

# U.S. Marines in the Persian Gulf, 1990-1991

## THE 3D MARINE AIRCRAFT WING IN DESERT SHIELD AND DESERT STORM

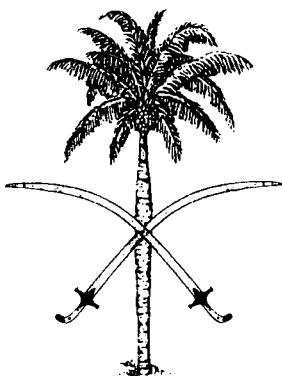


HISTORY AND MUSEUMS DIVISION  
HEADQUARTERS, U.S. MARINE CORPS  
WASHINGTON, D.C.

*COVER: A two-seat F/A-18D from VMFA (AW)-121, the "Green Knights" flying by the burning oil wells of Kuwait. The "Green Knights" flew primarily the Fast FAC mission in Desert Storm.*

# U.S. Marines in the Persian Gulf, 1990-1991

## THE 3D MARINE AIRCRAFT WING IN DESERT SHIELD AND DESERT STORM



by  
Lieutenant Colonel LeRoy D. Stearns  
U.S. Marine Corps

HISTORY AND MUSEUMS DIVISION  
HEADQUARTERS, U.S. MARINE CORPS  
WASHINGTON, D.C.

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## Foreword

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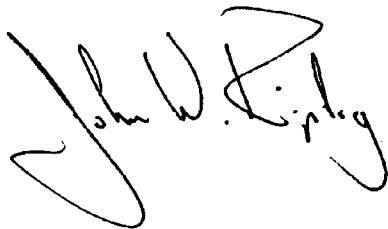
This monograph is an account of the activities of the Marines and units of the 3d Marine Aircraft Wing in support of the I Marine Expeditionary Force's efforts to liberate Kuwait. This document is part of a preliminary series of official Marine Corps histories that cover Marine Corps operations in the Gulf War.

On 2 September 1990, 3d Marine Aircraft Wing took command of Marine aviation forces ashore from a Marine composite aircraft group, which had hurriedly been moved to the Persian Gulf as part of Operation Desert Shield. The wing would grow to be the largest deployed in Marine Corps history. It would fly more than 10 different types of aircraft from eight airfield sites that required laying more than 4.5 million square feet of ramps, landing, and taxiing areas. In addition, the wing and its support groups would construct six 3,000-man base camps and establish a Marine Air Command and Control System that would operate across four countries in a joint and combined arena. When Operation Desert Storm began, the 3d Marine Aircraft Wing was ready and provided more than 18,000 fixed-wing and helicopter sorties in support of I Marine Expeditionary Force's mission of ejecting Iraqi forces from Kuwait.

Lieutenant Colonel LeRoy D. Stearns, Jr., a career aviator, attended the University of Texas at Austin before being commissioned in the Marine Corps and receiving his wings in 1979. Designated a CH-46 pilot, he joined Marine Medium Helicopter Squadron 162 at Marine Corps Air Station, New River, North Carolina, and subsequently was deployed with the squadron to the Mediterranean. In 1983, during the last of three such deployments to the Mediterranean, he flew combat missions in support of Marine and coalition forces during the crisis in Beirut, Lebanon. Following assignments in Hawaii and Okinawa, he attended the Marine Corps Command and Staff College, Quantico, Virginia, and then joined Marine Medium Helicopter Squadron 165, where he served as the squadron's operations and then executive officer. After a short tour with the Navy Staff as the amphibious warfare policy officer, Lieutenant Colonel Stearns attended the National War College and graduated in June 1997 with a master of science degree in national security strategy.

This monograph is predominantly based on unit command chronologies, more than three dozen interviews with key participants, comments from key participants on the draft monograph, and other source documents available at the Marine Corps Historical Center, Washington, D.C. The author began with an outline draft written by Major John T. Quinn II, and was assisted by two interns, Air Force Cadet Craig Prather, who assisted in laying out the appendices, and Mark M. Burgess of the University of Wolverhampton, England, who assisted in collection and layout of the photographs.

As this is a preliminary effort, the History and Museums Division encourages participants, scholars, and students to comment on this account and other monographs in the series.

A handwritten signature in black ink, appearing to read "John W. Ripley".

John W. Ripley  
Colonel, U.S. Marine Corps (Retired)  
Director of Marine Corps History and Museums

## Preface

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The material in this monograph was derived from unit command chronologies, oral history interviews, and official records of the U.S. Marine Corps. As such, it focuses on the commanders and their staffs. The true heroes of the 3d Marine Aircraft Wing during operations Desert Shield and Desert Storm were the individual Marines. Getting the bombs on target was not just a function of pilots and aircraft. The Marines who loaded ordnance and fuel, patched up and repaired, tasked and guided, fed and housed those aircrews were every bit as much contributors to the success of each bombing mission. The willingness to contribute their initiative, imagination, and long hours in a harsh environment to make up for shortfalls in equipment, doctrine, and the eviscerated peacetime tables of organization were critical to the around-the-clock wartime operations and success of the 3d Marine Aircraft Wing.

This monograph could not have been published without the professional efforts of the staff of the Marine Corps Historical Center. I would like to thank Dr. Jack Shulimson, Mr. Charles D. Melson, Mr. Charles R. Smith, and Mrs. Wanda J. Renfrow for their meticulous review and corrections to both style and content. I had the good fortune to have the daily support of the research librarian, Ms. Evelyn A. Englander, and the freedom of access to the documentary archives provided by Mr. Frederick J. Graboske and his staff. The Reference Section, headed by Danny J. Crawford, provided accurate and timely responses to my many inquiries, while the support branch under Lieutenant Colonel Leon Craig, Jr., and Captain Joseph Donald III, provided much of the administrative assistance. I am thankful for the assistance of two interns who worked on the project with me for several weeks, Air Force Cadet Craig Prather and Mr. Mark M. Burgess. Dr. David B. Crist assisted me in obtaining oral histories from critical sources. Mr. William S. Hill and Ms. Catherine A. Kerns worked closely with me in laying out the monograph. I am grateful for the advice and help I received from the Marine Corps reservists of MTU DC-7 who served as combat historians during Desert Storm. I would like to particularly thank retired Colonels Dennis P. Mroczkowski and Charles J. Quilter II, and Lieutenant Colonel Ronald J. Brown.

Outside of the History and Museums Division, I would like to express my thanks for their encouragement and review to General Terrence R. Dake; Lieutenant General Michael J. Williams; Major General Royal N. Moore, Jr.; Brigadier General Larry T. Garrett; Brigadier General Robert M. Flanagan; Colonel Manfred A. Rietsch; Major John T. Quinn II; and Captain Charles Grow.



LeRoy D. Stearns  
Lieutenant Colonel, U.S. Marine Corps



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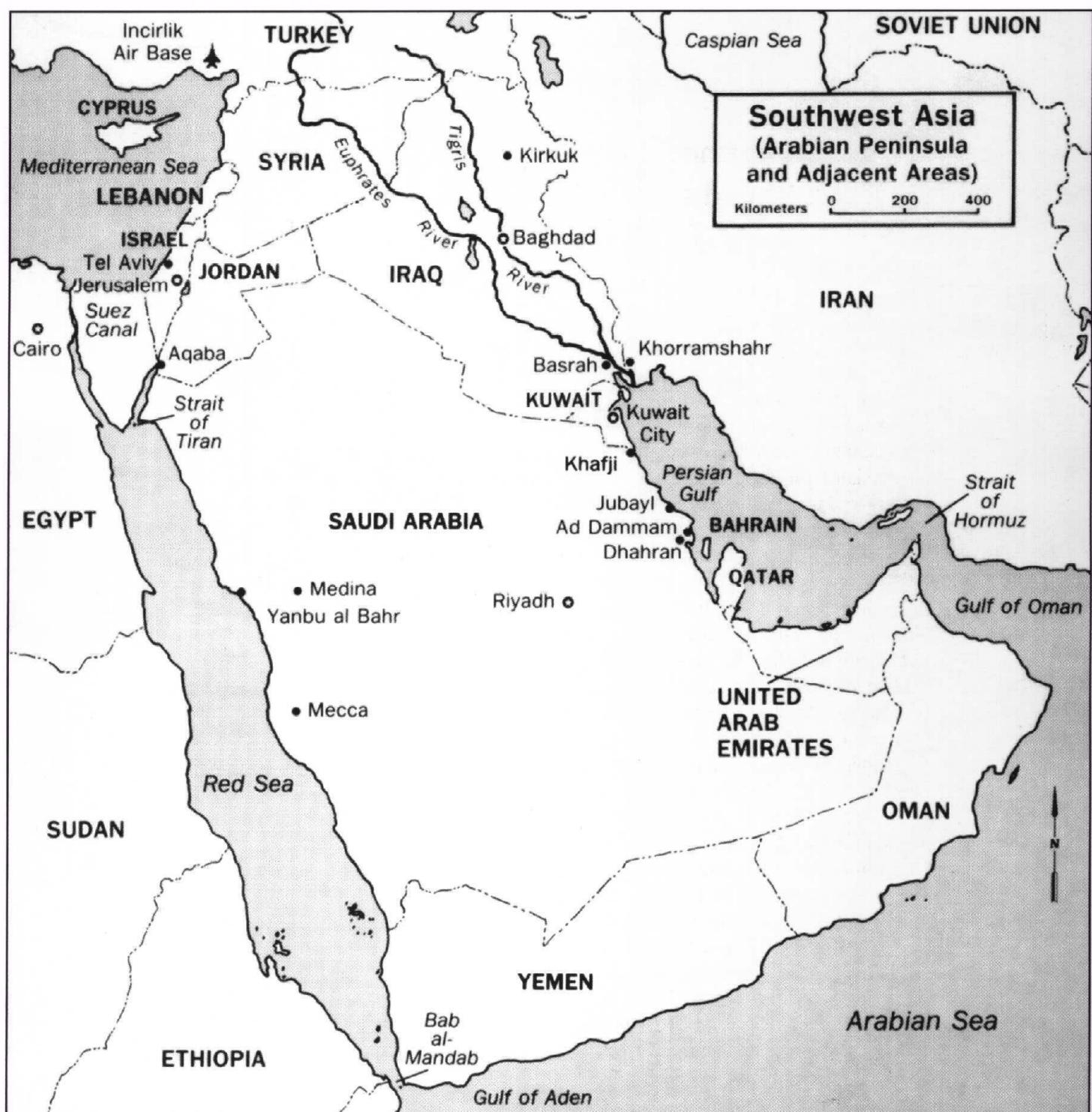
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**Southwest Asia  
(Arabian Peninsula and Adjacent Areas)**

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## U.S. Marines in the Persian Gulf, 1990-1991

# The 3d Marine Aircraft Wing in Desert Shield and Desert Storm

### Desert Shield Begins

#### *Background and Alert*

At approximately 0200 on 2 August 1990, the people of Kuwait were awoken by the unmistakable sounds of a military force on the move. Given the recent high tension between the government of this oil-rich nation at the top of the Persian Gulf and that of Iraq, its large and powerful neighbor to the north, few doubted the meaning of the noise filling the night sky. Iraq's President, Saddam Hussein, had conducted a highly public war of nerves with the ruling family of Kuwait during the late spring and early summer apparently designed to extort the forgiveness of the Iraqi debt to Kuwait accumulated over his nearly ruinous war with Iran during the 1980s. Saddam charged the Kuwaitis with drilling into the Iraqi side of the Al Rumalia Oilfield that straddled their common border, thus supposedly robbing the Iraqi treasury of much-needed revenue. Kuwait, the diminutive state to his south, served also as a convenient proxy target for Saddam's rage against the rulers of Saudi Arabia and the other Gulf states for refusing his insistence that they cut back on their production of crude oil, so that he could get the highest price possible per barrel.

On 2 August, Major General Royal N. Moore, Jr., commanding general of the 3d Marine Aircraft Wing (MAW) headquartered at Marine Corps Air Station (MCAS) El Toro, California, mused that this might be the one. He had commanded the wing for almost a year, since 18 August 1989. This native Californian had seen war before. He had served two tours in Vietnam, flew 287 combat missions, and was awarded the Distinguished Flying Cross. His second Vietnam tour was as a J-3 staff officer with the United States Military Assistance Command, Vietnam. This experience would be hard for the Marine Corps to find in 1990. His current duties included those of the deputy commander, I Marine Expeditionary Force (I MEF), where continuity has combat value. I MEF was about to have a new commander, Lieutenant General Walter E. Boomer.

As the course of events on 2 August progressed, those in power in the region faced two main questions. What was the extent of the incursion by the Iraqi dictator's army into Kuwait, and what would be the nature of the worldwide—and especially the American—reaction to this naked land grab by Saddam Hussein? The answer to the first question came quickly. By morning, it was clear



As Commanding General, 3d MAW, MajGen Royal N. Moore, Jr., was responsible for I MEF's air combat element of 467 aircraft during Desert Storm.

that Saddam had seized not only the disputed oilfields in northern Kuwait but also the capital as well. Several divisions of his elite strike force, the *Republican Guard Forces Command* (RGFC), led the assault on Kuwait City before proceeding southward toward the Saudi border.

The United States, eager to integrate Iraq into the western fold as a bulwark against Iran and its extremist views, had taken no public position on the Iraqi-Kuwaiti border dispute other than the desire to see it resolved peacefully. Despite significant attempts at normalizing the Iraqi-American relationship after

the end of war with Iran, Saddam's rhetoric had turned increasingly anti-American and anti-Israeli in the months preceding his move into Kuwait. The administration of President George Herbert Walker Bush, clearly taken aback by Saddam's invasion of an Arab neighbor, became extremely concerned about the direct threat to Saudi Arabia. On 4 August, senior administration officials, although initially divided on the best recourse to the invasion of Kuwait, quickly fell in behind the President's personal outrage against Saddam's actions. On 5 August, President Bush publicly declared Saddam Hussein's attack on Kuwait as "naked aggression" and stated: "this shall not stand." The President set out the United States national policy objectives:

1. Immediate, complete, and unconditional withdrawal of all Iraqi forces from Kuwait;
2. Restoration of Kuwait's legitimate government;
3. Security and stability of Saudi Arabia and the Persian Gulf; and
4. Safety and protection of the lives of American citizens abroad.<sup>1</sup>

These did not change throughout the entire storm that was brewing and would be the basis for drawing up the military objectives.

Rapid consultations with the Saudi leadership followed on the heels of this declaration, with senior U.S. officials pressing their Saudi counterparts on the need to respond decisively to the Iraqi threat. By the 6th, 11 Iraqi divisions were in Kuwait and positioning themselves along the southern border with Saudi Arabia. At this point Iraq had control of 20 percent of the world's oil reserves. Saudi oilfields appeared to be in jeopardy with little effective ability for U.S. Central Command (CentCom) to deter Saddam Hussein from grabbing an additional 20 percent of the world's oil reserves sitting just across the Kuwait border in Saudi Arabia.

A U.S. delegation including Secretary of Defense Richard B. Cheney, General H. Norman Schwarzkopf, USA, Commander, U.S. Central Command, and Lieutenant General Charles A. Horner, USAF, the Air Force Component Commander, Central Command (AFCent), met with Saudi Arabia's King Fahd in Riyadh to delineate the current Iraqi force disposition and to ask permission to begin sending a coalition force to defend Saudi territory. Late on 6 August, King Fahd agreed to a large American military deployment to his country as a necessary measure, and within a few hours, the Pentagon began what became Operation Desert Shield.

The United States Central Command, based at MacDill Air Force Base, Florida, was charged with planning and executing war plans and contingency operations in the Persian Gulf. CentCom, commanded since 1989 by General Schwarzkopf, was one of the five unified commands charged with broad geographic areas of responsibility. CentCom had recently executed a series of exercises titled "Internal Look 90" to test its new operational plans. Previous contingency plans focused on a Soviet invasion of the Persian Gulf but OpPlan 1002-90 envisioned a regional conflict. Thus CentCom OpPlan 1002-90 and the Internal Look exercises became the basis for deployment and movement to theater for the

3d Marine Aircraft Wing. It was obvious that with the Maritime Prepositioning Ships (containing enough supplies and equipment to support a Marine expeditionary brigade [MEB] for 30 days) stationed in Diego Garcia, a tiny British atoll in the Indian Ocean only seven sailing days away, that the United States Marine Corps would be an early response player in CentCom's request for forces.

After the meeting in Riyadh, 7 August became "C"(commencement) day for carrying out a highly modified deployment based on initial planning efforts and the "in work" OPLAN 1002-90 Time-Phased Force Deployment List (TPFDL). General Horner was tasked as CentCom forward to remain in Saudi Arabia to oversee the arrival, positioning, and "bed down" sites of the forces that began flowing into theater. General Schwarzkopf decided on a concept of operations that built up "trigger puller" combat forces in theater quickly at the expense of support forces by moving logistics further down the force deployment list.

In 1990, the fighting units of the Fleet Marine Forces were organized into Marine air-ground task forces (MAGTFs) which were flexible, task-organized combined arms teams. Although it varied in size and composition, each MAGTF had four common elements: a command element, a ground combat element (GCE), an aviation combat element (ACE), and a combat service support element (CSSE). The largest of these organizations was the Marine expeditionary force (MEF) which normally included one Marine division, one Marine aircraft wing, and a force service support group. The next smaller MAGTF, a Marine expeditionary brigade, usually included a regimental landing team, a Marine aircraft group, and a brigade service support unit group. The smallest permanent MAGTF was a Marine expeditionary unit (MEU), built around a battalion landing team, a composite helicopter squadron, and a MEU service support group. Marine air-ground task forces could stand alone or be used as building blocks to create a larger combat unit. Existing Marine Corps doctrine called for large MAGTFs to be created by "compositing," whereby the command elements of two or more units merged to create a single headquarters to ensure unity of command and eliminate redundant headquarters. Each of the subordinate elements were likewise absorbed into larger units. For example two MEB command elements might composite to form a MEF headquarters, the ground combat teams would create a Marine division, the merging aircraft groups would become a Marine aircraft wing, and the combat service support elements would make up the force service support group.

