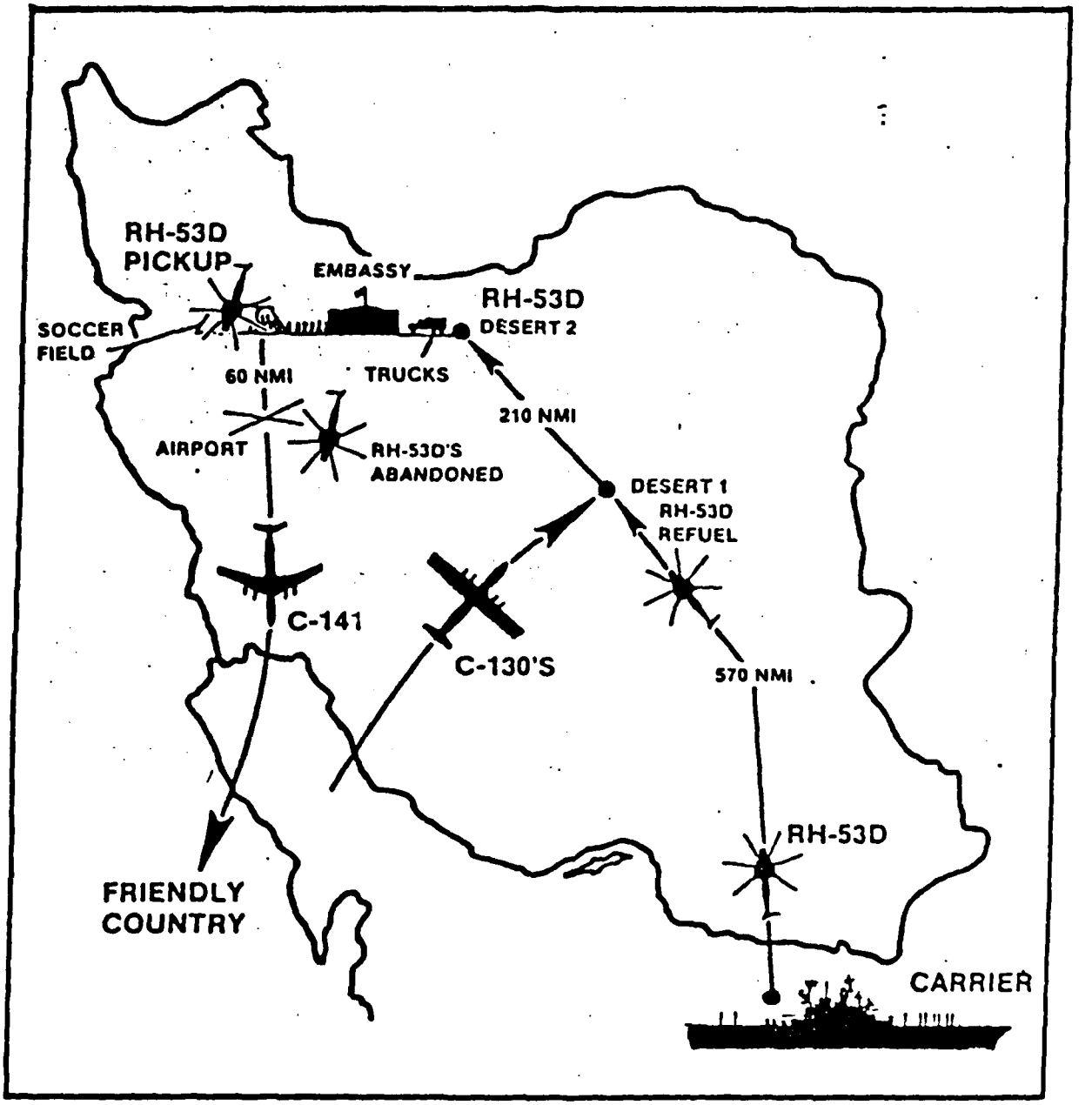

FIGURE NO. (5) IRANIAN RESCUE ATTEMPT WITH RH-53D HELICOPTERS[16]

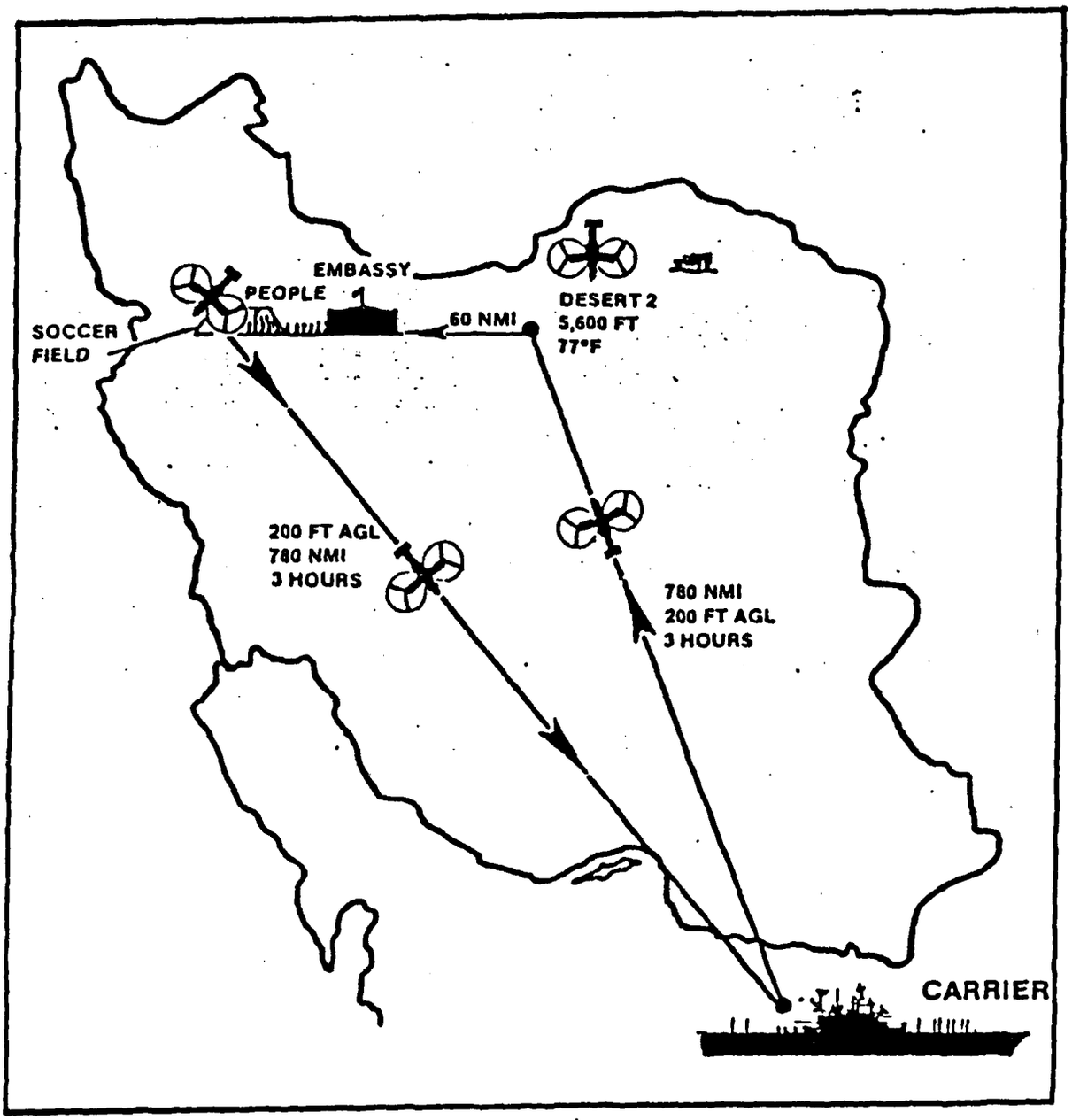

FIGURE NO. (6) IRANIAN RESCUE ATTEMPT WITH JVX [17]

and AAA.[18] If both the Army and the Marines had possessed JVX, airlift requirements would have been minimal; a greater and faster buildup of firepower and men would have been possible; and commanders would have had more flexibility on the battlefield.

CONCLUSIONS

From the study of these conflicts, we are able to draw some simple but valuable conclusions about the application of assault support airpower.

1. Assault support airpower provides a definite advantage of superior mobility for battlefield commanders. This mobility translates into greater maneuverability, resupply capability, and force multiplier.

2. With the advent of sophisticated and more effective anti-air weapons assault support airpower lost its relative invulnerability. Airpower can survive and succeed in a high threat environment but only by using innovative tactics, effective countermeasures, and thorough planning.

3. Real-time intelligence is crucial in future operations if failures similar to some recent U.S. operations are to be avoided. Greater emphasis on acquiring better, more comprehensive intelligence is required.

4. Rotary winged aircraft are important assets in combat but they lack the long range, high speed, and endurance of fixed-winged aircraft. The ability to self-deploy worldwide

would be another asset that would greatly enhance their use in crisis situations, especially in those that demand rapid response.

5. Unless we develop JVX or an equivalent capability aircraft, U.S. options will continue to be limited in response world crises. JVX is better suited to meet future military requirements.

6. Special operations missions require dedicated forces that are highly trained and well equipped if they are to have a chance of succeeding. This same principle applies to joint forces. Self sustaining forces such as the Marine air-ground team should not be divided.

Now that we have reviewed the past, we should next attempt to project ahead by studying trends as they might impact on JVX.

CHAPTER IV

POLITICAL/MILITARY TRENDS THAT MIGHT IMPACT ON THE USE OF JVX

Our foremost concern for the deployment of JVX is whether our strategy of forward deployment will significantly change in the next decade. Recent events indicate that our principal adversary, the Soviet Union, will continue to exploit opportunities to expand their influence either directly-such as in Afghanistan-or indirectly-such as with Cuban surrogates in Angola and Ethiopia.[1] But when the Western powers demonstrate a strong resolve to halt aggression, the Soviets often back away from confrontation. Both the Cuban Missile Crisis and the Berlin Airlift are examples of their retreat once confronted by strength and resolve from the U.S.

In the future U.S. strategic interests will encompass a wide range of regions. The integrity of NATO, the access to oil in the Middle East plus defusing the Arab/Israeli dispute, access to strategic resources in Africa, the continued sovereignty of South Korea, and keeping the sea lines of communication open are some of the global responsibilities that are associated with U.S. national interests. Both our ability to rapidly deploy or be in position to respond to a potential threat serve as the spearhead for our conventional deterrence against aggression. But the U.S. will likely continue to rely more

upon regional powers to undertake their share of the military burden as stated in the Nixon Doctrine.[2] As the leading military power with national interests throughout the world, the U.S. desires to maintain stability in the world and will continue to play a major role in achieving that end. Therefore, the U.S. will not abandon its interests readily. This means that the U.S. will likely continue to employ the strategy of deterrence which in turn involves forward deployment.[3]

Forward deployment has two facets: continental and maritime. Continental means that we maintain a portion of our Army and Air Force in allied nations on the periphery of the Soviet Union in order to be able to immediately react to overt aggression. The stationing of troops, aircraft, supplies, land equipment in Europe, Korea, and Japan is a way of signaling the Soviets that should they initiate hostilities in those regions, confrontation with the U.S. is a certainty. With current regional instability in Southwest Asia (SWA), the maritime aspect of forward deployment has become increasingly more significant. Sea control and power projection, the Navy's two basic functions, are requirements for a successful maritime strategy.[4] Since many nations in SWA are reluctant to provide basing for U.S. land and air forces, the Navy must assume the role as a forward deployed force. Moreover, the Soviet Navy's modernization and expansion is posing a growing threat to our control of the

seas. What we are now witnessing is an alarming trend in which the Soviets have significantly increased their numbers of offensive warships and their air-sea operations, both of which can increase their use of naval forces to attain both military and political goals. To counter this threat, the U.S. Navy is vigorously pursuing a 600 ship Navy.[5]

The U.S. Marine Corps provides Fleet Marine Forces in the form of Marine Air-Ground Task Forces (MAGTF) to the Navy for power projection. A MAGTF is a task organized combined arms force consisting of command, aviation combat, ground combat, and combat service support elements. The three types of MAGTFs are a Marine Amphibious Unit (MAU), a Marine Amphibious Brigade (MAB), and a Marine Amphibious Force (MAF). Often times Marines are the leading edge of U.S. forces introduced into troubled areas of the world. Both Lebanon and Grenada are our two most recent examples. Whether stationed aboard amphibious ships, in remote Far East bases, or in the United States itself, Marines serve as a readily deployable force. Although they specialize in amphibious warfare, Marines have been assigned an assortment of other missions. Because they are the "Force in Readiness", they are constantly seeking ways to improve their ability to rapidly deploy. With the introduction of JVX, a significant increase in deployability would be attained.

Because our deployment strategy demonstrates a need for the capabilities of JVX, factors that might impede its deployment or employment should be considered. In order to be able to effectively deploy JVX, the U.S. must position these aircraft in locations that would accommodate forward deployment. Present locations of Marine air bases in North Carolina and in Japan favor responses to both Europe and the Far East. However, deployment to SWA requires prolonged flights with a number of aerial refueling stops. Landing rights for ground refueling may not be granted in time of crisis as was the case during the 1973 Yom Kippur War.[6] Therefore, appropriate agreements for landing rights for JVX aircraft must be secured or else consideration be given to forward basing.

Another concern is the lack of aerial refuelers. The Strategic Air Command (SAC) currently provides a substantial degree of the strategic refueling for Marine aircraft. But SAC's refuelers must also meet a substantial commitment for the U.S. Air Force and U.S. Army. It is likely that in time of crisis SAC would be over committed. Therefore, military planners must study alternate means for strategic aerial refueling of JVX. The most likely alternative is a heavier reliance upon Marine KC-130 aircraft.

A third factor worth considering is the threat. As the number of Soviet naval aircraft carriers increases, the

CHAPTER VI

A PROPOSED CONCEPT FOR THE DEPLOYMENT AND EMPLOYMENT OF JVX DEPLOYMENT

DEPLOYMENT

When faced with credible, mobile forces that can react rapidly, an ambitious nation is not likely to pursue aggressive policies. Deterrence, therefore, has been high on U.S. priorities. In that regard aircraft can be a part of a deterrent force where units are positioned geographically so as to be able to rapidly deploy to potential world trouble spots. Since the three MPS MABs along with the MAUs afloat will probably be the first Marine units to react to a world crisis, JVX squadrons should be positioned for quick employment by the three MABs. If conditions preclude positioning near the MABs, alternate but viable contingency plans for rapid and long-range deployment should be formulated early.

Credible deterrence requires that forces be located near to the potential trouble area or capable of arriving rapidly. In the case of the deployable force the more rapidly it can respond the better the deterrent. The present location of Marine air bases is adequate for rapid responses with adequate numbers of JVX aircraft to East Asia, Central America, and even Western Europe. (See Figure No. 11) However, SWA, the Middle East, and much of Africa will require more time and logistics supports. Three options are available for those areas. JVX aircraft can be

assigned to fixed-wing aircraft such as the KC-130 are airlift, air delivery of critical materials, and inflight refueling which JVX will primarily be tasked with the vertical assault airlift. Essentially, the JVX will provide the tactical mobility and logistic support for ground combat elements. A variety of tactical maneuvers such as envelopment, double envelopment, or encirclement can be rapidly employed with vertical lift aircraft.[15] Since vertical envelopment with helicopters was introduced in the Korean War, JVX, with its signficant increase in range and speed, will be the first revolutionary change in this concept of warfare.