A composite Marine aircraft group (MAG) comprised the aviation combat element of a Marine expeditionary brigade. The task-organized air group included a headquarters, fixed- and rotary-winged squadrons and ground support detachments to provide the five functions of Marine aviation (offensive air support, anti-air warfare, assault support, aerial reconnaissance, and command and control of aircraft and missiles). Coordination for aviation among the MAGTF elements was achieved through the integrated Marine air command and control system. Composite MAGs adopted the number of its parent MEB and added a "0" to indicate the provisional nature. Thus, MAG-70 supported 7th MEB and MAG-40 supported 4th MEB. Ironically a deploying Marine aircraft group could become larger than the non-deploying Marine aircraft wing, as occurred in the case of MAG-70 in Desert Shield.

From the first few days of Operation Desert Shield, Fleet Marine Forces Pacific (FMFPac), I MEF, and the 3d MAW operated under the assumption that Marine Aircraft Group 70 would simply be the first aviation echelon of a MEF-sized deployment to the region. Sending a full aircraft wing was not simply a matter of Major General Moore deploying all of the 3d MAW's aircraft and aviation ground squadrons from the West Coast to Saudi Arabia. Moore first closely consulted with Lieutenant General Duane A. Wills, the Deputy Chief of Staff for Aviation (DC/S Air) at Headquarters, Marine Corps. Formal requests for additional resources had to be routed up the operational chain-of-command from the wing through I MEF to CentCom. Once CentCom approved the request and forwarded it to the Chairman, Joint Chiefs of Staff, the Joint Staff weighed its merits against the current and potential needs of the other warfighting commanders-in-chief, as well as the providing services capabilities. The Chairman then presented his analysis and recommendation to the Secretary of Defense, who reserved the final authority to order major troop movements in the name of the President.

Given the order to provide additional forces by the National Command Authorities, the Commandant of the Marine Corps and his DC/S Air had to find these additional aircraft squadrons from a relatively limited supply. The early decision to base most of the MAG-40 fixed-wing aircraft ashore with MAG-70 was a relatively uncomplicated one because those aircraft were already committed to the theater on paper. Obtaining additional units for Gulf duty, however, was more difficult. Factors internal to the Marine Corps such as squadron readiness levels, aircraft type, aircraft transition schedules, and even squadron decommissioning had to be taken into account by HQMC before it supported the dispatch of more units to Southwest Asia.

#### *The 3d Marine Aircraft Wing Readies MAG-70*

With the formal nod to the 7th MEB to prepare for movement to the Persian Gulf, what only days before had been the skeleton staff of MAG-70 at MCAS El Toro began to grow quickly to full strength and beyond. Its commander, Colonel Manfred A. "Fokker" Rietsch, who also double-hatted as the commander of MAG-11, welcomed representatives from the 3d MAW headquarters and the six groups of the wing as they flocked to his headquarters to fill out the MAG-70 contingency personnel roster. Even though no detailed list of units and their corresponding timetables for movement existed to match with CentCom's recently revised OPLAN 1002-90, units force-listed for the 7th MEB frantically readied for departure. With precious little information available about expected operating areas, movement timetables, and Iraqi capabilities, most units either fell back on earlier versions of the Operations Plan for guidance or relied on the recent experience of officers involved in Internal Look 90. Others drew on existing embarkation plans for the planned, but now preempted exercise, Display Determination 90, as a useful starting point.<sup>2</sup>

From Rietsch's own MAG-11, Marine Aerial Refueler and Transport



*Col Manfred A. Rietsch reverted to his role as commander of MAG-11 on 2 September 1990, when MAG-70 stood down and 3d MAW stood up.*

Squadron 352 (VMGR-352), commanded by Lieutenant Colonel Arlen D. Rens, prepared six of its 12 Lockheed KC-130 "Hercules" four-engine turboprop aircraft for the looming movement to the Persian Gulf. VMGR-352, nicknamed the "Raiders" had flown the venerable Hercules cargo plane since the late 1950s. Four of the KC-130s earmarked for Desert Shield were configured for aerial refueling, while the other two were stripped down for transport duties. The squadron's other six aircraft remained at El Toro in order to support the wide variety of training and support functions required by the stay-behind units of the 3d MAW.<sup>3</sup> The "Black Knights" of Marine Fighter Attack Squadron 314 (VMFA-314), commanded by Lieutenant Colonel George G. Stuart, also from MAG-11, readied for deployment as well, performing last-minute maintenance on its 12 McDonnell Douglas F/A-18A Hornets. In the interim, squadron pilots received threat briefings and weapons systems lectures, while those who had not previously done so qualified for strategic aerial refueling (tanking) with the Air Force's Boeing KC-135 "Stratotanker."<sup>4</sup> First introduced into the Marine Corps inventory in 1983, the "A" model of the Hornet by 1990 was in the process of being replaced by the more capable "C" model in 12 active-duty squadrons. This program had started with the conversion of the three McDonnel Douglas F-4S "Phantom II" fighter squadrons based at MCAS Kaneohe Bay, Hawaii, with MAG-24, but the transition had not yet reached the Corps' other fighter/attack groups in the continental U.S.<sup>5</sup>

Due to ongoing commitments, MAG-11's other Hornet squadrons were not available for immediate deployment in support of Operation Desert Shield. Fortunately, the "Death Angels" of VMFA-235 from MAG-24 were located at Nellis AFB, Nevada, for a "Red Flag" training exercise. This squadron departed its home station at Kaneohe Bay, Hawaii, in July with the expectation of returning in a few weeks. Instead, on 9 August, FMFPac ordered the F/A-18C squadron, commanded by Lieutenant Colonel William C. McMullen III, to join MAG-70. By nightfall the entire squadron had moved to El Toro, where it spent the next five days rectifying equipment shortfalls from MAG-11 stocks and preparing for movement to the Gulf region.<sup>6</sup>

MAG-11's two all weather Grumman A-6E "Intruder" squadrons, Marine All Weather Attack Squadron 121 (VMA(AW)-121) and VMA(AW)-242, were not available for deployment because they were undergoing transition to the F/A-18D, a two-seat version of the Hornet. VMA (AW)-121, the first tactical aircraft squadron to operate the F/A-18D, rolled out its first "D" model in May 1990. The squadron was redesignated Marine All Weather Fighter Attack Squadron 121 (VMFA(AW)-121) to reflect this change, but did not yet possess a full complement of these aircraft.<sup>7</sup> VMA (AW)-242, which did not expect to see its first F/A-18D until year's end, was preparing to turn over its remaining A-6Es over to the Navy. Of the A-6Es in VMA (AW)-242, only four were capable of high performance flight maneuvers up to six and a half times the force of gravity (6.5 "Gs").<sup>\*</sup> The others were limited to maneuvers of less than three "Gs" because of concerns over the strength of their wings.<sup>8</sup>

The 3d MAW also called upon its other fixed-wing group, MAG-13, based at MCAS Yuma, Arizona, to provide units to MAG-70. Located in the southwest corner of the state, MCAS Yuma was home to the wing's light attack force of McDonnel Douglas AV-8B Harrier IIs. This second generation vertical/short take-off and landing (V/STOL) aircraft, introduced into the Marine Corps inventory in 1983, was far superior to the 1960s-vintage "A" model of the Harrier operated by the Corps since 1971. The AV-8B, however, was still predominately a "day-only" attack aircraft, single seat, and built to replace both the AV8-A's and the Douglas A-4 Skyhawk. Technological changes in the engine, composite materials, and nozzle design, doubled either the payload or range of the AV8-B. Now with the six wing stations, a venerable 25mm gun pack and separate ammo pack, the Harrier II could fulfill its designed mission of close air support from flexible basing at V/STOL pads near the battle area. Two of MAG-13's Marine attack squadrons (VMA), VMA-211 and VMA-214, were in the process of accepting their first "night attack" versions of the Harrier as Operation Desert Shield unfolded. Only a few months earlier, VMA-211 had transferred its last A-4M "Skyhawk" to the reservists of the 4th Marine Aircraft Wing.

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\* The Department of the Navy, in response to concerns over the durability of the Intruder's wings, had begun a wing replacement program for the fleet in the 1980s. Unfortunately, this program could only upgrade a few aircraft per year, so each squadron was expected to operate with a mix of restricted and unrestricted airframes well into the 1990s.

The night attack Harrier equipped with a navigation forward-looking infrared system, night vision goggle-compatible cockpit, and a night attack head-up display (HUD), significantly enhanced the Corps' unique V/STOL fleet. Like the F/A-18D, however, this new aircraft was in the first stages of introduction to the FMF and was not yet ready to support a contingency operation or combat employment.

Of the two remaining MAG-13 squadrons, VMA-513 was slated to rotate to the 1st MAW at year's end, and a six-plane detachment had just returned to Yuma in July from a six-month deployment with the 15th Marine Expeditionary Unit (Special Operations Capable) (MEU[SOC]). The 3d MAW thus tasked the VMA-311 "Tomcats" with the MAG-70 mission. Commanded by Lieutenant Colonel Dickie J. White, the squadron screened its personnel, staged its ground equipment for air embarkation, and readied 20 aircraft for movement to theater. Marine Aviation Logistics Squadron 13 (MALS-13) organized a contingency support package maintenance detachment to accompany the Tomcats.

Although it did not command any of these aircraft in peacetime, the 3d MAW anticipated the assignment of a six-plane detachment of Grumman EA-6B "Prowlers" to MAG-70 for deployment to the Gulf region. A highly modified variant of the Intruder airframe, the four-seat Prowler provided the Marines a potent electronic warfare (EW) weapons system. Its primary mission was to jam or spoof enemy air search and fire control radar for antiaircraft artillery and missiles, but it could also destroy those weapons using the AGM-88 HARM missile it carried under its wing. The 18 aircraft of the Marine Corps' Prowler fleet were based at MCAS Cherry Point, North Carolina, under command of 2d MAW. The squadron normally deployed a six-plane detachment to the 1st MAW at MCAS Iwakuni on a rotating six-month basis, leaving 12 back in the states for training and other assignments.

The Marine Corps' other unique aircraft squadron, Marine Tactical Reconnaissance Squadron 3 (VMFP-3) under MAG-11 at MCAS El Toro, was unable to answer the call to arms. Only hours before the 7 August commencement of Operation Desert Shield, the last of VMFP-3's sleek RF-4B "Phantom II" aircraft served as a backdrop for the squadron's budget-driven decommissioning ceremony.\* The MAG-70 staff nevertheless briefly scrambled to deploy a few of the remaining aircraft to the Persian Gulf, but with the RF-4B's supply stocks and other unique equipment having been drawn down in the prior months, the aircraft no longer logistically supportable by Marine Aviation Logistics Squadron 11 (MALS-11). Unfortunately, its promised successor in function, a much-anticipated tactical photographic reconnaissance pod designed to be carried on the F/A-18, was still in development and ultimately would not reach the FMF in time to support the operation. The combination of these events would be the source of much aggravation for Marines in the upcoming months, as it left the Marines without a complete tactical reconnaissance capability.

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\* In a message to Fleet Marine Forces, Pacific, the Commandant noted: "the costs of retaining RF-4B's have become prohibitive in the current budgetary environment." (CMC msg to FMFPac, subj: RF-4B Plan, 040001Z Apr 90, in VMFP-3 ComdC, Jan-Jun 90).

The 3d MAW did not have to look beyond its own ranks to fill out a more modest initial helicopter requirement for MAG-70. At neighboring MCAS Tustin, three MAG-16 medium and heavy-lift helicopter squadrons readied for the contingency. The “Greyhawks” of Marine Medium Helicopter Squadron 161 (HMM-161), commanded by Lieutenant Colonel Gary J. Price and possessing 12 Boeing Vertol CH-46E “Sea Knight” medium-lift helicopters, flew their aircraft to El Toro, and began partially to disassemble them for transportation. This required the better part of a day, with another 12 hours on the distant end of the journey for reassembly. Three CH-46Es at a time could be transported in the cargo bays of the U.S. Air Force’s giant Lockheed C-5 “Galaxy” strategic airlift aircraft.<sup>9</sup>

The CH-46 fleet began service with the Marines in 1964 and was overdue for replacement by a modern medium-lift transport aircraft. Originally designed to carry 24 combat-loaded Marines at a gross weight of 24,300 pounds, by early 1990, the standard gross takeoff weight of the Sea Knight had shrunk to 23,000 pounds or 15 Marines. Then, in May 1990, the entire fleet was grounded due to a failure in the aft transmission of a 3d MAW aircraft. Although returned to service the following month after an extensive fleet-wide safety check, the Sea Knight was further limited to a maximum gross takeoff weight of 22,000 pounds.\* With extreme heat and high humidity being typical environmental conditions in the Persian Gulf region during the summer, the effect of this order was to reduce by half (eight) the standard number of combat troops who could be carried by the CH-46 on a sortie.

Lieutenant Colonel Daniel R. Rose’s Marine Heavy Helicopter Squadron 462 (HMH-462) “Heavy Haulers” also prepared for deployment, gathering 12 operational Sikorsky CH-53D “Sea Stallion” heavy-lift helicopters by trading off five of their older “A” models with Marine Helicopter Training Squadron 302 (HMT-302) in return for five “D” models. The CH-53A first saw action with Marines in 1967 in Vietnam, and the “D” version had been a wartime engine and avionics upgrade to the original model. Its successor in function, the three-engined CH-53E Super Stallion, was introduced to the Marine Corps aviation inventory in 1981. The CH-53E could lift 16 tons at sea level at 90 degrees Fahrenheit. The CH-53s, both D and E, would become the backbone of vertical lift in the Gulf region where temperatures could reach 130 degrees. HMH-466, nicknamed “Wolfpack” and commanded by Lieutenant Colonel Raymond L. Nymeyer, prepared eight of its Super Stallions and flew them to El Toro for partial disassembly and embarkation. Wolfpack’s first aircraft would arrive at the Saudi Naval Air Facility (NAF) Al Jubayl on 20 August. The CH-53E fleet was organized on paper into 16-plane squadrons, but HMH-466 had one detachment of four aircraft slated for deployment in December with HMM-268 (Reinforced) of the 11th MEU (SOC), and the remainder of the aircraft were either in overhaul

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\* A Fleet Marine Force, Atlantic message cites 4th MEB difficulties with 22,000-pound gross weight limitations. The fleet-wide grounding was in May, with aircraft returned to duty in June after extensive inspections. (CG FMFLant (PersFor) msg, subj: H-46 Maintenance Special Inspection, 031445ZOct90).

or maintenance. Another of MAG-16's heavy-lift squadrons, HMH-361, was scheduled to transition from the CH-53 "D" to "E" model, and were directed to take the four remaining HMH-466 aircraft.<sup>10</sup>

Forty miles south of El Toro at MCAS Camp Pendleton, the "Gunfighters" of Marine Light Attack Helicopter Squadron 369 (HMLA-369) readied their Bell-Textron AH-1W "Super Cobras" and UH-1N "Iroquois" (more commonly known as "Hueys") for duty in the Gulf. The AH-1W, known as the "Whiskey" to the close-knit community, was the latest version of the venerable Cobra gunship that had served Marines for a generation. It was faster and more powerful than its AH-1J and AH-1T "Sea Cobra" predecessors and could carry the laser-guided, tank-busting AGM-114 "Hellfire" missile. Like the earlier Cobra models, the Whiskey could fire the BGM-71 TOW (tube-launched, optically-tracked, wire-guided) missile and 2.75-inch rockets, and it carried a 20mm chain gun mounted in a chin turret, and could now do it in warmer climates. The Marine Corps had taken delivery of its first AH-1W in 1986.\*

The potent Iraqi armored force confronting the 7th MEB dictated that the brigade deploy with the strongest possible anti-armor capability, and the Whiskey was viewed by the MEB as an ideal weapons system for the task. Lieutenant Colonel Michael M. Kurth, the commanding officer of HMLA-369, proposed to MAG-39 commander Colonel Coleman D. Kuhn, Jr., that his squadron deploy to the Gulf region with extra AH-1Ws. Colonel Kuhn took a plan to the 3d MAW for a 30-plane squadron and General Moore initially agreed, but airlift constraints soon reduced the number to 24. HMLA-369 traded six of its Hueys along with aircrews to HMLA-169 in return for six of the latter's AH-1Ws, giving HMLA-369 a total of 18 Cobras and six Hueys instead of the standard 12 and 12 complement.<sup>11</sup>

To supplement this air movement to theater, the Civil Reserve Air Fleet (CRAF) was activated to supplement Military Airlift Command (MAC). CRAF is a program in which commercial airlines agree to make aircraft available for Department of Defense (DOD) deployments in exchange for peacetime military business. This was the first CRAF activation, and it initially provided 18 long range international (LRI) passenger aircraft and 21 LRI cargo aircraft and crews. Oversized cargo such as helicopters would still require the C-5 to get them to the Gulf.<sup>12</sup>

The circumstances in the Gulf clearly dictated a strong fixed-wing aircraft mix for the 7th MEB; additional fighter and attack squadrons were sought by the wing to flesh out its air combat element. In a 12 August "think piece" message addressed to Lieutenant General Walter E. Boomer, who had assumed command of I MEF four days earlier, General Moore laid out his concept of operations for the build-up of Marine aviation in the Gulf. With the 4th MEB slated to depart within a week for the Gulf by amphibious shipping, but with no specific mission

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\* The AH-1W had originally been designated the AH-1T+, but was differentiated by the more powerful T700-GE-401, 2,032-shaft-horse-power take-off engines and the night targeting system (NTS) incorporated on the newer model. (B. Fitzsimons, *Modern Fighter Aircraft: AH-1 Cobra*, (London: Salamander Books Ltd), 1987, pp. 4-13).

assignment from CentCom, Moore advocated the basing of MAG-40's non-amphibious fixed-wing aviation assets at MAG-70's bases in theater.<sup>13</sup>

Seeing essentially two squadrons of combat capable A-6E Intruders available for use between his wing and the 2d MAW, Moore recommended that the 2d MAW's most-ready A-6E squadron deploy first with MAG-70. Then the remaining combat capable aircraft at Cherry Point and El Toro could be combined and deploy as a squadron in support of the 4th MEB. Regardless of their order or assignment, he sought to have the two Intruder squadrons based ashore at the same site for economy of management and support. Moore likewise advocated the deployment of all 12 of the available EA-6B "Prowlers" to a single site under MAG-70. Further, General Moore wrote that ". . . on a philosophical note, my experience at CinCPac is that everything will not go as planned. We are not going to get 249 sorties to lift the 7th MEB immediately. Airplanes break, refueling trucks don't show up on time, crew rest becomes a factor, and most importantly, distance and changing priorities start to slide the aircraft."<sup>14</sup>

General Moore touched upon the plans for the MAG-70 deployment of helicopter, air control, wing support, and air refueling units. He also stated that between the 3d MAW, the 2d MAW, and the 1st MEB, there were sufficient fighter and attack assets to meet the immediate needs of the Gulf deployment. All told, he proposed a tactical aircraft mix of four Hornet, two Harrier, and two Intruder squadrons under MAG-70 in the Gulf region. The addition of other support aircraft raised that total to well over 100 fixed-wing aircraft ashore in theater. Gaining approval for this concept from I MEF and CentCom, Moore coordinated with the other commands to make it a reality as he prepared to move to the theater.



Also on 12 August, General Boomer, the I MEF commander, issued his Operation Desert Shield deployment order to his major subordinate commands. With C-Day already established as 7 August, General Boomer directed the 7th MEB to deploy first to the theater as I MEF (Forward) by strategic airlift in conjunction with the movement of Maritime Prepositioning Ship Squadron 2 (MPSRon-2) to Saudi Arabia from Diego Garcia. He instructed the brigade to establish rapidly and secure a lodgment in the area of Jubayl, Saudi Arabia, from C+8 to C+16. The 7th MEB would then join reinforcements (consisting of RCT-3 (-) (Rein), MAG-24 (-), and BSSG-1 (-)) flown in from the 1st MEB in Hawaii. These units would meet up with equipment offloaded at the Port of Jubayl from MPSRon-3.

The 7th MEB would then "composite" with the follow-on units to form I MEF. The arriving I MEF command element would absorb the 7th MEB staff, and the brigade's ground, air, and combat service support elements would report to the 1st Marine Division, 3d MAW, or the 1st FSSG, respectively, as they arrived in theater no later than C+23. Meanwhile, I MEF instructed the 5th MEB to deploy from the West Coast to the CentCom area of responsibility (AOR) by amphibious shipping. It was expected that 5th MEB would phase ashore in theater and be assigned to I MEF. The deploying 4th MEB out of the East Coast would stay at sea under the Naval component of Central Command, NavCent. It would be joined by the 13th MEU(SOC) out of the U.S. Seventh Fleet as well as by Amphibious Ready Group Bravo carrying elements of a regimental combat team (RCT) out of III MEF on Okinawa.

The I MEF order identified Dhahran Air Force Base as the aerial port of debarkation (APOD) for 7th MEB units. The MAG-70 fixed-wing bed-down site was Shaikh Isa Airbase, Bahrain, some 60 kilometers southeast of Dharhan. Located on the southern end of the island, the still incomplete Shaikh Isa air facility was not marked on available maps. The helicopters would stage 80 kilometers to the northwest of Dharhan at the airfield at the King Abdul Aziz Naval Base at the southern edge of the port of Jubayl.<sup>15</sup>

With its resources already heavily taxed filling out the 7th MEB force list, I MEF soon rescinded the order to deploy the 5th MEB. It also cancelled the movement of MAG-24 headquarters to the Gulf, but retained most of its subordinate units in the scheduled airflow. Where possible, General Boomer reinforced the 7th MEB with now-uncommitted 5th MEB units. The 3d MAW thus notified HMLA-367 and HMH-465 in mid-August to prepare to join MAG-70. Lieutenant Colonel Terry J. Frerker's "Scarfakes" of HMLA-367 gathered 10 AH-1Ws and 12 UH-1Ns for embarkation.

Like its HMH-466 neighbors, the "Pegasus" of HMH-465 deployed only half of its nominal 16 aircraft complement. A four-aircraft detachment from HMH-465 had been deployed since June with the 13th MEU (SOC), so Lieutenant Colonel Ronnie S. Johnson's Marines readied eight aircraft for the trip to Saudi Arabia while transferring the remainder to other MAG-16 squadrons.

The 3d MAW also ordered VMO-2, which operated several models of the North American OV-10 "Bronco" turboprop observation aircraft, to prepare for deployment to the Gulf region. Commanded by Lieutenant Colonel Clifford M.

Acree, VMO-2 operated 12 OV-10s at MCAS Camp Pendleton and supported the rotation of six others with MAG-36 in the Western Pacific. The squadron could only muster six aircraft for MAG-70 while still maintaining six others for state-side training commitments and scheduled overseas rotation. VMO-1 possessed eight of the older OV-10As plus four of the latest version of the Bronco, the OV-10D Service Life Extension Program (SLEP). The latter included forward-looking infrared radar (FLIR) that provided an impressive night and poor weather observation capability to the 3d MAW.

Unable to fit inside strategic transport aircraft and without an air-refueling probe, the only way for the squadron to move halfway around the world was by lengthy ocean voyage or ferry flight. General Moore suggested loading the Broncos on board the amphibious ships embarking the 4th MEB for transit to the Gulf region, but the acute shortage of East Coast “gators” resulted in there being room on board ship for only two OV-10s. The New River-based VMO-1 provided these to MAG-40, and they were craned on board the USS *Iwo Jima* (LPH-2) at the pier in Morehead City, North Carolina. The more risky method of ferry flight was the only recourse left for the VMO-2 aircraft, and thus, on 28 August, the first of six Broncos departed MCAS Camp Pendleton on a marathon eastward journey to Saudi Arabia.<sup>16</sup>

#### *Internal and External Deployment Constraints on FMF Aviation*

The single greatest factor in the contingency deployment decisions of mid-August was their impact on the Corps’ unit deployment program (UDP), which had been in existence in some form since the post-Korean War drawdown of the mid-1950s. The unit deployment program dictated that, rather than permanently assigning nearly 25,000 Marines to III MEF in the Western Pacific, the Corps would maintain the bulk of III MEF through the rotation of infantry battalions, aircraft squadrons, and a variety of smaller units from the United States. By mid-1990, the program had evolved to where both the 2d and 3d MAWs as well as the 1st MEB’s MAG-24 deployed a set mix of aircraft squadrons and detachments for standard (normally six-month) deployments to 1st MAW aircraft groups stationed on mainland Japan or on Okinawa.

The Marine Corps also maintained an ongoing commitment to provide CH-46E squadrons, reinforced with detachments of AH-1s, UH-1s, and CH-53s, to each deploying MEU. The MEUs embarking on board Tarawa-class amphibious assault ships were also normally assigned six-plane AV-8B Harrier detachments.\* In the U.S. Pacific Command area of responsibility in 1990, I MEF was obligated to provide one of its three MEUs to an amphibious ready group that would deploy forward from the U.S. to the Japan-based U.S. Seventh Fleet. The other two MEUs of the force either prepared for such a deployment or had just

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\* The *Tarawa* (LHA-1) and her four sister ships—*Saipan* (LHA-2), *Peleliu* (LHA-3), *Nassau* (LHA-4), and *Belleau Wood* (LHA-5)—were designated assault ships, general purpose (LHAs). The *Tarawa* was launched in 1973.

completed one. II MEF maintained a similar cycle with one of its three MEUs deployed as Landing Force Sixth Fleet in the Mediterranean.

The Pentagon and the U.S. Pacific Command, with ongoing concerns both on the Korean Peninsula and the Philippines, fully expected the Marine Corps to maintain III MEF at the agreed-upon strength while meeting its regular Seventh Fleet landing force obligations. Thus, few if any of the units already deployed to, or shortly slated for the Western Pacific, could be reassigned to Operation Desert Shield. This complex and continuous movement of aircraft squadrons across the Pacific meant that FMFPac aircraft squadrons fell into one of four rough categories available for deployment.

The first category included those squadrons either deployed to the 1st MAW or with a Pacific Fleet MEU, as well as those within a few months of undertaking a scheduled deployment, which were already under the operational control (OpCon) of their new commands and thus unavailable for other assignment. A second category encompassed those squadrons that had recently returned from such a deployment. Traditionally, squadrons falling into this category conducted extensive maintenance and safety standdowns in the immediate post-deployment period and experienced a high level of personnel turnover due to transfer and end of service. They also normally had many of their personnel on extended annual leave after their long stint away from family and friends. A third category involved those squadrons, which were in the process of transitioning to a new aircraft type or model. The fourth category was a squadron preparing for decommissioning. The F/A-18D Hornet and the AV-8B Harrier II Night Attack transition programs were good examples of the former, while the decommissioning of the RF-4B squadron illustrated the latter. All of the above fell most heavily on the 3d MAW at just the time when events in its geographic area of responsibility rose to a boil and accounted for the relatively few fixed-wing squadrons available for immediate deployment within the wing.

With these constraints, only one of MAG-11's three F/A-18A squadrons was available for immediate deployment. VMFA-323 had deployed to Iwakuni, Japan, in April 1990 and was about half way through a normal tour with MAG-12. VMFA-531 had just returned to MCAS El Toro the same month after its six-month stint in the Western Pacific.<sup>17</sup> Half its aircraft were undergoing extended maintenance, and after a heavy summer turnover, many pilots and maintenance personnel were new to the squadron. VMFA-314, at home base the longest, was quickly assigned to Operation Desert Shield by the wing. VMFAT-101, the Corps' sole F/A-18 training squadron, could augment other squadrons or trade a few aircraft if required, but could not deploy.

Given the mission of reinforcing MAG-70 with MAG-40's fixed-wing squadrons in hand, Major General Richard D. Hearney, the commanding general of the 2d MAW, examined his options and identified the squadrons to deploy to the Persian Gulf with the 7th MEB. He called upon MAG-31 at MCAS Beaufort, South Carolina, to provide two Hornet squadrons for Gulf duty. The group in turn notified Lieutenant Colonel Thomas A. Benes' VMFA-333 and Lieutenant Colonel Andrew S. Dudley, Jr.'s VMFA-451 to prepare their squadrons for departure. The "Warlords" of VMFA-451 dispatched lead maintenance personnel to

NAS Rota, Spain, on 17 August on board two VMGR-252 Hercules, while the rest of the squadron readied themselves and their aircraft. Next door, the "Shamrocks" of VMFA-333, nicknamed "Trip Trey" because of their distinctive three shamrock squadron insignia, did likewise.

As recommended by General Moore, the 3d MAW shortfall of all-weather attack aircraft was covered by MAG-14 at MCAS Cherry Point. On 17 August, the "Bengals" of VMA(AW)-224, commanded by Lieutenant Colonel William J. Horne, transferred from MAG-14 to MAG-70. With the Bengals' operating a mix of restricted (G limited) and unrestricted A-6Es like the rest of the Corps' Intruder squadrons, neighboring VMA(AW)-332 traded some of its unrestricted aircraft to its deploying sister squadron.<sup>18</sup> VMA(AW)-242 flew its remaining aircraft from El Toro to Cherry Point on 14 August and handed over its four unrestricted A-6Es to the Bengals to bring the squadron up to full capability.<sup>19</sup> With VMA(AW)-332 slated to relieve VMA(AW)-533 in the Western Pacific at year's end, however, HQMC cancelled plans for the dispatch of a second Intruder squadron to the Gulf region.

Saddam Hussein's military presented a challenging air threat to Marine aviation. The Iraqi military possessed modern Soviet and French aircraft and fielded a world-class integrated air defense system (IADS). This sophisticated threat dictated the augmentation of MAG-70 with a strong airborne electronic warfare contingent. Having commanded the newly-commissioned Marine Tactical Electronic Warfare Squadron 2 (VMAQ-2) during 1975-76, few Marines were as familiar as General Moore was with the tremendous capabilities brought to modern air warfare by the Prowler.\* In accordance with his recommendations, HQMC approved the commitment of the remaining Marine Prowlers to Desert Shield, and thus Lieutenant Colonel Richard W. Bates' "Playboys" readied their 12 remaining EA-6Bs for deployment.

The 2d MAW notified the VMA-542 "Tigers" of MAG-32, also based at Cherry Point, that they too would be joining MAG-70 in theater. Commanded by Lieutenant Colonel Theodore N. Herman, the Tigers had just returned from six months in the Western Pacific in June. Receiving its warning order on 16 August, VMA-542 quickly accepted AV-8Bs from VMA-223 and VMAT-203 to bring its total to 20 deployable aircraft. Short on personnel, the squadron joined 10 pilots and 37 enlisted Marines in the week prior to deployment.<sup>20</sup>

#### *Marine Air Control Group and Marine Wing Support Group Issues*

The 3d MAW's two non-flying groups, although not as well publicized, were nonetheless critical to the combat capability of MAG-70 and the 3d MAW. If the flying squadrons of a Marine aircraft wing could be likened to the various

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\* Marine Composite Reconnaissance Squadron 2 (VMCJ-2) was redesignated VMAQ-2 on 1 July 1975. Prior to that date, each MAW had a dedicated VMCJ squadron consisting of both electronic warfare and photographic reconnaissance aircraft. In 1975, all EA-6A aircraft were clustered under VMAQ-2, while the RF-4Bs were based at El Toro under Marine Tactical Photographic Reconnaissance Squadron 3 (VMFP-3).

muscles of the human body, then the Marine air control group constitutes its brain and nervous system while the Marine wing support group its vital internal organs. No single aviation element can stand alone in combat, and the employment of only two of the three elements would render Marine aviation merely an appendage of the Navy or Air Force's theater air effort. All three elements are needed to provide the operational depth and breadth to a MEB or MEF.

Marine Air Control Group 38, headquartered at MCAS El Toro and commanded by Colonel Joseph Della-Corte, faced difficult choices from the start of its embarkation. The group, organized into functional squadrons and battalions based on mission, would provide the structure for the command and control of 3d MAW's aircraft and missiles in whatever clime and place they were assigned. Stateside support for the remainder of the 3d MAW would continue while meeting the additional challenge of providing the wing's combat needs on the other side of the globe in a joint/combined arena. MACG-38 would receive a warning order from 7th MEB to prepare for what would become Desert Shield. On 6 August, the execution order followed, but without movement dates.

The first significant issue addressed by Colonel Della-Corte revolved around the deployment of an air control squadron. MACG-38 contained two Marine air control squadrons (MACS), MACS-7, based at MCAS Yuma, and MACS-1 at Camp Pendleton. Each squadron provided the facilities, technical equipment, and experienced personnel for a Tactical Air Operations Center (TAOC). The TAOC was designed to control the airspace over Marine forces. It coordinated the defensive employment of fighters and missiles within that airspace "box" or "bubble," and controlled offensive air operations among local airfield air traffic control detachments and forward air support agencies.

MACS-7 operated a Marine Corps standard suite of air control equipment consisting of two long-range air search radars, the TPS-32 and the TPS-59, each with a range of several hundred miles, and two short-range or "gap-filler" radars known as TPS-63. The Marine Corps procured these expensive air search radars in small numbers and there were not enough to pre-stage them on board MPS ships. Thus, the bulky long-range radars had to be transported by strategic airlift or sealift.

MACS-1, the group's other air control squadron, was involved in the testing and service certification of the engineering development modules (EDMs) of the Tactical Air Operations Module (TAOM) slated for procurement by the Marine Corps in the early 1990s. At the outbreak of the contingency, the squadron possessed two EDMs, whose testing program was nearly complete. Their last major field test was scheduled for September, when MACS-1 was slated to accompany MAG-70 on Exercise Display Determination 90 using EDMs to provide an automated early warning and control capability to the 7th MEB.

If allowed to deploy with its new engineering development modules to the Gulf, MACS-1 would reduce the total amount of airlift necessary to move the control group detachment, although one of the aircraft would have to be an Air Force Lockheed C-5 Galaxy to accommodate the trailer-mounted TAOMs. With the up-to-date electronics built into the TAOM system, the two EDMs in hand could

cover a sizeable portion of the workload previously requiring the employment of a complete older system.\* The TAOMs operated by MACS-1, however, were a "one-of-a-kind" system, and their supply and technical support were still the responsibility of the civilian contractor.

TAOM-unique parts were not yet in the Marine Corps supply system, thus they could not be replaced from MPS repair stocks.<sup>21</sup> Still, the use of the TAOM-equipped MACS-1 in the Persian Gulf region, albeit for even a short period of time, offered a distinct advantage. Colonel Della-Corte presented this information to the wing commander and recommended the squadrons deployment despite some technical and support risks. General Moore concurred and directed MACS-1 to move its equipment to El Toro for embarkation.