Because of its greatly improved range and speed, JVX may very well be called upon to perform the tasks of air delivery and evacuation since the use of KC-130 aircraft will be constrained by numbers and adequate airfields. The success of the initial phase of the amphibious assault in particular may well depend upon the flexibility of the JVX for assault support.

in the seizure and defense of advanced naval bases and conducting land operations as necessary for the prosecution of a naval campaign. According to Marine Corps doctrine, Marine aviation supports the landing forces throughout the amphibious assault and for any subsequent operations.[13] Normally, this support is derived from tactical Marine aircraft squadrons operating from Navy ships such as carriers or even from airfields within striking distance of the amphibious objective area (AOA). These aviation units will eventually phase ashore to continue support of the landing forces. A collateral mission is to participate as an integral component of naval aviation in the execution of such other Navy functions as the fleet commanders so direct.[14]

Marine Corps aviation is organized, trained, and equipped as an expeditionary air arm which can operate ashore from austere airfields and sites. The shift from conventional fixed-wing to the Harrier VSTOL aircraft reflects the trend toward more flexibility and responsiveness for the ground commander. JVX is in keeping with Marine Corps expeditionary doctrine.

Marine Corps aviation encompasses a variety of tasks. Assault support is one of the functions of Marine Corps aviation and the one which JVX will be called upon to perform. This function includes such tasks as vertical assault, tactical airlift, and air evacuation. The tasks

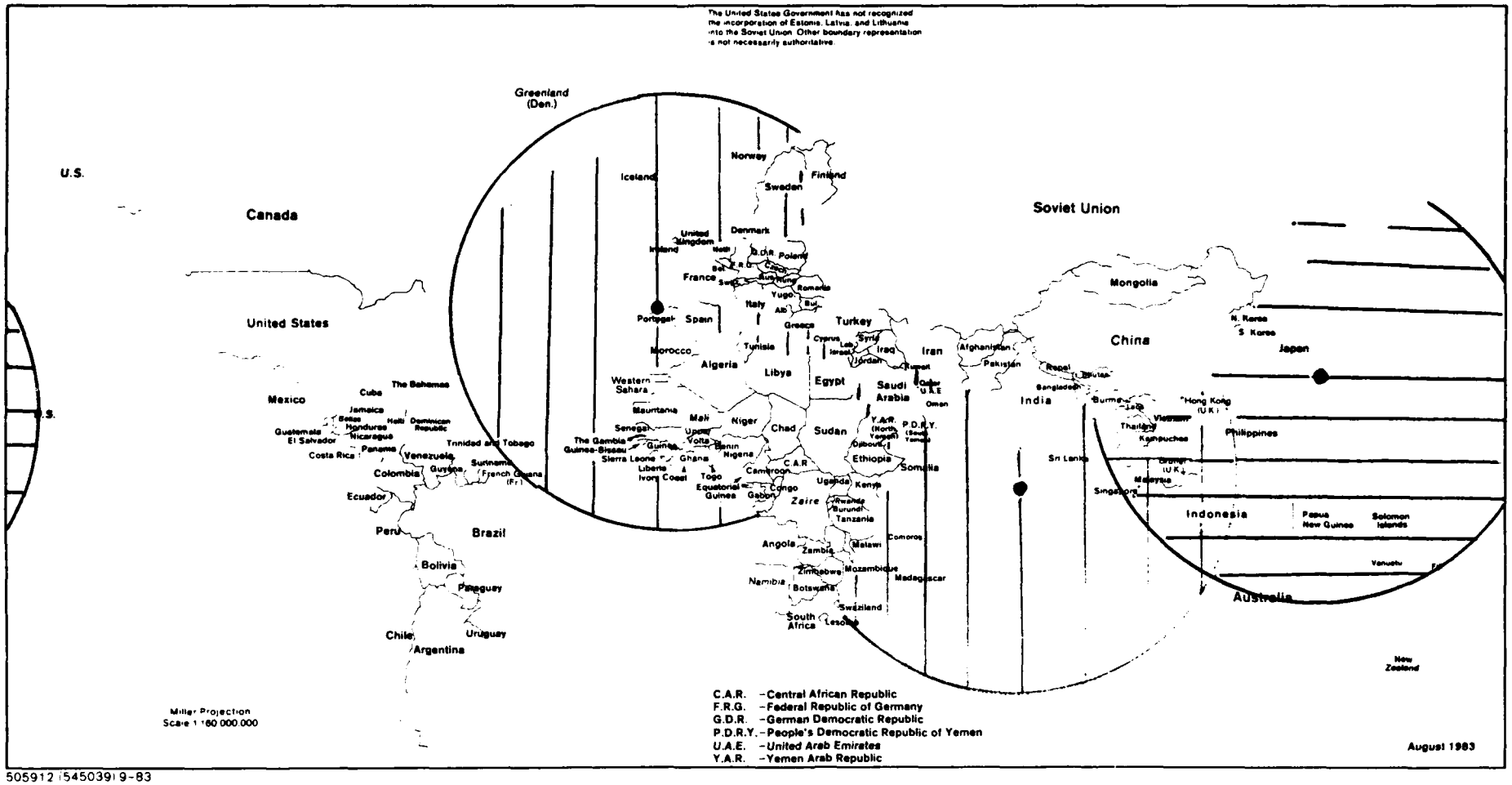

FIGURE NO. (10) MPS 7-DAY STRATEGIC REACH[12]

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PACIFIC OCEAN MPS — ATLANTIC OCEAN MPS — INDIAN OCEAN MPS

a result of carrying the equivalent of a Marine aviation intermediate maintenance activity on board, the TAVB vessel will also have berthing for 300 maintenance personnel. The Marines will have the option of cycling aircraft equipment aboard for repair by means of a helicopter landing platform on the ship or off-loading the repair facility and parts for phasing the maintenance activity ashore. The TAVB will save 160 strategic airlift sorties allowing JVX deployments to be more responsive.[10]

In essence, MPS is the U.S. answer for a rapid yet sustainable force in remote areas of the world. By late 1986 all three MPS squadrons will be deployed and ready for action. From their ocean stations these ships will be able to steam to many of the potential trouble spots, such as SWA, within seven days. (See Figure No. 10) This compares very favorably with current airlift capability which recently required 20 days to deploy a single airborne battalion to the Middle East. By comparision JVX would require 14 flight hours to Northern Europe, 21 to Southern Africa, and 26 to SWA.[11] (See Figure No. 2)

MARINE CORPS DOCTRINAL GUIDELINES FOR THE EMPLOYMENT OF JVX

In order to better understand the deployment role of JVX in the Marine Corps, the mission of Marine aviation must be examined. The primary mission of Marine Corps aviation is to provide air support for the Fleet Marine Force (FMF)

The U.S. Air Force has an aging fleet of C-141 aircraft that must either be replaced or undergo an expensive service-life extension program by the end of this century. The Air Force hopes to replace the aging C-141 aircraft with the C-17, a wide-body cargo aircraft capable of both inter and intra-theater lift.[9] Although the Air Force will also attempt to increase the airlift capability for the future, there will be a greater need. Continued competition for airlift assets is exemplified by the Army's increase in the number of divisions. Therefore, the dependence on airlift for assault support aircraft may not be prudent in view of the continued competition for MAC and SAC assets. Strategic airlift shortages make the JVX even more appealing.

What may lend some assistance to JVX's ability to deploy without heavy reliance upon airlift for maintenance support equipment is the Maritime Prepositioning Ships (MPS) program. Labeled as a maritime program which substantially increases mobility, sustainability, and flexibility, MPS will consist of three squadrons of military cargo laden ships strategically positioned near potential trouble spots that coincide with U.S. national interets.

Each MPS squadron will carry the major equipment plus 30 days of supplies for a MAB. MPS will also eliminate airlift requirements for air support equipment which will be prepositioned aboard an aviation support ship, the TAVB. As

is marginal at best. The probability of delay or even pre-emption by a higher priority cargo is very high. Our sealift capability is too slow for situations that demand a rapid response to areas such as in SWA. But sealift plays a crucial role in sustaining our combat power since as much as 90% of our supplies and equipment are carried by ship.[7] Only top priority airlift and the Amphibious Ready Group (ARG) with a MAU aboard are our answers to the rapid deployment of Marine assault support aircraft today.

THE FUTURE

Current plans include increases in both our airlift and sealift capabilities. But conditions will not significantly improve until the 1990's and beyond. The fate of strategic lift programs is tenuous as they continue to come under the close scrutiny of budget cutters in our government.

If current plans become a reality, the Navy will have enough amphibious shipping to lift the equivalent of the assault echelons of one Marine Amphibious Force (MAF) plus one MAB by 1994.[8] (See Figure No. 9) This will be an improvement over our present capability. But the standing deployment will remain the same with two MAU's afloat or possibly an increase of one additional MAU. Hence, our rapid response capability will remain essentially the same while the potential for greater lift will increase.

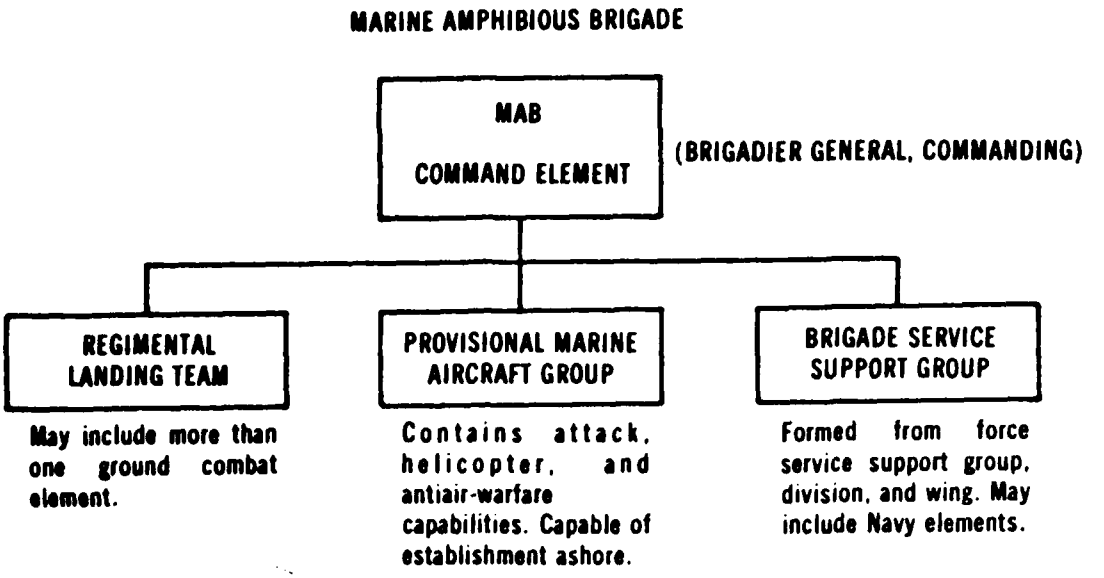

Figure No. 8 Typical organization of a Marine amphibious brigade. The MAB [6]

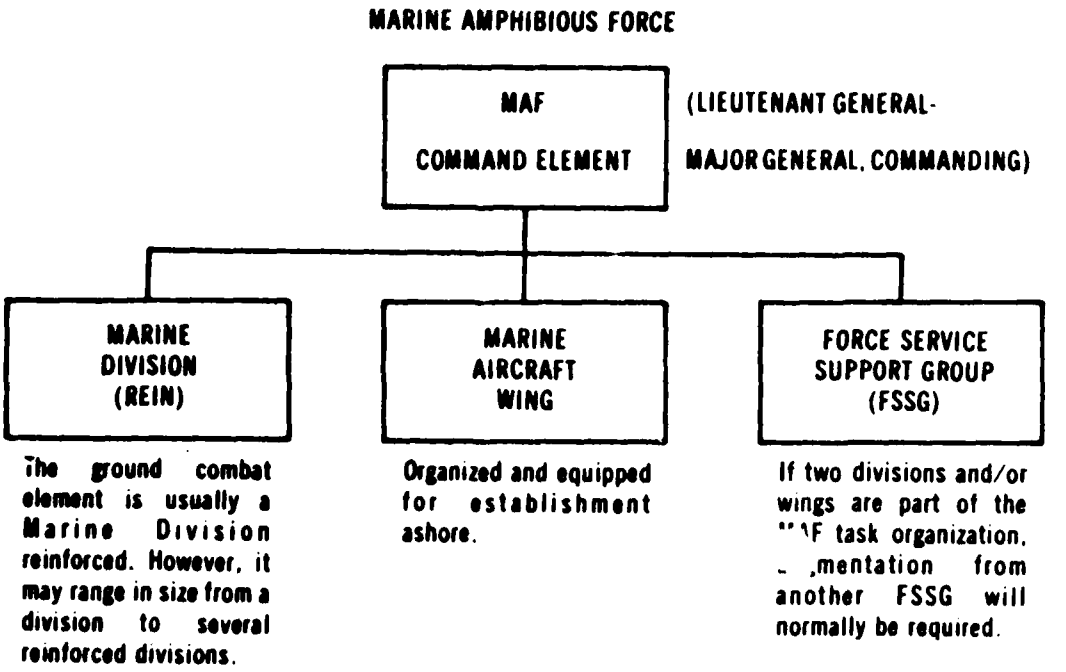

Figure No. 9 Typical organization of a Marine amphibious force. The MAF [6]

In 1980 the Joint Chiefs directed the Military Sealift Command (MSC) to establish a maritime prepositioning program.[4] This was a reaction to the deteriorating situation in SWA because of the fall of the Shah of Iran and the invasion of Afghanistan. Besides concern for regional stability, the threat to the flow of oil became the U.S. government's primary motivation for establishing a credible deterrent. The Rapid Deployment Joint Task Force (RDJTF), later named Central Command (CENTCOM), was formed. In addition to the establishment of RDJTF the Near Term Prepositioned Force (NTPF) became the first step in an important part of the equation for a rapid and sustainable force in SWA. With seven chartered commercial ships positioned in the Indian Ocean, the NTPF vessels carry much of the supplies and equipment for an 11,000 man Marine Amphibious Brigade (MAB). (See Figure No. 8) All that is required to marry-up the complete MAB is the flight ferry and airlift of troops, aircraft, and certain aircraft support equipment.[5]

Marine assault support helicopters, however, still require substantial airlift to remote regions plus the time and means for disassembly and assembly. Sealift is an alternative to constrained airlift, but the trade-off would be a loss of rapid response.