A similar dilemma confronted Della-Corte concerning his air defense units. The Yuma-based 2d Light Antiaircraft Missile (LAAM) Battalion, equipped with two firing batteries employing the Improved-HAWK (Home-All-the-Way-Killer) surface-to-air missile, normally would be employed in reinforced firing battery strength for a MEB-level contingency such as the one unfolding in the Middle East. The battalion had undergone a major equipment upgrade in 1987, designated as Phase III of the HAWK improvement program. This upgrade greatly increased the HAWK system deployability and reliability.

Using the Phase III HAWK system, the battalion could employ a variety of tactical configurations depending on the threat. The basic element of the system was the HAWK fire unit, a slice of a standard firing battery which contained a trailer-mounted three-missile launcher, a high-powered illumination radar (HPIR), a continuous wave acquisition radar (CWAR), and a battery command post (BCP). Improved computer software permitted the fire unit to engage multiple low-altitude targets at a time.<sup>22</sup>

Given the likely wide geographic dispersion within the 7th MEB area of responsibility, Colonel Della-Corte recommended that two austere firing batteries, each fielding two HAWK fire units, be deployed instead of the force-listed one reinforced battery. While far from ideal, this would allow for extended area defensive coverage and provide a deterrent against Iraqi air attacks on the critical debarkation ports and airfields.<sup>\*\*</sup> The trade-off of airlift space, however, would cost the battalion some initial depth in maintenance and support until these elements could be brought forward. Weighing the cost versus the benefit, the MAG-70 commander quickly "bought off" on the plan. Concern for the large area and

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\* The system "consisted of 150 personnel, two mobile-loaded engineering development modules (EDM), two radars (TPS-59 and TPS-63), and all available contractor support spares/maintenance float from Litton for a 30-day commitment. Initial 30-day commitment based on subsequent relief in place by unit with current TAOC system. Relief required based upon logistical supportability." (MACS-1 ComdC, 7Aug-2Sep90).

\*\* "Based upon mission requirements (defend significant vital areas spread over a wide geographical area) the MAG-70 force-listed one HAWK firing battery was not sufficient to protect 7th MEB forces ashore nor the MPS offload. As a result, the decision was made to deploy four 'bare bones' fire units from 2 missile batteries. This decision provided at least the foundation of providing adequate air defense once assault follow-on shipping/airlift arrived." (Encl 1 to 2d LAAM Bn ComdC, 1Jul-30Sep90, p. 4).

point targets requiring air defense coverage also prompted the Stinger Missile-equipped 3d Low-Altitude Air Defense Battalion (3d LAAD) to seek to deploy in battalion strength instead of the programmed reinforced firing battery. The wing halted this effort due to airlift constraints and limited the 3d LAAD initial in-theater force to 45 Stinger teams.<sup>23</sup>

Headquarters and Headquarters Squadron 38 (H&HS-38), Marine Wing Communication Squadron 38 (MWCS-38), Marine Air Traffic Control Squadron 38 (MATCS-38), and Marine Air Support Squadron 3 (MASS-3), were all slated to deploy detachments consisting of about half their strength in support of MAG-70. Most of these units were manned at much less than table of organization (T/O) strength in early August due to traditional high summer turnover and other factors. Major Eric D. Zobel's H&HS-38, the home of the 3d MAW's Tactical Air Command Center (TACC), prepared to embark. Load plans would be adjusted numerous times between the execution order of 6 August and the first fly-in-echelon departure on 22 August. Just next door, MWCS-38 similarly organized a MEB-size detachment consisting of 250 of the squadron's 544 Marines. MATCS-38 augmented two of its four airfield detachments and added a headquarters section for deployment. MASS-3 readied a detachment, lead by Major Maurice B. Hutchinson, configured to operate a minimal DASC while awaiting the arrival of the rest of the squadron.<sup>24</sup>

MACG-38's preparations were complicated from the outset when the 7th MEB determined that no female Marines or sailors would deploy in deference to Saudi cultural customs. This created significant personnel difficulties for some of the control group squadrons since they had female officers and enlisted women Marines in key billets throughout their organizations. This instruction was modified several times, until 20 August, when the MEB finally determined women could be scheduled in the airflow. By that time, however, most of the units had made the required but unpopular personnel adjustments and had begun to deploy with alternates in place. As a consequence, very few women Marines were able to join their Middle East-bound units for several weeks.<sup>25</sup>

The I MEF order of 12 August to prepare for the possible deployment by sea of the 5th MEB caused MACG-38 to spend a day attempting to rearrange squadrons, personnel rosters, and equipment in order to support the simultaneous deployment of the 7th and 5th MEBs. With female service members already prohibited from serving on board U.S. Navy combatant ships, many control group units could not satisfy this new requirement and the 7th MEB prohibition on the early deployment of women to Saudi Arabia. As a consequence, shipboard detachments were built on paper by switching available male personnel from MAG-70, and females were then placed in the empty MAG-70 slots. The idea of an early 5th MEB deployment quickly faded, but precious time was again lost while the question of the deployment of women was addressed.\*

MWSG-37 went through the same Desert Shield preparations as MACG-38, but the challenges its units faced were somewhat different. As the operation

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\* Captain John T. Quinn II recalled the difficulty units had with the switching out of women Marines, while serving as the assistant detachment commander for MWCS-38.

unfolded, its commanding officer, Colonel Ronald M. D'Amura, was scheduled to turn over command of the group to Colonel Robert W. Coop, the current wing G-3. With the group working to organize adequate service support for MAG-70, General Moore placed the change of command on hold for the moment. MWSS-373, based at El Toro and structured to support the unique needs of a fixed-wing MAG, was slated to deploy with the fixed-wing contingent of MAG-70. The squadron, commanded by Lieutenant Colonel Stephen D. Hanson, was well short of its authorized table of organization personnel strength, but would be providing some of the first Marines to Shaikh Isa, Bahrain, to act as the offload preparation party (OPP) and surveillance, liaison, and reconnaissance party (SLRP). These Marines departed El Toro on 12 August.

MWSS-374, commanded by Lieutenant Colonel Stephen G. Hornberger and based at MCAS Tustin with MAG-16, was notified it would support the MAG-70 helicopter detachment. This squadron was also significantly under-strength in early August. Hornberger would later state:

The squadron rolls showed 18 officers and 250 enlisted at the beginning of the period. In preparation for Desert Shield, personnel were recalled and augments from MWSS-171 were joined. Twenty officers and 427 enlisted stepped off for Operation Desert Shield on 13 August.<sup>26</sup>

The vast majority of both support squadrons' equipment was planned to be drawn from shipboard MPS stocks, while the personnel would be airlifted from El Toro and Tustin into the theater.<sup>27</sup> Most of their own equipment was left behind in California in the custody of stay-behind detachments. MWSG-37's other support squadrons, MWSS-372 at Camp Pendleton, MWSS-371 at MCAS Yuma, and MWSS-173 at Marine Corps Air-Ground Combat Center Twentynine Palms, remained at their respective stations but soon sent detachments to cover required operations at El Toro and Tustin.

#### *Aircraft Basing and Tanker Support*

Even as operational, administrative, and logistical details relating to the embarkation of MAG-70 were being dealt with by its staff and higher headquarters, the unresolved issue of prospective aircraft bases in theater hung like a cloud over planning. OPLAN 1002-90 assigned the 7th MEB to the defense of the Jubayl area in the oil-rich Eastern Province of Saudi Arabia. Al Jubayl, the first city of any substance on the coastal route south of the Kuwaiti border, was a logical place for the projected Marine cantonment. The commercial Port of Jubayl seemed ideally suited for the first "real-world" employment of the MPF, and it was complemented by the airfield on the southern outskirts of the city at the King Abdul Aziz Naval Base (KAANB).

On closer inspection, however, this airfield possessed some significant shortcomings for supporting an MPS offload and hosting a large rotary-wing

detachment. Its 8,000-foot runway had not been properly maintained for many years. Although nominally long enough to land a U.S. Air Force Lockheed C-141B Starlifter safely, the runway could not accommodate a sustained flow of airlifters due to its deteriorated condition. As one Harrier squadron commander later noted:

The runway adjacent to a soccer stadium was an 8,000-foot stretch of badly deteriorated asphalt. Its small turnaround [and] parking area was in sad shape and barely sufficient for a 20-plane squadron. Overall, the potential for foreign object damage (FOD) would have been unacceptable during peacetime.<sup>28</sup>

In addition to these failings, there were no aircraft hangers and the base also lay within a few hundred meters of the major coastal north-south thoroughfare and thus its activities were open to observation by passers-by.

A dozen miles northwest of the city of Jubayl lay a much newer airfield with a runway that could accommodate the largest strategic airlift aircraft in the world. Landing at NAF Jubayl would become an unforgettable event for many 3d MAW Marines.\* This airfield, used by several helicopter squadrons of the Royal Saudi Naval Force and known as the Jubayl Naval Air Facility (JNAF), also had very limited aircraft parking and taxi areas and as a result could only accommodate a few very large aircraft at one time.\*\* Given time, however, these limitations and roadblocks could be overcome and the facility upgraded to suit I MEF's requirements.

Time, however, was of the essence in the first weeks of August 1990. Faced with the invasion of Kuwait and possible attack on Saudi Arabia, the authors of the draft OPLAN 1002-90 (Defense of the Arabian Peninsula) assumed "... that 19 days of pre-hostility deployments and nine more days of deployments after hostilities began would be available before lead enemy elements reached defensive positions near Al-Jubayl."<sup>29</sup> With essentially no warning of Saddam's attack into Kuwait and confronted with the very real possibility of the Iraqi Army continuing southward on short notice, the certainty of utilizing Jubayl as a port and airhead for MPS operations was very much in question during the first critical days of Operation Desert Shield. Given the overt Iraqi threat to eastern Saudi

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\* Sergeant James I. Mabus of Marine Aircraft Control Group 38 described the image of arrival in Saudi Arabia that is most vividly seared into most Marines' memories: "Arriving in theater and the back hatch of the plane opening . . . and the hot air shooting into the aircraft, stifling with the strong sent of jet fumes, someone in the plane said, 'This might not be hell, but we can see it from here.' One thought that the jet hot exhaust would end as one stepped off the aircraft and away from the tarmac, but as the smell left, the heat didn't stop. It took a while for the mind to accept that the two are separate, and that you are now in a truly foreign place that remains this hot all day long." (Attachment to H&HS-38 ComdC, Jan91).

\*\* The 1:500,000 Tactical Pilotage Chart (JOG Air) carried by pilots referred to the port and city as Al Jubayl and the airfield northwest of the city as Jubayl.



*Often, art can capture a sense of the reality of war in ways other media cannot. In this painting, Col H. Avery Chenoweth, USMCR (Ret), conveys an impression of the urgency that accompanied the build-up to Desert Shield/Desert Storm as Marine aircraft fly into Jubayl the supplies so necessary to allied victory.*

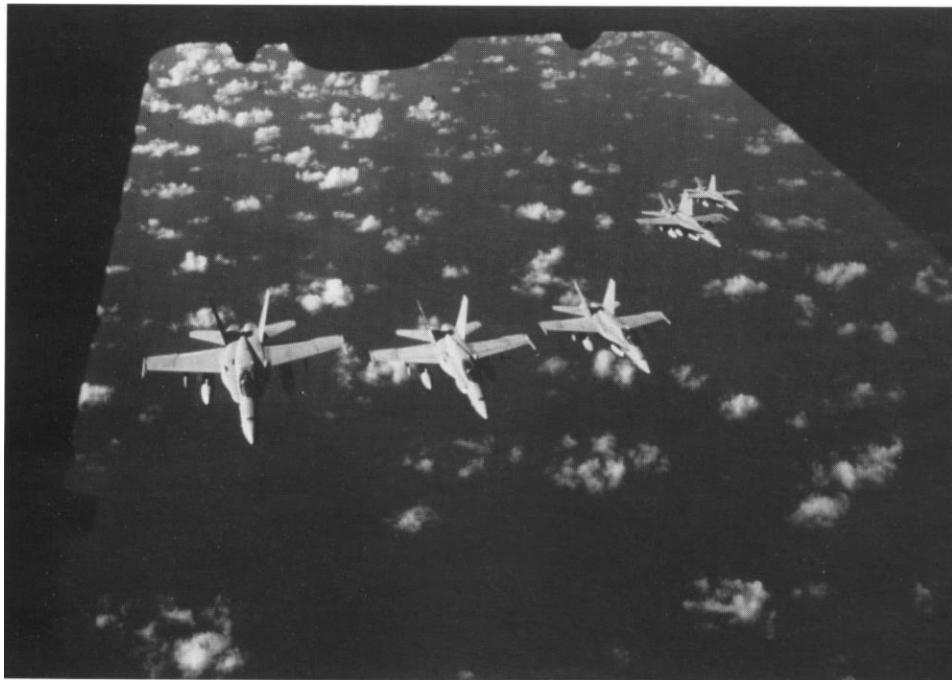
Arabia, the wing even went so far as to examine alternative airfields in Oman.\*

Facing a dearth of suitable airfields in eastern Saudi Arabia, the Marine Corps was fortunate to have dispatched Major General Jeremiah “Digger” Pearson III to Saudi Arabia in early August from his assignment in Quantico, Virginia, to serve as the deputy commander Marine component command of Central Command (MarCent) in Riyadh. A recent CentCom Inspector General (1986-1988), Pearson was already acquainted with many influential persons in the region. He called upon one of those, Shaikh Khalifa bin Ahmad Al Khalifa, the minister of the Bahrain Amiri Defense Forces, and explained to him MarCent’s airfield difficulties. The minister understood immediately and graciously offered the Marines some space at the busy Bahrain International Airport on the outskirts of the capital and the full use of Shaikh Isa Air Base, a partially-completed fighter base, in the southern portion of the island.<sup>30</sup>

At the same time, the Air Force component command of Central Command (CentAF) dispatched a multi-service team to the theater to assess the quality and quantity of available airfields for use by the large aviation force slated to descend upon the region within a few days. General Moore sent Lieutenant Colonel Stephen F. Mugg of the wing staff to join the team, and they too reported that the Jubayl area was less than ideal. The team drew roughly the same conclusion as had General Pearson about the proper sites for MAG-70, determining

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\* Captain John T. Quinn II, the assistant detachment commander for MWCS-38, recalled the urgency of early MAG-70 planning meetings he attended.



*Getting aircraft to theater required the largest "tanker bridge" operation ever undertaken. Here, Marine F/A 18s refuel from tanker aircraft enroute to the Persian Gulf area.*

that Shaikh Isa would be a more appropriate base for fixed-wing squadrons. The team report to General Horner recommended that the Marines use Shaikh Isa. General Schwarzkopf, in consultation with the Bahrainis, quickly concurred.<sup>31</sup>

Shaikh Isa Airfield seemed ideal to the Marines of MAG-70 when they arrived in mid-August. With a runway of 12,541 feet and 1.1 million square feet of ramp space, Shaikh Isa was one of the better facilities available in the region.<sup>32</sup> Located along the coast on the eastern side of Bahrain near its southern tip, the airfield was situated well away from the island's population centers. Although incomplete, most necessary ancillary facilities were available on the northeast corner of the base including mess halls and temporary berthing for hundreds of men in air-conditioned buildings. Two modern hangars and an air traffic control tower dominated the operational area of the base on the western side of the runway. A dozen smaller buildings in the area offered room for supporting units.

Inadequate basing in theater was only part of the problem confronting Marine aviation in mid-August; the other parts consisted of garnering enough strategic airlift and aerial tanker support to move MAG-70. A notional MPS MEB required the equivalent of 259 mainly Air Force C-141 sorties to fly-in enough personnel and equipment to marry up with and fully employ the stocks on board the MPS squadron. More than 50 of these sorties had to be C-5s to lift outsized cargo. The figure of 259 did not include tanker sorties to get the multitude of C-5s, C-141s, and fixed-wing tactical aircraft to their destinations halfway around the world.

For Operation Desert Shield, unfolding in an area of the world far

removed from most of the overseas U.S. military infrastructure, the level of tanker support required was extraordinary. With little base access west of the Philippines and east of Diego Garcia, U.S. aircraft sometimes had to be routed eastward nearly two-thirds of the distance around the globe. This optimized use of U.S. bases in the United States and Western Europe as well as the Atlantic and Mediterranean “tanker bridge” instituted by the U.S. Transportation Command (TransCom).<sup>33</sup>

*An F/A-18 is shown being refueled from the perspective of the tanker. This is considered a “stop” on the tanker bridge to the Persian Gulf.*



This “tanker bridge,” although unprecedented in size and scope, could only support a limited number of aircraft in transit at any one time. In the first week of the operation, this key resource transported lead elements of the U.S. Ninth Air Force (starting on 7 August with two squadrons of Air Force McDonald Douglas F-15C Eagles from the 1st Tactical Fighter Wing) and the U.S. Army 2d Brigade, 82d Airborne Division, together with other XVIII Airborne Corps elements. With the Ninth Air Force commander, General Horner, positioned in Riyadh, Saudi Arabia, and deputized by General Schwarzkopf as the CentCom (Forward) commander, the emphasis on moving tactical aviation to theater as quickly as possible was predictably strong. However, this emphasis did not initially extend to Marine tactical aviation.