To summarize, the present U.S. capability for rapidly deploying Marine assault support aircraft worldwide

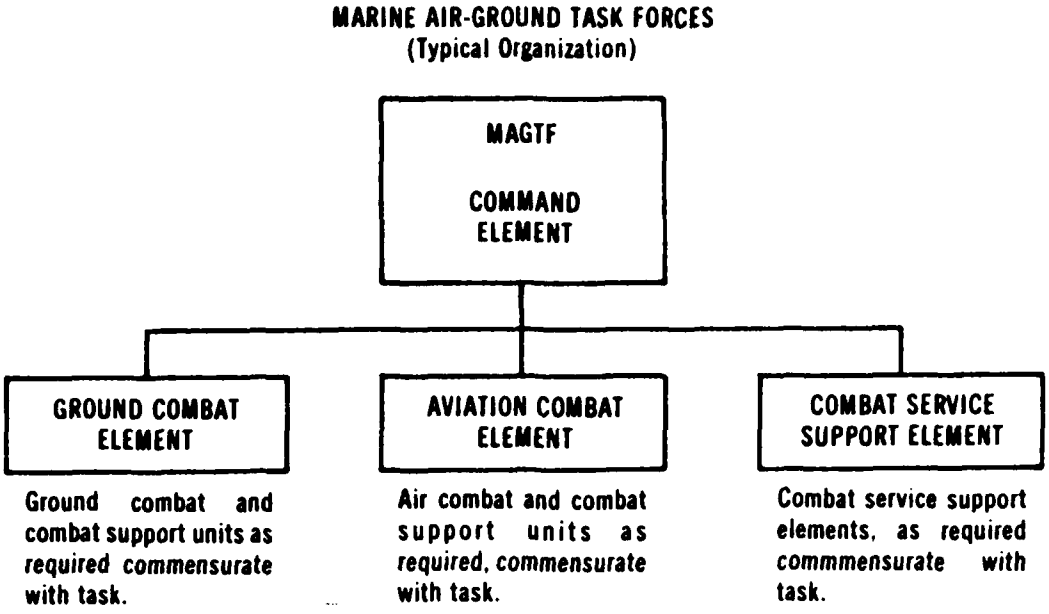

Figure Typical organization of Marine air-ground task forces.

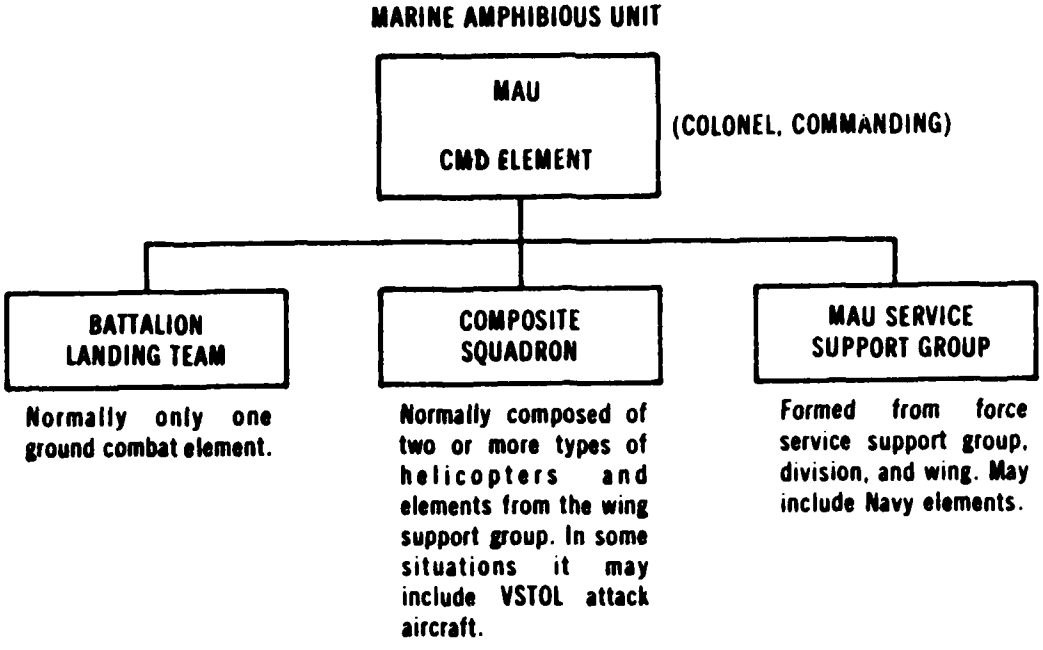

Figure No. 7 Typical organization of a Marine amphibious unit. The MAU[3]

now attempting to correct this deficiency.[1] On the other hand, although sealift is an important aspect of our strategic mobility, it also has its limits. Shipping requires a benign environment for off-load; it has a limited self-defense capability; and it is slow (15 to 25 knots). Still, though it may not provide a rapid response, sealift will provide the tonnage and bulk of supplies for sustainability in combat.

Currently, our maritime strategy maintains two standing Marine Amphibious Units (MAU's) on worldwide deployment. (See Figure No. 7) While one of these MAU's is deployed to the Mediterranean, the other is in the Western Pacific. Integral to each of these MAU's is a composite squadron of Marine assault support helicopters. These are our front line amphibious forces. However, these units are very limited in combat support, sustainability, speed, and range: 12 CH-46 and four CH-53 helicopters to support a battalion landing team; only equipped for a short duration campaign with 15 days worth of supplies; slow (100$\pm$kts) compared to fixed-winged aircraft (500$\pm$kts); and a severely limited range (100$\pm$nm). Although the MAU can make a forceable entry against a hostile shore in a low threat environment, it is best suited as a show of force or as a quick reaction to a crisis situation (Lebanon and Grenada).[2]

CHAPTER V

PRESENT AND FUTURE CONSIDERATIONS FOR DEPLOYING/EMPLOYING MARINE ASSAULT SUPPORT AIRPOWER

I shall now evaluate and contrast present and future capabilities to deploy Marine assault support aircraft. A comparison of the present situation with the future requirements reveals an increasing demand for strategic mobility. JVX will be able to reduce these requirements by its ability to self-deploy. Doctrinal guidelines for employment of assault support airpower once it arrives for combat will also be addressed.

PRESENT

Current strategic airlift has a number of limitations: extensive requirements for support equipment which is sometimes cumbersome; long runways; and the user must have a high priority for airlift. Marine assault support airpower would rely upon a high priority to airlift large numbers of aircraft, equipment, and troops.

Until the 1980's the focus had been on strategic airlift to the detriment of sealift. The reason has been the attention devoted to the concept of rapid troop reinforcement of NATO. Equipment and supplies are already prepositioned in Europe with Prepositioned Organizational Material Configured in Unit Sets (POMCUS). Meanwhile, our strategic sealift capacity has steadily declined since WWII and the last ten years in particular. But the U.S. Navy is

concentrations, and fly long distances over water where navigational aids are few or nonexistent. State-of-the-art Forward Looking Infrared (FLIR) systems and Night Vision Goggles (NVGs) systems will provide excellent visual acuity at night, especially at low altitudes. These mission enhancements will support the procurement of JVX.

Soviets will gain the added ability to disrupt U.S. aircraft employment from Navy ships, especially during amphibious operations. JVX aircraft will require escort aircraft or they must be configured for self-defense. In addition, defensive tactics must be formulated and then exercised to enhance survivability.

Another factor that warrants serious consideration is the development and use of real-time surveillance. The race to improve remotely piloted vehicles (RPVs) for real-time surveillance is warranted considering their merit for a wide variety of tactical situations. With the ability to gain real-time surveillance from RPVs, JVX aircraft would avoid high threat corridors and enemy infested landing areas. With miniaturization, small RPVs could feasibly be strung underneath a JVX aircraft for use at the pilot's discretion. Other possibilities are long endurance RPVs or dedicated satellites for crisis situations. The development of a flexible but reliable real-time surveillance system would greatly enhance JVX as well as other aircraft.[7]

Finally, technological advances should allow pilots to navigate JVX with extreme precision to include periods of low visibility and darkness. The Global Positioning System (GPS) will make aerial navigation simple and precise. Pilots will know their exact locations regardless of the weather, day or night. They will also be able to chart and fly precise routes, circumnavigate known enemy

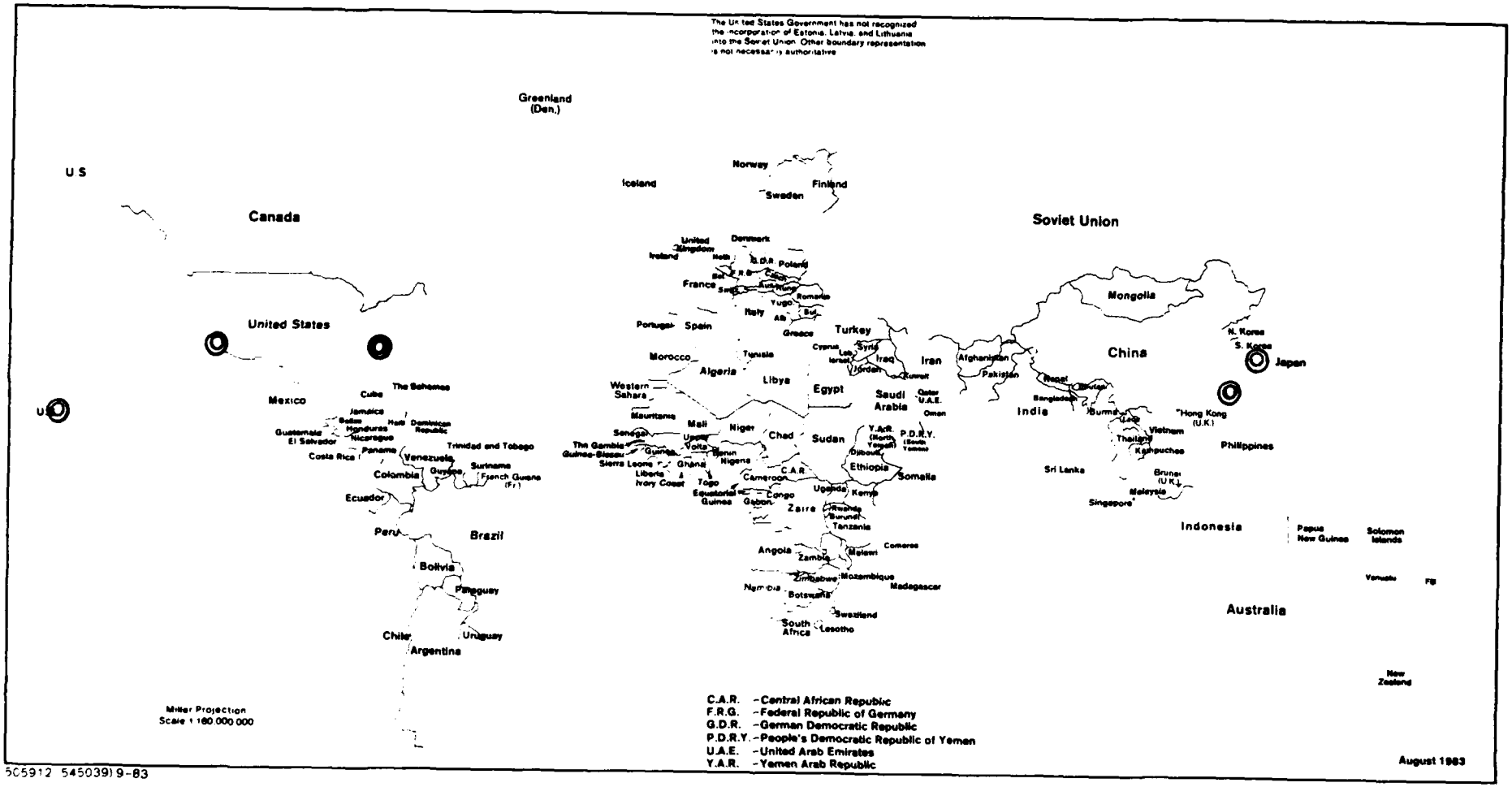

FIGURE NO. (11) USMC AIR STATION LOCATIONS WORLDWIDE

Legend for Marine Air Stations: ◎

airlifted by strategic assets or the JVX aircraft can be self-deployed. As discussed earlier, strategic lift may not always be available unless a very high priority exists. The second option, however, is fraught with potential problems: revocation of overflight or basing rights plus the possibility of encountering adverse enroute weather, mechanical problems, and fueling delays. For a flight route example to SWA see Figure No. 12. The third option is the obvious solution of forward deploying (on a rotational basis) several JVX squadrons in the Mediterrean/European area.

These rotating JVX squadrons could be flight ferried across the Atlantic. Enroute refuel stops would be made at Bermuda and the Azores (the Southern route) or over Canada and Iceland (the Northern route). Once situated at a U.S. base in Europe such as at Rota, Spain or Siganella, Italy, the JVX units would continue their training and participate in military exercises as required. The squadrons could also rotate to Europe aboard either LHA/LPH amphibious ships or CV/CVN carriers for mid-Atlantic launches to their European base, or else be carried until within close proximity to suitable European bases.

There are numerous advantages to this type of forward positioning of JVX squadrons in Europe. The most perilous half of a deployment to the volatile SWA region would no longer be necessary because these forward deployed

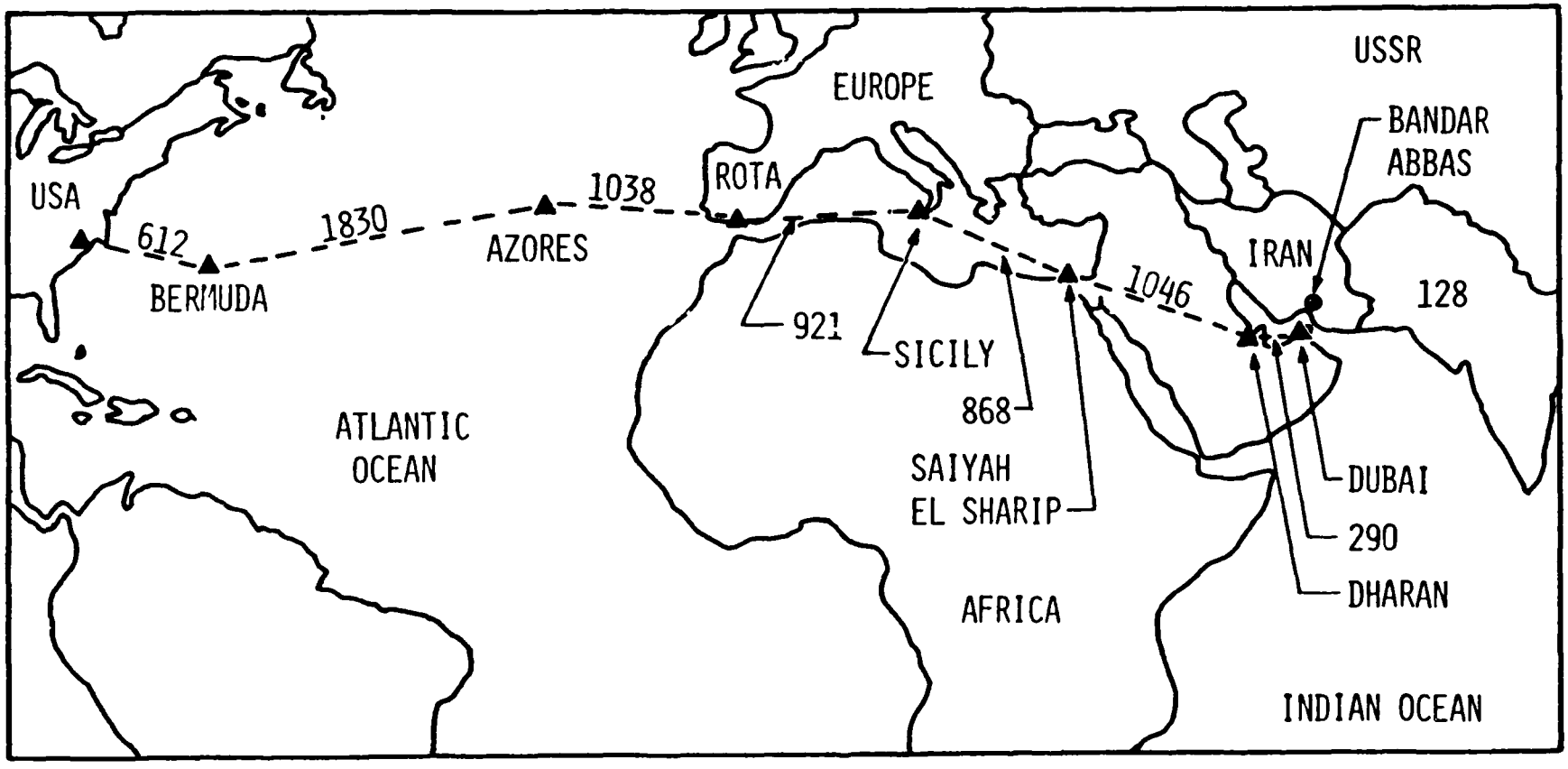

FIGURE NO. (12) JVX FLIGHT ROUTE TO SWA[1]