While this delay was being resolved, the 3d MAW began to move MAG-70's fixed-wing aircraft across the U.S. to East Coast air stations using Marine KC-130s reserve and intermediate staging bases enroute. The KC-130s that were required for this movement exceeded those available from active units. KC-130s of the 4th MAW provided immediate and constant support starting on 6 August, to Marine units staging from East Coast bases to the Gulf. Almost to a man, VMGR-452 pilots voluntarily took a military leave of absence from their civilian airline jobs to provide what was needed for their active duty counterparts to get to the Gulf.<sup>34</sup>

On 14 August, VMFA-235 and VMFA-314 departed El Toro for MCAS Beaufort and VMA-311 left Yuma the next day for Cherry Point. The squadrons spent the following period conducting additional training while awaiting Air Force tanker support for the trans-Atlantic leg of the journey to the Persian Gulf.<sup>35</sup> Although a KC-130 detachment accompanied Marine expeditionary units on occasion when they deployed to the Mediterranean, the Hercules was a tactical tanker by design. It did not have the capacity or speed to support effectively the large number of Marine jet aircraft slated to cross the Atlantic. This required Marine aviation to be dependent on the Air Force tanker bridge. Getting a time slot to enter a Marine squadron onto the Air Force tanker bridge would be a mandatory step in getting to the theater.

After several false starts, on the night of 21 August, Lieutenant Colonel “Scotty” Dudley’s VMFA-451 Warlords would get its time slot on the bridge for departure from MAG-31, MCAS Beaufort, South Carolina. Fully combat armed, the Warlords’ 12 F/A-18s began their trans-Atlantic flight and arrived in Shaikh Isa, Bahrain, on the afternoon of 23 August, reporting to MAG-70. While easily said, this understates the tremendous preparations required of all the squadrons departing for Desert Shield. A squadron typically had 8-10 ready-to-go aircraft out of 12 assigned on any given day during peacetime. The remainder were undergoing modifications, at a depot-level maintenance facility, or temporarily grounded awaiting parts. When the order to go to war came down, non-flying and missing aircraft are replaced from other squadrons in the MAG with no small amount of resentment. Augmenting the deploying squadron personnel to full table of organization likewise required other units to find volunteers to fill the peacetime 20 percent shortfall with pilots, as well as maintenance crews. Aircraft cannot oper-

ate very long without a spare parts supply. So packing contingency parts, in addition to all the individual and unit equipment to survive in an austere environment required a total MAG effort. Colonel Randolph H. Brinkley's MAG-31 met this challenge while sponsoring the West Coast squadrons as they transited through Beaufort and awaited their time slot for the tanker bridge.

Colonel Rietsch thought that the support provided by "Brinkley's MAG-31 was far above and beyond what I had expected. We literally cleaned them out of air-to-air missiles, and FLIR pods, plus some skilled people that we picked by name. This was really the 'Corps taking care of its own' at its best."<sup>36</sup>

The night of departure for the Warlords had two flights of seven F/A-18s flying behind Air Force KC-10 tankers which carried enough fuel to get the 12 "flyers" across the Atlantic by airborne tanking about seven to nine times. The two spare contingency planes were for any aircraft that might have maintenance problems. These returned to Beaufort and their pilots slowly rode across the "pond" on a scheduled Marine KC-130.\* The pilots of the squadron spent a "crew rest" period in NAS Rota, Spain, then departed the next day for Shaikh Isa.

The greatest part of the support required by the deploying squadrons had to arrive by sea. The MAG-70 combined offload preparation party (OPP) and surveillance, liaison, and reconnaissance party (SLRP), whose mission was to survey the port of entry and to prepare MPS equipment for offload and issue, departed Norton Air Force Base, California, on 12 August after a delay of several days. That same day, but half way around the world, three of the five ships of MPSRon-2 arrived at the commercial Port of Jubayl. On the 13th, the MAG-70 advance party left El Toro, and later that day the Military Airlift Command (MAC) turned on the airflow spigot and began to inundate El Toro with C-5s, C-141s, and chartered civilian aircraft.

Major General John I. Hopkins, commanding the 7th Marine Expeditionary Brigade of which MAG-70 was the aviation combat element (ACE), issued a warning order as early as 3 August. It was followed by a nominal contingency force list on the 8th and an alert order. However, it was not until the 10th that 7th MEB, as the lead element of I MEF, was authorized by CentCom to deploy to the Gulf.<sup>37</sup> Hopkins arrived at Dhahran at 0400 on the 15th, and then proceeded to Jubayl to organize the inbound combat elements and set up defenses.<sup>38</sup> Upon arrival, 7th MEB found elements of the 2d Brigade, 82d Airborne Division, occupying hasty defensive positions around the port and the Jubayl Naval Air Facility, a dozen kilometers to the west. Laying their eyes on the two airfields closest to Jubayl, KAANB and NAF Jubayl, for the first time, Hopkins and his staff quickly realized the potential of NAF Jubayl as a aerial port of debarkation (APOD) and helicopter base. He broached the idea of switching MAG-70 helicopters to Jubayl with the local Saudi authorities, and on the 16th, they granted permission to reroute the airflow to Jubayl.<sup>39</sup>

While the 7th MEB advance party undertook its initial actions in Saudi Arabia, Lieutenant Colonel Michael M. Kurth's HMLA-369 "Gunfighters" went

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\* For a first person narrative compiled from his own journal, see Jay A. Stout, *Hornets Over Kuwait* (Annapolis, MD: Naval Institute Press, 1997).



Marine Corps Art Collection

*The "Warlords" of VMFA-451 prepare to depart for the Persian Gulf, midnight, 21, August 1990. This sketch is by Col H. Avery Chenoweth, USMCR (Ret).*

through a series of machinations to arrive at the squadron makeup of 18 AH-1W Super Cobras and six UH-1 Hueys. On 3 August, before receiving the warning order, the squadron began all the necessary preparations for deployment. Administration began checking that all pay was on direct deposit, ID tags made, wills and powers of attorney in order, records of emergency data updated, and serviceman's group life insurance audited and corrected. This was accomplished while attaching 20 Marines and transferring 25 others out of the squadron. That day as well, the Gunfighters requested approval for a prototype of the AIM-1 DLR night sight to be placed on the 20 mm gun system. On the 4th they modified body armor to ensure water egress, manufactured crew recovery straps to enable the AH-1Ws to recover downed aircrew, and began briefing the enemy situation, terrain, and weather. They reviewed ordnance available on the Maritime Prepositioning Ships and initiated requests for shortfalls. The "Gunfighters" also began a rapid action maintenance engineering change (RAMEC) for installation of the LORAN-C navigation system, operation-checked ordnance systems, and built and installed the mounts and power supply for the new AR-5 chemical protective system.

On 6 August, HMLA-369 was placed under operational control of MAG-70. The next day, the squadron drew individual combat gear and area maps, worked in dental checks, and set up load plans for the C-5s. On the 10th and 11th, aircraft were flown to El Toro, while the squadron equipment moved there by truck from Camp Pendleton. In addition, HMLA-369 bore-sighted all of its weapons and secured special paint from commercial sources in order to apply a desert-camouflage scheme to all aircraft. Nearly all of 3d MAW's squadrons had

to go through these same wickets, but few had such short notice. Lieutenant Colonel Kurth later estimated that he spent about \$50,000 open purchase (purchase outside the normal items of military supply), for these preparations before the squadron left the United States.

HMLA-369 divided its 24 aircraft into four self-supporting detachments for movement to theater. The first C-5 out of El Toro carried four Hueys and two Cobras; the other three C-5s departed shortly thereafter. After a sharp discussion with wing staff officers, Lieutenant Colonel Kurth was able to include modest quantities of TOW missiles, 20mm cannon rounds, and 2.75-inch rockets with each detachment. He also broached the issue of Hellfire missiles, but was informed that they were scheduled to arrive in theater later. The squadron departed El Toro on the 14th and 15th on board C-5s, loaded with passengers; cargo; armed aircraft; weapons; nuclear, biological, and chemical (NBC) protective equipment; and meals ready-to-eat (MREs). The C-5s carrying squadron helicopters and personnel began arriving at Dhahran, Saudi Arabia, on 16 August, making HMLA-369 the first Marine squadron to arrive for Desert Shield.<sup>40</sup>

The remaining MAG-70 helicopter squadrons followed HMLA-369 out of El Toro beginning on 17 August. Colonel Larry T. Garret, commanding officer of MAG-16 would later recall HMM-161's difficulties in making the 17 August departure: "The CH-46 was undergoing yet another component upgrade . . . as new components were just coming available. HMM-268 was working up for MEU (SOC) deployment and had all of its aircraft upgraded, because up until the Iraqi invasion of Kuwait, it was the next squadron to deploy. All of a sudden HMM-161, on the force list for MAG-70 had to go within days, needed the aircraft with the latest dynamic component upgrades. Since simply swapping the squadrons (HMM-268 for HMM-161) was disapproved, there was no alternative to a flip flop of aircraft. It was not a happy occasion . . . but it did get the job done."<sup>41</sup> Lieutenant Colonel Daniel R. Rose's HMH-462 also traded five CH-53A's to HMT-302 for five CH-53Ds to bring his squadron to 12 CH-53Ds. Lieutenant Colonel Raymond L. Nymeyer with HMH-466 brought eight CH-53Es and was the first heavy lift squadron in Saudi Arabia. MACG-38's various squadrons, missile battalions, and detachments were fed in whole or piecemeal as the airlift flow dictated. Marine wing support squadrons, MWSS-374 and MWSS-373, were intermixed with this flow to theater, as were aviation logistics contingency support packages (CSPs) from the four aviation logistics squadrons.

The only 3d MAW elements to move by sea consisted primarily of several hundred maintenance vans from the Marine aviation logistics squadrons, MALS-11 and MALS-16. They departed Port Hueneme, California, on 14 August on board the USNS *Curtiss* (T-AVB 4).<sup>42</sup> Lieutenant Colonel Michael J. Kennedy was the embarked troop commander for about 300 embarked 3d MAW support Marines.\* The remainder of MALS-16 was augmented by MALS-39

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\* In a letter to the Commandant of the Marine Corps, the commanding officer of USNS *Curtiss* detailed how six days into the voyage the ship lost both boilers and was adrift for 72 hours. The Marines on board not only repaired the boilers but repaired the ship's radar as well. (Enclosure to H&HS-38 ComdC, 4Aug90-31 Mar 91).

personnel from Camp Pendleton. On 20 August the squadrons fly-in echelon departed El Toro and completed its transit to NAF Jubayl on 26 August. The *Curtiss*' sister ship, the USNS *Wright* (T-AVB 3), departed after loading much of MALS-14 on board.<sup>43</sup>

On 19 August, MAG-70 fixed-wing aircraft began trans-Atlantic flights from MCAS Cherry Point and MCAS Beaufort with Air Force tanker support. First in the queue across the Atlantic was VMA-311. After numerous air refuelings and a stop at NAS Rota, Spain, they arrived at Shaikh Isa Air Base the following day. The rest of the fixed-wing aircraft made trans-Atlantic flights following the same basic route. VMA-542 left Cherry Point in the company of four VMGR-352 KC-130s. The bulk of the squadron arrived at Shaikh Isa on 21 August, while the Hercules proceeded north to Bahrain International Airport because of limited ramp space at Shaikh Isa. VMFA-314 and VMFA-235 followed on the 22nd, and VMFA-333 and VMFA-451 arrived at Shaikh Isa on the 23d. VMA(AW)-224 and VMAQ-2 joined MAG-70 the next day, completing the group's initial fixed-wing flow with the exception of several aircraft delayed due to maintenance problems enroute.<sup>44</sup>

This initial flow of 3d MAW Marines to join up as a part of MAG-70, the aviation combat element of 7th MEB, did not bring any relief for the Marine Corps from ongoing commitments around the globe. As each Marine urgently prepared to meet the needs of their Corps and country on short notice there was precious little time to "square away" their personal affairs. What is left untold is the emotional strain on each family, as their Marine compartmentalized his life and moved toward an uncertain environment. The Marine Corps culture of deployment would ease this transition through a well-used family support structure. The Marines stepped off at the various airfields in the Persian Gulf with weapons and ammunition ready. They functioned in this strange new environment by relying on their instilled training and unit cohesion. That was enough to accomplish what the Corps had always asked of them, to successfully complete the mission.

## Initial Marine Air Operations in the Gulf Region

*The Defense of Eastern Saudi Arabia and Bahrain  
(15 August-8 November)*

*Liaison with CentCom and CentAF*

Sensing that important issues were being decided on the ground in Saudi Arabia and that was where he could best influence events, General Moore on 14 August departed El Toro on board the C-5 transporting HMLA-369's first load of aircraft and arrived at Dhahran Air Base in Saudi Arabia the following day. Among the small group of 3d MAW staff officers accompanying Moore was Colonel Joseph W. Robben, Jr., one of the Corps' most experienced air control

officers and until July the commanding officer of MACG-38, Lieutenant Colonel Walter E. McTernan II headed up the advance G-2 (intelligence) shop. Colonel Terrance R. Dake, who had just joined the 3d MAW staff as the news of the Iraqi attack was breaking, brought along several members of the G-3 (operations) section. Colonel Dake later stated:

I checked in on 3 August and the invasion when it took place was a surprise—we had some warning signs, but it seemed to take us by short notice. So MAG-70, as part of 7th MEB, we did everything we could to beef them up so that they were a robust ACE. By that I mean that we added people, looked at functions, . . . with the idea that when 3d MAW headquarters stood up, part of MAG-70 would join the staff and be the nucleus of the wing headquarters. That was our plan, and allowed General Moore then with some confidence, to go with a very small staff, 10 people as I recall.<sup>45</sup>

Upon his arrival in Saudi Arabia, General Moore immediately sought out General Horner. Busily coordinating the initial build-up of U.S. forces, General Horner reviewed with Moore and his staff the projected disposition of MAG-70 and the anticipated 3d MAW reinforcements. The Marines were impressed by General Horner's openness and practical approach to the situation at hand. General Horner welcomed them to theater and promised his best efforts at a smooth working relationship. After these initial consultations, Moore took most of the staff and headed to Shaikh Isa, Bahrain. He sent a team headed by Colonel Robben to work directly with Horner's staff, and to serve as a liaison element.\* This move was crucial because on 10 August General Schwarzkopf designated General Horner as the Joint Force Air Component Commander (JFACC) and the ensuing air control and apportionment issues would be critical to the Marines warfighting effort.<sup>46</sup>

Initially the JFACC staff was joint in name only, with the manning, background, and outlook of a numbered U.S. Air Force headquarters, since it was built from CentAF headquarters personnel. At the outset, no non-Air Force officers were assigned to key decision-making billets on the JFACC staff. Instead, Navy, Marine, and Army officers served as liaisons between their component commanders and the JFACC, with no more influence on the development of the initial air campaign plan than had the Saudis or even the small allied NATO coalition members.

This Air Force planning focus was exacerbated from the start when General Schwarzkopf designated General Horner as the CentCom (Forward) commander. Preferring that General Horner concentrate on marshalling CentCom's forces in theater, Schwarzkopf on 8 August turned to the Air Force

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\* MajGen Terrance R. Dake noted General Horner's positive reception of General Moore and his staff. He also highlighted Colonel Robben's work with the JFACC as a key contribution to the success of the 3d MAW. (MajGen Terrance R. Dake intvw, 21Feb96).



*MajGen Moore on the flightline at Shaikh Isa in front of an A-6E. Gen Moore brought a wealth of experience to his position as Commanding General, 3d MAW. He previously served as the deputy assistant chief of staff, G-3, 1st MAW, assistant chief of staff, G-4, 2d MAW, and chief of staff 2d MAW.*

Headquarters staff in the Pentagon for assistance in developing an immediate air plan should the Iraqis press on and attack into Saudi Arabia. The outline plan, developed by the so-called “Checkmate” staff inside the Air Staff’s operations directorate in the Pentagon, revealed the indelible imprint of its director, Colonel John A. Warden III, USAF.<sup>47</sup>

### *Air Power Theory*

Colonel Warden, a noted USAF air power theorist, had argued persuasively in a 1988 book that the focus of any air campaign should be primarily the enemy leadership and other strategic targets.<sup>48</sup> These leadership-related targets fell in the center of a conceptual five-ring “bull’s eye,” followed in declining order of priority away from the center, by key production, infrastructure, population, and fielded forces on the outer rim. As a result, enemy field armies and other operational and tactical-level targets were not deemed vital in Warden’s construct. Colonel Warden had served as an instructor at the Air College at Maxwell Air Force Base, Alabama, where he lectured on the war-winning potential of a properly developed strategic air campaign, “victory through air power,” without the need to commit to ground troops and their inevitable associated casualties. Using his theories, Warden and a small group of officers developed within days an outline plan for a strategic air campaign. This campaign was dubbed “Instant

Thunder” by Warden to highlight its difference from the piecemeal and halting “Rolling Thunder” air campaign employed early in the Vietnam War. “Instant Thunder” touted a massive unified attack against critical leadership targets in Iraq as the most effective means of getting Iraq to cease any attempted invasion of Saudi Arabia. In line with his conceptual construct, Instant Thunder accorded much less attention to the frontline Iraqi armored formations likely to head down the east coast of Saudi Arabia toward the Al Jubayl, Ad Dammam, and Dhahran area.

On 20 August, Colonel Warden and a few select officers briefed General Horner on this concept in Saudi Arabia. Horner objected to certain aspects of the plan, most notably its lack of emphasis on Iraq’s leading mechanized formations, and sent Warden back to Washington. However, Horner retained most of Warden’s officers on his staff and they formed what would become known as the “Black Hole,” the highly secret planning cell for the air campaign. The cell worked to tailor the outline of Instant Thunder more to Horner’s liking without compromising its basic thrust against the command structure of the Iraqi regime.