squadrons would be poised for immediate deployment. Aerial refueling would be unnecessary since extended flights would be radically reduced. (See Figure No. 12). Besides being able to react to SWA, forward deployed JVX squadrons could reach Norway, the southern flank of NATO, the Middle East, or North Africa. They would also be made available to support the Mediterrean MAU. The tremendous savings in strategic airlift would be signficant while a lengthy and complex self-deployment on a short notice basis would be eliminated. More important would be the rapid response capability which equates to a stronger deterrence.

With JVX squadrons located at present Marine Corps air stations plus at a U.S. base in Southern Europe, the Marine Corps could easily dispatch these units to rapidly join the MPS MABs. Although the exact final locations of the MPS have not been determined, plans call for a total of three MPS squadrons to be located in the Indian Ocean, the North Atlantic Ocean, and the Pacific Ocean.[2] The MPS squadrons would then be able to steam to most contingency areas within seven days. (See Figure No. 10) Similarly, Marine forward deployed JVX units would be able to quickly deploy to these same areas. While awaiting the MPS squadrons to arrive, JVX units could work on maintenance, planning, reconfiguration for mission accomplishment, and coordination with MAGTF forward elements.

Without the forward positioning of JVX squadrons, the Marine Corps must develop a plan for self-deploying JVX that would include extended range flights requiring aerial refueling. The most difficult contingency plan would involve a JVX deployment to SWA from either the U.S. or East Asia. Although either option (self-deployment from either the U.S. or East Asia) would require 22 to 26 flight hours, the most difficult portion of the plan would involve acquiring aerial refueling assets and obtaining airspace authorization from foreign countries. Aerial refueling delays, faulty navigational equipment, unexpected head winds, inclement weather, inflight emergencies, and communication breakdowns are some of the problems that plague all extended overwater flights. They would be especially critical in time of crisis.

An alternative to aerial refueling could be the utililzation of vessels for on deck "hot" refueling (refueling while the engine is running). These vessels might be the MPS ships themselves or U.S. Navy ships such as amphibious platforms or CV/CVN's. Since MPS squadrons could be positioned at pre-planned refueling locations along JVX trans-oceanic flight paths, these ships provide an excellent option and should be a major consideration. Compatible radio and navigational equipment, hot refueling capability, and adequately trained refueling and air operations personnel aboard the MPS ships would be required.

EMPLOYMENT

With the introduction of the MPS MABs and JVX I visualize the employment of Fleet Marine Forces in general, and JVX in particular in three echelons. These three echelons are analogous to a three pronged spear. This lethal spear will have the following three characteristics: (1) the ability to respond quickly; (2) the flexibility to reinforce the original combat force or to divert forces rapidly to other areas; and most importantly (3) sustainability for combat.

The first echelon involves the JVX squadrons aboard rotating MAUs as assault support helicopters have done in the past. They shall remain the forward air component, be the first to respond to an amphibious campaign, and will launch from amphibious ships in support of a BLT. For an artist's example of JVX in the assault support role, see Figure No. 13. The MAU remains the most responsive of all MAGTFs and is well suited to be the vanguard in an amphibious operation. It must still be resupplied quickly, however, to sustain combat.[3]

Our second echelon combat units are the MPS MABs with dedicated JVX squadrons stationed worldwide. The Atlantic Ocean MPS MAB will likely rely upon JVX squadrons stationed on the East coast of the U.S. while the Pacific Ocean MPS MAB will likely depend upon Okinawa based JVX squadrons. But if JVX squadrons are deployed to Southern

FIGURE NO. (13) JVX IN THE ASSAULT SUPPORT ROLE[4]

Europe, the Indian Ocean MPS MAB could rely upon those units. When directed, the various elements of the MAB plus the MPS squadron would deploy to a specified location to rendezvous for employment. While the MPS squadron is steaming to the designated littoral area, JVX squadrons would be self-deploying to the objective area. Simultaneously, tactical fixed-wing aircraft would be flight-ferried while MAB personnel were being airlifted. Within 7 days, all elements of the MPS MAB would be in place and ready for combat. While the MPS has 30 days of supplies, the JVX squadrons would be sustained by an aviation logistics support ship, the TAVB. This ship will carry the Marine intermediate maintenance activity and serve as a mobile base for supporting Marine rotary and fixed-wing aircraft in an expeditionary mode. Helicopters will be able to land on the TAVB and deliver aircraft parts to aviation maintenance locations ashore. When feasible, all or part of the embarked IMA assets may be relocated ashore.[5]

Ideally, the second echelon of combat power (the MPS MAB) could perform a number of tasks with the JVX serving as the backbone of assault support. Some of these tasks include reinforcing an amphibious operation; occupying and defending areas bordering key choke points along strategic sea lines of communications; and reinforcing an ally.

The third echelon would be the deployment of a MAGTF from the U.S. aboard the remaining available

amphibious shipping. JVX units would likely deploy aboard this shipping although the option of self-deployment would exist if aircraft deck space became critical. Since the third echelon would require the most time to respond, military planners must take the long time delay into consideration. This third echelon force would be capable of a forceable entry in the event military planners decide to conduct a different amphibious assault than that of the first echelon. But the principal difference between the two would be the reaction time and force size, i.e., the first echelon MAU could respond quicker to a crisis and would be smaller than a MAB or MAF.

How should JVX be employed in each of the three echelons? A commander would have several options. The first would be to airlift as large of an assault force ashore in the shortest time possible and without having to refuel JVX aircraft. Two sorties out to a range of 50-110 nautical miles would be possible before refueling would be required. The advantage in this option is that a rapid employment of airlifted forces could be inserted into critical chokepoints and key terrain before the enemy could react. The second option would involve carrying cargo, both externally and internally, for a rapid buildup of firepower in place of force buildup. Certain scenarios might require this approach. The last option would be to blend the first two options; a limited buildup of forces but with ample

firepower. Depending upon the threat to friendly aircraft, there will probably be fighter escorts assigned with the initial assault waves of JVX aircraft. Real-time battlefield surveillance will enhance mission accomplishment and survivability. The speed, range, and endurance of JVX will greatly increase the limited battlefield maneuverability that now exists with helicopters.

FOUR CRISIS SITUATIONS SCENARIOS FOR JVX

Potential crisis areas today include SWA, Korea, Norway, and Central America. Although future events may dictate a change in our national interests, these four settings offer challenges that could appear anywhere. Therefore, I shall use them to exemplify JVX's capabilities to rapidly respond and then give the commander the option to either be poised for combat or immediately engage an enemy.

Southwest Asia

The National Command Authority (NCA), in response to a crisis, has directed that Marine forces be dispatched to SWA as soon as possible. CENTCOM would then alert unified and specified commands of the support requirements for the deployment of Marine forces. One of the two standing MAUs aboard an ARG would already be enroute. Having departed its anchorage in the vicinity of Diego Garcia, the Indian Ocean MPS squadron would also be enroute. Similarly, JVX squadrons from Rota, Spain would be flying across the

Mediterranean with refueling stops at Naples, Cairo, Riyadh and a final stop in Oman. The remaining elements of the 7th MAB would simultaneously be airlifted and flight ferried to Oman. With the assigned mission of occupying and defending the area bordering the Straits of Hormuz from a pending Soviety mechanized attack, CENTCOM would direct that the first echelon Marine force, the MAU afloat, conduct an amphibious assault against Bandar Abbas. After the MAU has secured the airfield and port facility at Bandar Abbas, the 7th MAB would reinforce the MAU from Oman while a naval carrier battle action group provides naval and air support as the Marines phase ashore. Meanwhile, JVX is employed in the initial airlifted assault waves from the MAU against the Bandar Abbas airfield. Additional support is provided by subsequent waves of airlifted 7th MAB Marines aboard their own integral JVX assault support aircraft. Despite the distance from their base in Oman to Bandar Abbas, the JVX aircraft would be able to effect the extended range vertical assault because of its unique capability. Otherwise, the buildup of forces at Bandar Abbas during the critical first hours would have been severely limited. This sudden and quick deployment of American forces to Bandar Abbas could deter the Soviets from aggression.

Korea

The North Koreans have recently massed a formidable invasion force along the DMZ. Once again the NCA directs

PACCOM to deploy Marine units to Korea in anticipation of the outbreak of hostilities. A standing MAU is dispatched to the crisis area while the Pacific Ocean MPS and its MAB are directed to deploy to Pusan, South Korea. In this situation, the preponderence of the MAB personnel and aircraft deploy from bases in Japan. Consequently, the marry-up of the MAB and the MPS occurs within a matter of days. Additional amphibious shipping is diverted to Korea along with naval combatants and U.S. Air Force squadrons. This rapid buildup of forces plus the U.S. amphibious capability deter the North Koreans from invading. Because of JVX and LCAC, the North Koreans would have had to contend with over-the-horizon amphibious assaults combined with vertical envelopment.

The Northern Flank of NATO

In the third scenario Norway has reported some border violations by the Soviets near the Kola Peninsula. The incursions are mounting in both frequency and intensity. As a result, both Soviet and Norwegian forces have been placed on alert and a formidable Soviet buildup along the common border has commenced. Norway requests the U.S. Norwegian dedicated MAB as soon as possible. Both the Atlantic and European Commands respond as the NCA directs the deployment of the designated MAB. With the majority of the equipment already pre-positioned in Norway, MAB personnel and aircraft commence an air movement to Norway

from the East coast of the U.S. JVX squadrons in Rota, Spain are directed to remain in place while the U.S. based JVX units are self-deploying along a northern route to Norway. The entire air movement occurs in less than seven days. Additional U.S. and European forces are placed on alert. In this scenario JVX will be able to operate from their southern bases in Norway and at remote refueling sites in the northern part of the country. This rapid movement of forces catches the Russians by surprise. NATO is able to avert a probable invasion on the northern flank.

Central America

Nicaragua has escalated border attacks against Costa Rica under the pretext of pursuing Contra freedom fighters. In response, Costa Rica asks the U.S. to temporarily station U.S. forces in and around their country. The NCA directs SOUTHCOM to deploy U.S. force to deter or defeat an invasion. While U.S. naval forces converge in the waters adjacent to Nicaragua, both a standing MAU and the Atlantic Ocean MPS and MPS MAB are dispatched to Costa Rica. U.S. Army and Air Force units are brought into Costa Rica from the U.S. All efforts are accomplished within 7 to 14 days. JVX squadrons are self-deployed from the East Coast and West Coast JVX squadrons are placed on alert. Operating from amphibious ships or bases in Costa Rica, JVX aircraft could fly anywhere in Nicaragua and back to their home stations without refueling. They could be employed in a maneuver to

response catches the Nicaraguan government off guard. The border incidents disappear.

In each of the above scenarios the ability to respond rapidly with a self-deployable aircraft adds much greater mobility to deployment and the battlefield, therefore providing a strong deterrence against aggression. Forward positioning improves the Marine Corps' ability to self-deploy JVX to the most remote regions. The cost would be minimal compared to the long range benefits. If deterrrence should fail, battlefield commanders will have the increased mobility and speed that only JVX can provide. The mere thought of moving entire battalions 50 nm in 10 to 15 minutes or 100 nm in 25 to 30 minutes is exciting to any commander.

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effectiveness for combat. With the virtual elimination of airlift requirements, runways, limited range and endurance, and slow speeds, military planning and execution will become greatly simplified. JVX is the solution for the future enhancement of assault support airpower.

CHAPTER VIII

CONCLUSION

The U.S. military in general and the Marine Corps in particular are now at an important crossroads. One direction leads down the old familiar path of the status quo with obsolete helicopters performing assault support missions. As in the past, their inherent limitations in speed, range, and endurance will restrict combat potential. The other direction leads toward the development of a revolutionary aircraft for assault support and inevitable progress in achieving combat power.

This is the opportune time to select the road to progress. The enemy threat, the world situation, the advances in technology, and the continued limitations of helicopters compel us to develop and procure a dramatically advanced aircraft for assault support airpower--the JVX. The Marine Corps has a pressing need to replace its fleet of CH-46 helicopters which serve as the aging backbone of their assault support capability. Most important, the JVX provides tremendous improvement in conducting amphibious operations--the Marine Corps' trademark.

JVX will not only add a new dimension to amphibious warfare but will revolutionize assault support airpower. The combination of helicopter/airplane capability will give commanders and military planners greater flexibility and

rapidly self-deploy and be able to engage the enemy upon arrival.

To improve the Marine Corps' ability to provide a rapid response with JVX on a short notice basis, serious consideration should be given to the proposal to forward deploy JVX squadrons to Europe. This forward positioning will achieve a balance in the Marine Corps' ability to react to most potential trouble spots in a timely and effective manner, with JVX and MPS.

support airpower, a need to develop an aircraft that would eliminate rotary wing limitations while still possessing a VTOL capability was apparent.

There is also a pressing need to have a self-deployable assault support aircraft since strategic airlift will be heavily taxed while the alternative, sealift, is slow. The ability of JVX squadrons to rapidly self-deploy and join MPS lends greater credibility to deterrent capability.

A study of recent trends in warfare favor the development of JVX. Technological advances for military aviation will enhance JVX's ability to accomplish its mission and still survive the formidable anti-air threat that our adversaries have developed.

JVX's unique capabilities will not only be able to fulfill Marine Corps doctrine and the traditional role of Marine assault suppport, but JVX will add greater flexibility to the conduct of amphibious operations and possibly expand the role of vertical assault support. When combined with LCAC, JVX will make over-the-horizon amphibious assaults routine plus, within a short time, achieve an unprecedented and spectacular buildup of firepower and forces ashore.

Our four scenarios for crisis situations clearly illustrated the flexibility and military value of the JVX. They vividly demonstrate JVX's revolutionary capability to

CHAPTER VII

SUMMARY

I have reviewed the initial development of tilt-rotor aircraft and the progress that eventually led to the JVX program inception by Department of Defense. From this retrospective glance it is apparent that the feasibility of developing and employing such a revolutionary aircraft depended upon such factors as improved technology, a valid requirement, political and military strategy which encouraged the acquisition of such a unique aircraft, and the aeronautical limits of rotary wing aircraft.

In the review of past conflicts I examined a variety of factors that influenced the effectiveness of assault support airpower as well as those elements which limited its success. Assault support airpower enjoyed remarkable success in its infancy against primitive adversaries when the weather and terrain were favorable, and where anti-air weapons were not a threat. With the introduction of helicopter assault support, airpower gained new prominence with its ability to operate without runways and from small platforms aboard ships. VTOL aircraft proved their great military value in many conflicts. Although helicopters had many advantages, they were relatively slow and lacked range and endurance. The Iranian rescue attempt clearly revealed these limitations. As I tracked the progression of assault

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