### *The Arrival and Beddown of MAG-70*

Several hundred miles to the northeast of Riyadh, HMLA-369’s initial detachment of four Hueys and two Cobras were unloaded from a C-5 at Dhahran Air Base. While the detachment readied its aircraft for flight, Lieutenant Colonel Michael M. Kurth looked up an old Marine Corps Command and Staff College classmate who commanded a Royal Saudi Air Force fighter squadron based at Dhahran. After remarking how they had “gamed out” a similar contingency during their student year together at Quantico, the Saudi officer briefed Kurth on the current situation in Kuwait. Later, meeting with the MAG-70 advance party, Kurth learned that Jubayl NAF was planned to be HMLA-369’s ultimate destination. Kurth then gathered his aircrews and briefed a flight plan to Jubayl. After a long wait on the taxiway, at about 1800 his detachment got airborne and headed north. Ten miles short of the airfield at Jubayl, Kurth set his Huey and an accompanying Cobra down as they began to run short of fuel. A section of Hueys returned shortly with more fuel, and by 2000, he and his wingman joined the remainder of the detachment. The other three detachments followed and by 17 August, all 24 of the squadron’s aircraft were in place at Jubayl. Kurth staged his aircraft on the flight line, which was already crowded with a variety of Apache, Kiowa, and Blackhawk helicopters from the Army’s 2d Brigade, 82d Airborne Division.

Kurth later remarked that his initial worries about Hellfire missiles to support the defense of the key ports of entry during the first days of August were allayed in traditional Marine Corps fashion:

When we got off the planes in Dhahran, there was a flatbed that was loaded. It was just sitting by itself. Nobody claimed it. So, in order to prevent those missiles from falling into the wrong hands, my S-4 offi-

cer took protective custody of those hundred Hellfire missiles, and we moved them into a bunker at Jubayl. Some months later, they did find the rightful owners of those misplaced missiles and [they were] returned to them.<sup>49</sup>

Advance elements of MWSS-374 and MACS-1 had settled into King Abdul Aziz Air Base on the 17th, so detachments of the wing support squadron were sent up to Jubayl to support Kurth's Marines. They initially were not allocated working spaces inside the two Saudi Naval Forces hangars and had to set up outside the airport terminal building. Units at King Abdul Aziz, on the other hand, had access to locker and utility rooms at the modern, but largely unused soccer stadium on the eastern side of the airstrip, which they turned into incongruous squadron spaces.

While MWSS-374 scrambled to provide basic airfield services at King Abdul Aziz and erect tents for billeting, MACS-1 turned to the task of establishing an early warning and control site for the area. By 19 August, the Tactical Air Operations Module (TAOM) was in position east of the soccer stadium, and on the 20th, the TPS-63 radar was operating under manual control. The automated system became operational when the early warning and control (EW/C) linked with an orbiting Air Force airborne warning and control system (AWACS) aircraft for the first time on 25 August. With the automated EW/C in place, the squadron could provide a level of early warning of air attack to Marines in the area and give the arriving HAWK fire units and LAAD platoons a measure of target cueing (early warning on direction of a threat). Although essentially an appendage of the expanding Air Force command and control system, this was the most that the squadron could provide until the MAG-70 Tactical Air Command Center (TACC) was established and its long-distance tactical communications system was operating.\*

On 15 August, MWSS-373's advance party arrived and began the task of surveying the facility and assigning work and billeting spaces for MAG-70. Like the other Marine wing support squadrons, there would be a priority list of operations and services to begin providing. This list was dependent on the status and condition of the airfield. Shaikh Isa was new, but would have to grow to accommodate the large number of people and inbound aircraft. On 20 August, when VMA-311's Harriers touched down at Shaikh Isa, they learned that they were not alone. A squadron of 24 F-4G Phantom II "Wild Weasel" aircraft from the U.S. Air Force's 35th Tactical Fighter Wing had arrived a few days earlier and had set-

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\* A Tactical Air Command Center (TACC) was the principal Marine Corps air command and control agency from which air operations and air defense warning functions were directed. It was the senior agency and the operational command post of the aviation combat element commander. It provided the facility from which the aviation combat element commander and his battle staff planned, supervised, coordinated, and executed all current and future air operations in support of the MAGTF commander. The tactical air command center provided integration, coordination, and direction of joint and combined air operations.

tled into the two available hangars on base. This would become the format for the initial distribution of host nation facilities in both Bahrain and Saudi Arabia. First to arrive would claim and hold onto facilities.

The headquarters of the MACG-38 headquarters detachment and Detachment A, MWCS-38, landed at Dhahran on the 22nd, and by nightfall had moved across the four-lane bridge and causeway to the island nation of Bahrain and down to the southern tip to the as-yet-unmarked airfield of Shaikh Isa. Intermixed in the fixed-wing flow of 20-24 August were lead elements of MACG-38 and the remainder of MWSS-373.

Lead elements of HMLA-367 and HMH-465 arrived at the MAG-70 rotary-wing detachment at Jubayl NAF at the end of August, and the remainder of the squadrons' personnel and equipment were in place at Jubayl by the first week of September. The Hawaii-based 1st Marine Expeditionary Brigade also began to schedule the next echelon of forces for deployment to the Gulf during this period. From MAG-24, eight CH-53Ds from HMH-463 and a dozen CH-46Es from HMM-165 were prepared for air embarkation. MWSS-174 and MACS-2 also augmented the force, with the latter anticipated to relieve MACS-1 of its mission as the 3d MAW tactical air operation center (TAOC), since MACS-1 was operating the new tactical air operations modules and had only 30 days of parts and contractor support. Upon arrival in the Gulf, these units would marry up with their equipment sets being offloaded at the port of Jubayl from ships of the Guam-based MPSRon-3. Repeating the procedures undertaken by the 7th MEB forces, MAG-24's deploying squadrons scrambled to fill out personnel rosters and draw desert equipment as they waited for strategic airlift support. C-5s, C-141s, and civil reserve air fleet aircraft began arriving at MCAS Kaneohe Bay, Hawaii, in late August and promptly loaded the 1st MEB's deploying aviation, ground, and combat service support elements.

With the acute shortage of space on board the 4th MEB's aviation-capable amphibious ships combined with I MEF's desire for the early deployment of antiaarmor weapons systems, it was decided to move the additional dozen AH-1Ws belonging to HMLA-269 to Saudi Arabia by strategic airlift. Thus, Lieutenant Colonel Kenneth W. Hill and his "Gunrunners" of HMLA-269 were embarked at Cherry Point, North Carolina, and flown on board C-5's to Dhahran. Arriving on 18 August, Hill's under-strength squadron, designated HMLA-269 (Forward), with 12 AH-1W Super Cobras, staged at the airfield in preparation for further movement. The rest of the squadron (six UH-1Ns and three AH-1Ts) deployed with MAG-40 and maintained the squadron designation, HMLA-269. Hill's Marines were able to take very little in the way of logistical support with them to Dhahran. General Hopkins therefore decided to keep HMLA-269 (Forward) at Dhahran while they conducted an intense weapons tactics instructor (WTI) supervised work-up to achieve combat readiness.<sup>50</sup> This work-up included training flights for weapon employment and night vision goggle proficiency.

The breakout and build-up of aviation ordnance was a continual challenge for MAG-70. Although squadrons were able to deploy with minimal quantities of defensive armaments on board their aircraft, actual combat operations would burn

through these small amounts in a few combat missions. The overwhelming majority of aviation ordnance required for such a contingency lay on board the MPS and afloat prepositioned ships only now beginning to offload their cargo at Jubayl and Damman, Saudi Arabia. Fuel was less of an initial problem with the Saudis providing adequate supplies directly from their refineries.

With MAG-70 split between two countries, Bahrain and Saudi Arabia, the MPS and ammunition ships would offload at the port of Jubayl and then reload the fixed-wing components and make the one-day transit to offload at the Mina container pier in Bahrain. Moving the vast quantities of material out of the ports was very difficult with the dearth of motor transport assets available to the brigade. Consequently, the task of building and securing dumps positioned away from the port areas, but close to the key airfields, demanded urgent attention. The 7th MEB would have to construct these ammunition supply points (ASP).

#### *Initial Air Operations in Theater*

With the Navy's two aircraft carriers still operating outside the Gulf in the Indian Ocean and with the U.S. and Royal Saudi Air Forces stretching to cover much of the Arabian Peninsula, General Horner assigned MAG-70 the mission of providing air defense coverage of the northern Persian Gulf area and the fleet units operating there. The air defense zone ran north to south from astride the Kuwait-Saudi border down through Bahrain and east to west from the Saudi coast to the edge of Iranian airspace. With the air distance from one end of the zone to the other covered in less than 15 minutes flying time and the threat level uncertain, Horner and the Navy required 24-hour-a-day fighter coverage of the area. With only a few days in country to get settled, such a combat air patrol (CAP) responsibility would be a challenge to sustain.

Providing land-based aviation to operate in support of the fleet had been a traditional Marine mission almost from the beginning of naval aviation. This mission in the northern Gulf, however, was to be unique in several respects. With responsibility for the Gulf resting with the Navy component commander of Central Command (NavCent), MAG-70's fighters operated under the tactical control of the fleet antiair warfare commander on board the USS *Worden* (CG-18) and other guided-missile cruisers, with mission call sign "Red Crown." To ensure against Iraqi aircraft splitting the air defense seam between sea and shore, General Horner charged the 3d MAW with establishing an interface between the *Worden*, the orbiting Air Force AWACS over northeastern Saudi Arabia, and the Eastern Sector Air Defense Command located at Dhahran.

The "Warlords" of VMFA-451 arrived at Shaikh Isa on the afternoon of 23 August, while the squadron's maintenance and staff sections were in place by the 26th. On the 26th, they began operations on a 24-hour-a-day basis manning the "Northern Gulf CAP." These were the first of what would become thousands of sorties providing air cover to 7th MEB and then to I MEF, relieving pressure on the Navy to maintain a northern Gulf CAP from its carriers outside the Gulf. Captain Jay A. Stout of VMFA-451 described a typical combat air patrol mission:



Marine Corps Art Collection

*White sand and hot runways were common to 3d MAW operations in the Persian Gulf as portrayed in Col H. Avery Chenoweth's painting of Marine F/A-18 Hornets refueling at Shaikh Isa Airfield in Bahrain.*

Normally we would brief up to three hours prior, suit up, and go to our jets, running them through all their preflight checks. Then we would shut them down and sit around the maintenance spaces fulfilling the 30-minute and 15-minute alert criteria. When it came time to launch we would walk back out to the line and start up, then taxi out to the arming points, where all our weapons would be checked and readied. Finally about 20-30 minutes prior to our assigned CAP time, we would launch. All of this was accomplished using as little radio communication as possible. We carried two external fuel tanks, one under each wing, three or four AIM-7 Sparrow missiles, four AIM-9M Sidewinder missiles, along with a full load of approximately 550 twenty-millimeter rounds for the M61 cannon. Our CAP station was roughly two hundred miles north, just south of the Saudi-Kuwait border, and offset over water. When we reached our point, the previous section of jets would depart and we would take up station. Generally we would split and set up in an opposing race track pattern with legs about 20 miles long, so that we always had a radar from one of our jets looking north into Kuwait and Iraq. Normally we were controlled by Navy ships (Red Crown), with occasional control provided by a Marine air control squadron, or an Air Force AWACS (airborne warning and control system) aircraft. If equipment were working properly, which was surprisingly often, all radio comm would be transmitted in an encrypted mode.

In a perfect world our tactics called for us to operate at an indicated airspeed of about 350 to 400 knots, at medium altitude. We weren't operating in a perfect world. If we tried to operate at the desired speed, we would have run ourselves out of fuel much too quickly. We didn't

have the fighter or tanker assets to afford that. Because of fuel restrictions, we were driven up to 30,000 feet and operated at air speeds as slow as 250 knots. We concentrated our radar scans to the lower altitudes. The radar coverage of our controlling units was not as good at low altitude as ours was. Essentially we were betting that with our own radars and those of our controlling units, and the capabilities of our electronic eavesdropping aircraft, we would have enough warning to reach a favorable airspeed and altitude, reconstitute as a formation, and engage the enemy in plenty of time. This was not unrealistic, and we became comfortable with the limitations.<sup>51</sup>

Normal on-station time was either an hour and a half, or three hours, with at least one refueling from an airborne tanker each period. The tanker was normally a Marine KC-130 at night, but during the day there was an Air Force KC-135, or KC-10 on station.

Colonel Rietsch, MAG-70/MAG-11's commanding officer, adopted a group combat air patrol station from 28 degrees North to 28 degrees, 30 minutes North latitude for these very specific reasons: the threat sector area of interest was 40 miles closer to shore than the Navy CAP; politically, the MAG-11 CAP was closer to Marines on the ground and protected the tactical seam between the Navy CAP and the Air Force overland CAP; and the CAP was able to pick up the enemy quicker as they were trying to come from the sea instead of chasing them from further out at sea.<sup>52</sup>

The Air Force KC-135 was considerably harder from which to refuel, especially at night. Lieutenant Colonel Richard W. Bates would remark on this difficulty in regards to VMAQ-2's trans-Atlantic crossing. VMAQ-2 departed in two six-plane elements for their trip to Bahrain at midnight from Cherry Point. The KC-135 was to lead them out the first two hours and then Air Force McDonnell Douglas KC-10 Extenders would take over the pathfinder and refueling role to Rota, Spain. According to Lieutenant Colonel Bates:

There was a lot of difficulties with the KC-135 at night in marginal weather, with 2 of the 12 planes unable to refuel and having to tank from the KC-10 Pathfinders which is a much more straightforward proposition. It was an 8-1/2 hour flight to Rota and a further 8 hours to Bahrain. We spent 14 hours in Rota and then moved on. We flew over 16 hours in a day and a half. It was no mean feat to get all 12 aircraft there in a day and a half with a small maintenance detachment on the KC-10s.<sup>53</sup>

#### *Maritime Prepositioning Shipping (MPS) Offload Issues*

A maritime prepositioning ship (MPS) offload was a complex operation involving the unpacking, movement, storage, and issue of many thousands of separate items ranging from main battle tanks to small repair parts. For the MPS concept to work effectively, the squadrons, battalions, and detachments departing the

United States and overseas—some with only their individual equipment and weapons—had to have confidence that the equipment and supplies advertised as being included on board the MPS ships were in fact there and would be made available quickly to units once they arrived in theater. Command arrangements could appear unusual to the untrained eye. The Navy and Marine Corps saw the steps to be undertaken during the employment of an MPS as being akin to traditional amphibious operations, with the commander of the maritime preposition force assuming the role of commander amphibious task force (CATF) while the Marine expeditionary brigade would be the equivalent of the commander landing force (CLF). Thus, until the 7th MEB was firmly established ashore, the operation would be run by the Navy. Advance Marine expeditionary units were chopped to the MPF to provide security in the port while the offload commenced.<sup>54</sup>

In the first days there were two MPS squadron offloads. The first, MPS RON-2 (from the British atoll Diego Garcia in the Indian Ocean), consisted of the merchant vessels (MV) *Bonnyman*, *Anderson* and *Hauge* which had arrived pier-side at Jubayl by 1800 on 15 August, with the MV *Fisher* arriving later. The same day, Commanding General, 7th MEB, and a nucleus of his command element staff arrived.

While the concept worked largely as advertised, the compressed timeline of the offload combined with the proximity of Regimental Combat Team (RCT) 7 to the staging area took a toll on the efficiency of the operation. Given the theater commander's desires, the combat forces, or the "teeth," arrived on the first fly-in echelon aircraft rather than the rehearsed Marine Corps combat service support detachment (CSSD) elements. Incidents involving the commandeering of vehicles and other items by leaders desperate to move their units quickly out of the overcrowded and unsanitary conditions at the port were reported. MAG-70 units generally arrived at Dhahran and then moved to Shaikh Isa, King Abdul Aziz, or Jubayl NAF. By the time units arrived at Shaikh Isa and were able to locate a place to bed-down, arrange for vehicles, and make the necessary travel arrangements to the port of Jubayl, they tended to find little organization at the port and less than their full allocation of equipment awaiting their signature. While the aviation Marines found in most cases superior living conditions, they would be initially hampered in accomplishing their mission by the lack of planned for but uncontrolled equipment distribution.

Colonel Rietsch recalled that "ground transportation was exceedingly scarce. The first units arriving at Shaikh Isa were given U.S. Air Force prepositioned vehicles. . . . [I] got a 1982 Dodge pickup with 200 miles on the odometer. Other vehicles were simply rented on the spot in Manama."<sup>55</sup>

MACG-38 units in particular encountered a shortage of electrical power generators. These were soon sorely missed, as they were critical to the 24-hour operation of the group's radar, facilities, communications, and all-important air conditioners to keep them running in the scorching heat of the Persian Gulf. Tactical vehicles were also in short supply. Equipment shelters that were supposed to be pre-loaded on board the backs of high-mobility multipurpose wheeled

vehicles (HMMWVs) and pick-up trucks, were found by MACG-38 representatives sitting on the pavement minus their prime movers. Lieutenant Colonel Dennis C. Sorrell, the commanding officer of Marine Air Support Squadron 3 (MASS-3) would lament that "the majority of rolling stock to support MASS-3 Det A was unavailable due to well-intentioned, but ill-conceived distribution from the MPS offload." MPSRon-3 would arrive on the 26th and its offload would progress more smoothly.

#### *Initial MWSS Efforts in Theater*

MWSS-374 and MWSS-373 also struggled with the after-effects of the MPS offload. MWSS-373 was fortunate to have the basic infrastructure at Shaikh Isa as a starting point, but the distance to Jubayl and the initial complexities of transportation to and from another country led to the same type of problems encountered by MACG-38 units. The squadron was able to shelter some Marines in brand-new, air-conditioned barracks at Shaikh Isa while it sought out tentage and prepared open areas for semi-permanent encampments. Meanwhile, the squadron established tactical fueling sites, internal airfield telephone and radio communications, messing, and organized transportation services around the base. The tactical airfield fuel dispensing system (TAFDS) bore some immediacy as Shaikh Isa's in-ground fuel system would support only two to three days of combat operations for the aircraft currently occupying the airfield.

The burgeoning numbers of tactical aircraft at Shaikh Isa required immediate attention. More than 120 jet aircraft were forced to occupy ramp space totaling only a few acres. Aircraft were lined up wing-tip to wing-tip, providing a lucrative target for Iraqi attack aircraft or saboteurs. More ramp space was required at the base as soon as possible; luckily MWSS-373 was joined at Shaikh Isa by the Air Detachment of the 7th Naval Mobile Construction Battalion (NMCB). The detachment of "Seabees" would be joined within weeks by the remainder of the battalion, as most of its heavy equipment would come by sealift. The Seabees were noted for expertise in permanent and semi-permanent construction at ports, airfields, and other facilities of naval interest. They had served side-by-side with Marines since World War II, and that tradition was carried forward in the Gulf from the earliest days of Desert Shield.

MWSS-374 found itself in quite different circumstances from its sister squadron to the south. Other than the unused soccer stadium at the south end of the base, King Abdul Aziz offered very little in terms of existing airfield support. The stadium was soon known as the "SCUD Bowl" because of its anticipated use as an aimpoint for the Soviet surface to surface missiles (SCUDs) known to be in the Iraqi arsenal. To make matters worse, the already undermanned squadron bled off precious personnel and equipment to support the growing helicopter presence at Jubayl NAF. The MWSS provided the aviation elements with: motor transport, heavy equipment; emergency decontamination in a nuclear, biological, and chemical (NBC) environment; construction and utilities; expeditionary airfield extensions; airfield crash fire and rescue; tactical aviation fueling; military police; internal communication; and meteorology. Each of these areas would place demands



*F/A-18s of VMFA-451 and VMFA-333 line the runway at Shaikh Isa. Flight line overcrowding became an increasingly serious issue as 3d MAW continued its flow to theater.*

on the MWSS's in theater. The rapidity of the build-up at Jubayl caused increasing problems for the squadron. The magnitude of the build-up was taxing. Lieutenant Colonel Stephen G. Hornberger's command chronology gives insight into the build up:

MWSS-374 assumed official support responsibilities for Jubayl on 21 August, splitting the squadron's personnel and assets. Assistance was provided in the areas of water, food, shelter, and sanitation. 3,000 bottles of water were delivered daily, augmented by two water bulls. . . . [The squadron] relieved group guard and improved security positions. By 23 August, fresh fruit and juices were provided to augment MREs. By 27 August there were 1,400 personnel on board. There were 141 tents . . . [and] a 12-man shower unit became operational on that date. Population totaled 1,700 by 27 August. Wooden latrines were built by 29 Aug. On 30 August 1,000 cots were divided among the camp's 1,900 inhabitants. Hot chow began 31 August. By 2 September, Jubayl was home to 2,300. MWSS-374 had 209 personnel here and 244 back in King Abdul Aziz. The camp contained 214 tents and 44 latrines.<sup>56</sup>

Squadron logistics personnel were always on the prowl to meet needs. Upon arrival in Saudi Arabia, tents, liners, cots, and PRC-77s (short range radios) were hard to get. There was only a trickle of Class IX support items (repair parts for Marine Corps equipment). Sandbags and concertina wire required for rear area security were difficult to acquire. Marines made do and continued to upgrade both their defensive positions and living conditions as operations continued.

Lieutenant Zara E. Fulton of H&HS-38 in his quest for air conditioners to cool electronic equipment, displayed the “can do” nature of the Marine and an ability to trade:

When first arriving in theater, our air conditioners were going down left and right and [we] didn’t have the parts or expertise to fix them, so . . . we took a bag of Tootsie Roll Pops to MWSS-373 and traded them for two cases of the “new MREs.” We then took the new MREs to an Air Force Det and traded the MREs for a maintenance contract team with parts (the Air Force didn’t have the good MRE’s). They ate well and we got four air conditioners up.<sup>57</sup>

#### *The Establishment of the MACCS*

At Shaikh Isa, Lieutenant Colonel Harvey R. Norton’s MACG-38 detachment struggled to put together the scattered elements of the Marine Corps Air Command and Control System (MACCS). While the automated EW/C at King Abdul Aziz Naval Base began operating on 22 August, most of the group did not arrive in theater until that day. The forward element of H&HS-38 did not land until the 26th, after the main body, due to their C-141 being grounded enroute. Delays in the receipt of their MPS equipment coupled with misrouted fly-in echelon equipment pallets cost H&HS-38, MWCS-38, and MATCS-38 several days in setting up their systems. On 31 August, the communications squadron detachment established the first of its critical multi-channel microwave links between Shaikh Isa, King Abdul Aziz, and Jubayl NAF. Beginning on the 20th, the 9th

*H&HS-38 Marines putting finishing touches on a hardback tent are, from left, GySgt Velanda K. Milton, Cpl Christopher King, GySgt Kieth A. Thrasher, Sgt Mark Hurst, and Cpl Lloyd F. Jackson.*





An F/A-18 Hornet lands at Shaikh Isa, Bahrain. As the 3d MAW build-up continued, air traffic control services were provided by MATCS-38. In this environment close cooperation with host nation controllers was very important.

Communication Battalion provided multi-channel satellite connectivity from Shaikh Isa to the 7th MEB. However, the primary means of communications during these early days was the existing host nation commercial telephone lines.\*

H&HS-38 was able to take advantage of several unoccupied buildings at Shaikh Isa to temporarily house the MAG-70 tactical air command center (TACC). Difficulties in collecting and moving embarked equipment from Dhahran to Shaikh Isa delayed the assembly of the TACC, which was further complicated by the incomplete distribution of expected allocation of MPS equipment. By the 28th, however, the TACC was operating 24 hours a day and had tactical digital information link (TADIL)-A down-links from the orbiting E-3A Sentry (AWACS), and established the TADIL-B link with the TAOC at King Abdul Aziz, courtesy of a 78-mile multi-channel radio link between the two bases. The attempt to integrate the Marine TACC with the host nation's system and not appear to be supplanting Bahraini control of their airspace failed. It was obvious that the control capability of the TACC must cover far beyond the Bahrain national air space limits. 3d MAW would be concerned with the airspace over northern Saudi Arabia and into Kuwait.

Antiair defense provided the Marines numerous challenges. The 2d Light Antiaircraft Missile (LAAM) Battalion flew-in four firing units in two missile

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\* Several Marine officers would lament that communications were very unreliable and relied heavily on commercial phone lines. For an in-depth view of Marine communications see Major John T. Quinn II, *U.S. Marines in the Persian Gulf, 1990-1991: Marine Communications in Desert Shield and Desert Storm*. Washington, D.C.: History and Museums Division, HQMC, 1996. See also 7th MEB SitRep, 261436Z Aug 90.

batteries to cover the large area of vital interest with minimal support "footprint" and relied heavily upon maritime prepositioning ships for support. Battery A/2, 2d LAAM Battalion, established firing positions north of Shaikh Isa Airfield. Operating with only voice nets at the outset, the battery was integrated into the automated network after the group's multi-channel radio links were up. Battery B/2 established a firing unit north of King Abdul Aziz Naval Base, while the battalion headquarters located itself near the soccer stadium at King Abdul Aziz. From this site, Marine Air Control Squadron 1 provided early warning and control facilities to the 3d MAW and to the Saudi Eastern Air Defense Network in Dhahran under which the 7th MEB would operate. Command and control of Marine HAWK batteries was through the TAOC from MACS-1 and integrated with the Saudi Arabian Royal Air Force Eastern Sector Command Center (Sector 2) located in Dhahran. In early September the Marine Hawks were the only U.S. medium altitude surface to air defense in Saudi Arabia.

The advance elements of the 3d Low-Altitude Air Defense (LAAD) Battalion deployed early and integrated with the 7th MEB and the HAWK units upon their arrival. They consisted of seven M998 HMMVs and 485 Stinger missile rounds, which was a standard based on initial estimates of the situation. However, the commanding officer, Lieutenant Colonel George S. Fick, would repeatedly request additional assets to cover the expanding zone as he was tasked to provide two sections to Shaikh Isa. To make matters worse from an antiaircraft defense view was that nearly half (207 rounds) of the missiles arrived in theater with no battery coolant units.

The 7th MEB directed that no Stinger teams were to be employed outside of the Jubayl port complex, but LAAD needed to position Stinger missile teams away from the vital area asset, in the quay to the north and west, to engage aircraft before their ordnance release. Lack of communications and security were contributing factors in this decision to keep LAAD in close. The 3d LAAD established contact on a borrowed Saudi UHF radio with the Saudi Eastern Sector Air defense network on 22 August.

Detachment A, Marine Air Support Squadron 3 (MASS), led by Major Maurice B. Hutchinson, set up the direct air support center (DASC) alongside the RCT-7 command post and began working on the close air support (CAS) and assault support procedures in support of the ground combat element's concept of operation. Early in September the detachment provided a direct air support center (DASC) with an echelon capability, a fire support coordination center (FSCC) team, and two air support liaison teams. The DASC initially would run mainly helicopter requests such as resupply, close in fire support (CIFS), and medical evacuations (Medevac), but by early September would be coordinating simulated close air support (SimCAS). By mid-September, an airborne DASC capability also existed within the 3d MAW, carried aloft by a specially configured Marine KC-130.

Air traffic control services were provided at the Marine airfields by elements of MATCS-38. At Shaikh Isa Air Base, the squadron's Detachment B would optimize the existing airfield equipment and work with host nation con-

trollers. At King Abdul Aziz and Jubayl these air traffic control services were provided by Detachment C in more austere conditions. The tactical air navigation system (TACAN) had to be rebuilt at Jubayl after not working for several years. A Marine TACAN was set up at King Abdul Aziz. Radar approach control was established at all three airfields, while another detachment was formed to provide service to the CH-53s at Ras Al Ghar.

Overall, the deployment of the reinforced 7th MEB proceeded quickly and efficiently considering the press of events and the execution of an untried employment plan. Many functional areas demanded the immediate attention of leaders throughout the brigade during the last week of August, but General Hopkins' 7th MEB Marines worked to resolve these problems and improve the brigade's defensive posture. Despite the difficulties encountered during the two-week deployment of the 7th MEB, General Hopkins remained confident of the ability of his Marines and sailors to carry out their assigned mission. On 25 August, he reported the brigade as combat ready to CentCom.

## The 3d MAW Stands Up

### *Compositing and Reorganization*

Even as the 7th MEB and MAG-70 began to congeal as a fighting force in Saudi Arabia and Bahrain, the clock had already begun to run out on their existence as a tactical command. The reinforcing units from MAG-24 and the rest of 1st Marine Expeditionary Brigade began to arrive in theater during the last week of August. The four ships of the Guam-based MPSRon-3 tied up to the massive pier at Jubayl on the 25th. As equipment was disgorged from the ships into holding areas, RCT-3 with its two infantry and one artillery battalion undertook a more orderly acceptance of it than 7th MEB predecessors. On 3 September, the 7th MEB and the new arrivals joined to become I MEF. The same day 3d MAW, and the 1st FSSG command elements, took command of their respective forces in theater as major subordinate commands of I MEF. On 6 September, enough of the 1st Marine Division forward command post was in place to absorb RCT-7 and RCT-3 and assume the I MEF's ground combat element responsibilities.

During the first week of September, MAG-24's elements flew directly into Jubayl NAF. HMH-463 and HMM-165 quickly offloaded and reassembled their aircraft and joined up with the helicopter detachment already in place. MWSS-174 gathered its equipment from the port of Jubayl and settled into King Abdul Aziz, thereby allowing MWSS-374 to concentrate its efforts at Jubayl NAF. The increased support at King Abdul Aziz allowed VMA-311 to move from Shaikh Isa to Aziz on 23-24 August. MACS-2's personnel and equipment also went directly to King Abdul Aziz on 6 September. The squadron began to integrate its personnel with the MACS-1 "Watchstanders," but Lieutenant Colonel Carl E. "Chico" Treutle's squadron remained as the lead unit for several more weeks.

With only a skeletal command and control system in place, the transition

of the aviation combat element from a composite Marine air group to a full aircraft wing nevertheless proceeded quickly. This transition was aided by the fact that General Moore had been in theater since 15 August and was thoroughly familiar with the key issues confronting his command. On 3 September he assumed command of the Marine aviation units ashore from Colonel Rietsch and operated from the same tactical air command center at Shaikh Isa. Building a 24-hour around-the-clock wing staff proved more challenging, since nearly two decades of peacetime manpower constraints did not provide the depth required for the task at hand. Moore had deliberately loaded up MAG-70's staff as it deployed with the intent of facilitating the eventual transition to a wing headquarters, but some essential gaps remained in early September.<sup>58</sup> Many senior wing personnel, including Brigadier General Harold W. Blot, the assistant wing commander, remained in California minding the wing's rear echelon.

On 3 September, MAG-70, already larger than the 1st MAW, split into three aircraft groups. Colonel Rietsch retained command of the fixed-wing aircraft at Shaikh Isa and Bahrain International under the colors of MAG-11. MACG-38 continued as a nominal detachment led by Lieutenant Colonel Harvey R. Norton until 20 September, when Colonel Joseph Della-Corte arrived from El Toro with most of his remaining group staff. MWSG-37 headquarters and headquarters squadron (H&HS), however, remained at El Toro. The three support squadrons reported directly to the wing through the offices of the logistics department (G-4). Few 3d MAW groups or squadrons were able to bring all their personnel forward, as a substantial number of "short-timers" and other non-deployables required a certain amount of oversight in the absence of dedicated "house-keeping" units.

With MAG-16's staff also split between California and Saudi Arabia, Colonel Larry T. Garrett appointed Lieutenant Colonel Michael J. Aguilar from

*One of the 19 AV-8Bs of VMA-311 is pictured at Jubayl. Arriving on 20 August, the "Tomcats" were the first fixed-wing squadron from 3d MAW in theater.*



MAG-50 as the group executive officer, while Lieutenant Colonel Lonnie A. Howerton moved down from MAG-70 to become the logistics officer. Other positions in the staff were filled by squadron augmentees. Most of MAG-70's headquarters personnel remained at Shaikh Isa, either with Colonel Rietsch at MAG-11 or augmenting the small wing staff General Moore had brought from El Toro.

Colonel William A. Forney, an experienced fighter pilot who, several years earlier had commanded MAG-15 at Iwakuni, Japan, held down the wing chief of staff position. Slated to assume command of MWSG-37, Colonel Robert W. Coop was brought out from El Toro by Moore to serve as the acting wing logistics officer, with additional responsibility for the deployed Marine wing support squadrons. Colonel Terrence R. Dake, a former commanding officer of HMX-1, moved up to take Coop's job as the wing operations officer (G-3). The wing logistics officer (G-4), Colonel Ronald M. D'Amura, remained at El Toro with the MWSG-37 headquarters for the time being. Rounding out the principal staff was Lieutenant Colonel Rudolph Lowery as the personnel officer (G-1), Lieutenant Colonel Walter F. McTernan II as the intelligence officer (G-2), and Lieutenant Colonel Philip J. O'Brien as the communications officer (G-6).

At King Abdul Aziz, VMA-311 temporarily remained as a forward detachment of MAG-11 until 7 October, when General Moore sent Colonel John R. Bioty, Jr., to King Abdul Aziz Naval Base to establish MAG-13 (Forward). Bioty, who had relinquished command of VMA-331 in June, quickly formed a small staff comprised of MAG-70 officers and squadron augmentees from VMA-311, VMO-2, MWSS-174, and MALS-13 (Forward).<sup>59</sup> The 3d MAW would find it necessary to designate site commanders due to geographic location. Each site commander would have operational control of all 3d MAW assets at his location. Administrative control would remain with the units' parent commands. In case of MACCS units including 1st MEB units, the parent command would be MACG-38, located at Shaikh Isa. Site commanders were the commanding officer of MAG-11 at Shaikh Isa, the commanding officer of MAG-16 at Jubayl NAF, and the commanding officer of MAG-13 at King Abdul Aziz.<sup>60</sup>

#### *Joint Air Doctrine Issues*

One of the first issues the wing staff had to address was the subject of the ownership of the airspace over I MEF's area of responsibility and, in particular, its defensive positions around Jubayl and to the north. Unlike the first weeks of Desert Shield, when the few orbiting Air Force AWACS aircraft were the only effective air control agency in place, the establishment of the MACCS now gave the wing the ability to effectively control the airspace over the I MEF area of responsibility. Participating in a major joint air operation for the first time since the Vietnam War, General Moore and his staff expected to be confronted with Air Force opposition to subdividing theater airspace.\*

Air Force doctrine espoused air warfare as a distinct and superior form of

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\* Following the war, Marine and Navy critics argued that the JFACC system in the Gulf was so thoroughly an Air Force operation that it did not deserve the "joint" designation.

the offensive. Given the appropriate resources and wide latitude from political leaders, Air Force leaders argued that an air campaign focusing on strategic targets could break the enemy's will and compel him to surrender or desist without the U.S. having to resort to a costly and possibly unpopular ground campaign. This form of nearly unrestricted air warfare against deep or strategic targets demanded that ground officers who favored using air power primarily against tactical targets be kept at arms' length. To ensure that the air commander in a joint operation possessed the authority to direct or redirect strikes across the length and breadth of the theater in pursuit of campaign objectives, Air Force doctrine also demanded that airspace not be ceded or parceled out to other services or allies.

In the Korean War, after moving from the "fire brigade" defense of the Pusan Perimeter to mobile warfare during the drive up the Korean peninsula, the Marines were able to pair 1st MAW with its supported 1st Marine Division up to and during the crucial withdrawal from the Chosin Reservoir, although both were commanded by an Army general at X Corps. Once the 1st Marine Division was placed in the main Eighth Army line in 1951, however, the commander of the Far East Air Forces succeeded in splitting off the wing from the division and using it in general support of the Eighth Army. While some tactical control over 1st MAW was later restored to the 1st Marine Division commander, the efficacy of the air-ground team was much less than the Marines knew was possible. As Marine units were withdrawn from the war in the wake of the armistice, their leaders spent a great deal of time and effort thinking about ways to ensure the future integrity of the Fleet Marine Force.

The Air Force, however, continued to view tactical aviation as being effectively employed only under the aegis of a theater air commander. In Vietnam, this view was aggressively promoted to MACV commander General William C. Westmoreland, USA, by U.S. Seventh Air Force commander Lieutenant General William W. Momoyer. Through Momoyer's efforts, the 1st MAW, after three years of relative independence, was forced during 1968 into an Air Force-dominated "single manager" system that featured a high degree of centralized control from Saigon. The Seventh Air Force presumed to know the relative importance of scheduled and on-call close air support sorties well enough to redirect them if it saw a need to do so.<sup>61</sup>

Marine aviation, which had been painstakingly defended before and re-authorized by the U.S. Congress in the years since the Korean War based upon the full understanding of its unique requirements and methods, was severely constrained under this system. Response times for close air support requests plummeted and even high priority pre-planned sorties were diverted for other purposes. Marines of that era again vowed to fight future efforts to institute such a "unified" air command system, although some saw the best tactic for this purpose was to "out game" the Air Force from the inside.<sup>62</sup>

The Goldwater-Nichols Act of 1986, much to the disappointment of many Marines, cemented the authority of a CinC to appoint a Joint Force Air Component Commander (JFACC). In the name of unity of effort, the JFACC could translate the CinC's broad directives into a theater-wide air campaign. As such, the JFACC through the authority of the CinC could set targeting priorities,

apportion airspace, and direct the “excess” sorties of the respective service components. This idea of excess sorties was created by the 1986 Omnibus Agreement.\* All services agreed that the Marine air-ground task force (MAGTF) commander would retain operational control of his organic air assets, and would provide sorties in excess of the MAGTF direct support requirement to the joint force commander (JFC) for tasking through the air component commander. However, the JFC could redirect efforts through reapportionment and reallocation of any MAGTF tactical air sorties when they were required for higher priority missions. This later apportionment, apportioning aircraft by percentage of a particular asset that would be required in the joint effort, and allocating, the assigning by sortie and mission through the air tasking order (ATO) process, was what concerned the otherwise lightly fire-powered Marines.

The Air Force, which expected to be the JFACC in any large conflict, designed its numbered Air Force headquarters to fulfill this role. The preferred mechanism of control over its own air units as well as those of the Navy and Marines was the air tasking order (ATO). The ATO served as the daily master plan for the JFACC and listed all of the strikes, CAPs, tanker missions, and other supporting functions for a 24-hour period.

Using the computer-assisted force management system (CAFMS), the planners at the numbered Air Force could garner targeting input from the various component commands, assign appropriate targets, build a mission package, eliminate conflicts between that package with others planned, and make required changes. This could be done in theory on a 72-hour cycle while still leaving time for the pilots at the wings and groups who would execute these missions to do the requisite detailed planning. The Navy and Marines, accustomed to decentralized planning and mission coordination based on airspace delineation or “route packages,” were deeply suspicious of both the efficacy of the Air Force system in crowded airspace and its perceived inflexibility when confronted with last-minute requests for support.

Many of the leaders of Marine aviation, oriented toward the specific support of their ground comrades-in-arms, saw the ATO system as antithetical to their way of doing business. They feared the “joint strategic missions” would require so many assets that the optimum support of the specifically trained and equipped MAGTF team, and ultimately the Marine on the ground, would be compromised. Although joint doctrine continued to recognize the unique qualities of the Marine air-ground task force, many Marines remained skeptical about Congress granting so much power to the JFACC. The institutional memory of Air Force generals in recent conflicts who demanded absolute control over Marine jets and the exclusion of helicopter aviation in the name of doctrinal purity remained quite fresh in the minds of Marine leaders as Desert Shield unfolded in August 1990.

Fortunately for Marines, the senior airman in theater was at heart a practical man when it came to questions such as these. General Horner made it clear in his earliest discussions with General Moore and his representatives that he had

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\* General Paul X. Kelly informed the Marine Corps with his White Letter No. 4-86, which contained the 1986 Omnibus Agreement.

no doctrinal axe to grind with Marine aviation. Horner and Moore agreed that all of 3d MAW's A-6 and EA-6 sorties and half of its F/A-18s would be committed to the joint air effort. The wing's AV-8Bs, OV-10s, KC-130s, and the Beechcraft C-12, however, would be reserved for Marine employment.\* Their scheduling would be forwarded to the JFACC for inclusion in the ATOs for the purpose of coordination. This initial agreement remained in effect until the approach of the ground campaign.<sup>63</sup>

As with many joint understandings, the devil was found to be in the details of the complex air command and control system then being built in theater. Marines traditionally sought a three-dimensional airspace "box" over their forces in the field within which their aviation assets had free reign to respond to calls for defensive or offensive air support from the MAGTF commander or his subordinates. Marine air also wanted to operate with few restrictions over the adjacent enemy's airspace so as to wage the battle both against the enemy's frontline troops as well as against targets deeper in his territory such as supply dumps and mechanized reserves. The major air control measure that delineated the maximum forward responsibility of friendly ground forces was the fire support coordination line (FSCL).

The FSCL in earlier wars was normally located at the outer range limit of friendly artillery, but the growing range of rocket artillery and attack helicopters in the U.S. Army inventory disturbed this traditional marker. The Army began to demand a more distant FSCL in order that it gain the freedom to fire and maneuver at will in battle without having to coordinate with the Air Force. The Marines, historically short on artillery and thus heavily reliant on offensive air support to bridge the battlefield fire support difference, were more accepting of a FSCL closer to the forward line of troops, as long as their aircraft could range deeper when required without undue burden or limitation.

In Riyadh, Colonel Robben summarized the status of Marine aviation in the joint and combined air command and control environment in a memo to Major General Pearson.<sup>64</sup> For the purpose of preserving the language of Marine aviation at the time, the memo is quoted in the footnote below.\*\* On the key issue of offensive air support (OAS), he noted that the JFACC's concept was that the control of aircraft would be primarily through the Air Force's airborne command control and communications system. Under this system the MAGTF commander did

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\* Some Marines would argue that this was the very reason that the Marine Corps had AV-8s. Neither the Navy, nor the Air Force were likely to grab them, except for CATF's occasional emergency defense of the amphibious task force.

\*\* Colonel Robben noted that "to use the USAF ABCCC as the key C2 agency to achieve unity of effort managing CAS for U.S. Army forces and all 'kill zones' just forward of the joint combined FSCL. Other USAF C2 agencies (TACC, CRC, ASOC, AWACS, TACPs) are involved in the process, but ABCCC is viewed as the focal point for battle management. USMC CAS will be handled through USMC agencies (USMC TACC, TAOC, DASC, DASC[A], FACs, and TAC [A]). The MAGTF commander does not 'control' the airspace beyond the joint combined FSCL, but he has the flexibility to use the airspace as required." (MarCent Liaison Officer memo to CentAF and Com MarCent Rear, subj: Airspace Control in Desert Shield, 11Sep90).

not “control” the airspace beyond the joint combined FSCL, but he would have the flexibility to use the airspace as required.

Robben reported that the JFACC, while initially refusing the full-time assignment of medium and high-altitude airspace to I MEF, recognized the need for the Marines to exercise control at times of large segments of airspace to effect close air support and other offensive air operations. Robben explained that these segments of airspace, designated high-density airspace control zones (HIDACZs), would be established for Marine use by mutual agreement with all joint combined agencies. The following criteria would apply to the HIDACZs:

[HIDACZs] are established at the direction of the USMC and as coordinated between USAF tactical air command center and the USMC tactical air command center for pre-planned, or airborne command, control and communications (ABCCC) and the Marine direct air support center (DASC) for immediate.

- Are defined volumes of airspace.
- Require airspace users to be controlled by Marine tactical air operations center (TAOC) or the Marine direct air support center.
- Require Marine air-ground task force commander to control the air defense weapons control status (TAOC controls through the eastern sector control center).
- Are characterized by extensive use of a variety of weapons.
- Require approval from either DASC or TAOC before aircraft can transit.
- Occasional spill-out of both close air support aircraft and/or artillery fire from High Density Air Control Zone (HIDACZ) is anticipated.

In summary Colonel Robben noted that, even though the 3d MAW did not gain full control of the airspace in question, the arrangements with the JFACCC “allow the MAGTF commander the flexibility to complete his mission.” In terms of specific air defense and air control responsibilities, he briefed General Pearson that the 3d MAW TAOC “provides early warning and fire direction for the USMC HAWK battery in the Al Jubayl area and controls CAS operations in the USMC HIDACZs.”<sup>65</sup>

In addition, Marines agreed that the tactical air operations center (TAOC) would provide track and surveillance production for 3d MAW’s tactical air command center (TACC) and the other air control agencies. They would provide primary back up track and surveillance for the combat air patrol (CAP) under AWACS control in northeastern Saudi Arabia, and the Marine fighters under NavCent control in the northern Persian Gulf. Although it took several more weeks of discussions by Moore, Pearson, and Robben with their counterparts, General Horner, on 25 September, gave over temporary control of the HIDACZ corresponding to the I MEF AOR to the 3d MAW.<sup>66</sup>

### *Operations and Training*

Throughout its first month in Bahrain, MAG-11 maintained the full-time CAP schedule over the northern Gulf through the rotation of daily responsibilities among its four Hornet squadrons. The group also began to step up its offensive training program, conducting by September's end a variety of antiair, strike, and simulated close air support operations with fellow Marines as well as United States and Bahrain Air Force units. The exercise of some of the D-Day ATO strike packages were called Mirror Strikes, and were rehearsed during both day and night. The strike package would include all escort, tanker, command and control, jammer, and striker assets that would be used in the mission. It would be conducted over the same distance as the actual mission, except heading south over Saudi airspace instead of north over the actual target area. This mirrored effect lead to the naming of the exercises as Mirror Strike exercises.

In between this tactical training and the combat air patrol sorties, the Marines at Shaikh Isa weathered a series of very important person (VIP) visits as well as the arrival of a 450-bed Army hospital. VMGR-352 was still at Bahrain International. Beginning in September, MCAS El Toro Station Operations and Maintenance Squadron Detachment "A" joined the KC-130's at Bahrain International providing a Beechcraft UC-12B Super King Air to relieve the smaller lift requirements, the constant VIP missions, and various movements among the air bases.

MAG-13 (Forward) joined its OV-10s on 26 September, when the first of six VMO-2 aircraft (three OV-10As and three OV-10Ds) completed their 30-day ferry flight operation from Camp Pendleton. The two OV-10Ds from VMO-1, after being craned off the USS *Iwo Jima* (LPH-2) at the port of Jubayl, flew off the pier for the short hop to King Abdul Aziz where they joined up with VMO-2. Although the main body of squadron personnel arrived at King Abdul Aziz on 3 September, the six VMO-2 aircraft followed a circuitous route across the North Atlantic. Supported by two Marine KC-130s with the squadron's maintenance detachment on board, Lieutenant Colonel Clifford M. Acree's Broncos finally departed the United States after several maintenance problems. The Broncos stopped at sites including Sondrestrom, Greenland; Keflavik, Iceland; Kinloss, Scotland; and Lakenheath, England, before heading south across the Mediterranean to Saudi Arabia.<sup>67</sup>

At Jubayl NAF, MAG-16 sought alternate bases for some of its aircraft due to severe flight line crowding. Aircraft were parked as if on board ship with the blades folded and as tightly packed as possible. The Seabees and MWSS worked around the clock to provide more ramp parking space, but aircraft were arriving faster than space could be made for them. Parking on the sand caused additional maintenance problems and was avoided. Colonel Larry T. Garrett would recall "Although we could find no one to make a decision to allow the use of Ras Al Ghar, Major General Moore finally told me to just go occupy it, and that's what we did"<sup>68</sup>

On the 10th, HMH-465 started to redeploy to a large parking lot at the Ras Al Ghar Saudi Marine Base, located 12 miles south of King Abdul Aziz Naval



*A CH-53E of HMH-466 "Wolfpack" refueling at Ras Al Ghar. Safety was improved by the move to Ras Al Ghar, but at a cost to communications and supportability.*

Base. This site offered the advantage of being co-located with the developing 3d Marines' rear encampment (Camp Daly). Despite this effort, a taxiing CH-53E made contact with the rotor blades of a parked helicopter on 12 September. Although shards of steel and fiberglass flew across the ramp area, the mishap did not result in serious injury to personnel or major aircraft damage.

By the 26th, HMH-465 was joined by HMH-466 and HMH-463. HMH-462, with the exception of some split site operations, remained at Jubayl, as did Sea Knight squadrons as well as HMLA-367 and HMLA-369. Conditions were measurably improved by this reshuffling at Jubayl, although contact with the detachment at Rhas Al Ghar was intermittent at times as the communications system scrambled to keep up with the wing's rapid expansion. The wing continued its efforts to make space for HMLA-269 (Forward) at Jubayl, but Moore decided, in the interim, to leave Hill's squadron at Dhahran Air Base.

Keenly aware of the hazards posed by the adjustment to a strange environment, aviation safety remained at the forefront of commanders' concerns. In spite of this awareness, accidents wore down the strength of the force from the outset. On 7 September, a Cobra from HMLA-269 hit the ground during a low-level nighttime night vision goggles (NVG) training mission. On 13 September, a CH-53E from HMH-465 crashed on take-off from King Abdul Aziz. Inadvertently attempting a take-off on only one engine after refueling, the pilot of the aircraft lost control as it transitioned out of ground effect, crash-landed, rolled, and caught on fire. The aircraft was a total loss. A few weeks later, an A-6E collided with a radio tower near Manifa Bay during a night flight. It returned to base with damage but no injuries.<sup>69</sup>

With 1st Marine Division setting up defensive positions north of Jubayl NAF, MAG-16 started providing a range of logistics, transport, and medical evacuation support to Major General James M. Myatt's command. After General Myatt pushed his composite Light Armored Infantry Battalion (Task Force Shepherd) and the 3d Battalion, 9th Marines, further up toward the "Triangle"

area during the second week of September, MAG-16 and MWSS-374 developed a forward arming and refueling point (FARP) at a run-down airstrip at nearby Manifa Bay.\* With the assistance of CSSD, the airstrip was patched where possible and stabilized with fuel oil to keep the sand and chunks of asphalt from being whipped around by rotor wash. The strip was designated as FARP Foss in honor of the noted World War II Marine fighter ace and later South Dakota governor, Joseph J. Foss, who was awarded the Medal of Honor.\*\*

A few radio nets and a temperamental telephone line were all that linked the FARP with the rest of the expeditionary force in its first weeks. Still, the site was an integral part of the defensive scheme, with a normal compliment of two Cobras, two Hueys, and two Sea Knights on hand to respond immediately to an Iraqi incursion or a medical emergency. The resupply plan established as early as 22 August, was to organize a landing support battalion (LSB) detachment at the Manifah jetty and resupply from the sea by landing craft utility (LCUs) from the port of Jubayl. Aircraft and crews were generally rotated back to Jubayl every few days. Flight operations from FARP Foss generally consisted of reconnaissance missions in addition to limited training with the neighboring division units.

#### *Aviation Logistics*

After a round of discussions concerning a unified aviation logistics support structure for Marine forces in the Gulf region, General Boomer on 15 September outlined his concept of employment of the aviation logistic support ships (TAVB) arriving in theater to Major General Harry W. Jenkins, Jr., the commanding general of 4th MEB.\*\*\* Citing the need to position the aviation logistics support near the preponderance of Marine aircraft, Boomer decided that:

The USNS *Wright* will ultimately operate pierside at Manama Port, Bahrain, primarily supporting fixed-wing aircraft, but will first download rotary-wing and AV-8B assets at Al Jubayl Port, Saudi Arabia, to provide the initial assets for MAG-16 and MAG-13. The USNS *Curtiss*

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\* 1st Marine Division Operational Order 2-90 assigned Task Force Shepherd the mission of screening the division's front from Safaniya to a point 60 miles west. For details on the ground operations see Charles H. Cureton, *U.S. Marines in the Persian Gulf, 1990-1991: With the 1st Marine Division in Desert Shield and Desert Storm*. (Washington: History and Museums Division, HQMC, 1993).

\*\*While serving as executive officer of VMF-121 at Guadalcanal, Captain Joseph J. Foss was awarded the Medal of Honor. The award citation, in part, reads: "Engaging in almost daily combat with the enemy from October 9 to November 19, 1942, Captain Foss personally shot down 23 Japanese planes and damaged others so severely that their destruction was extremely probable."

\*\*\* Major General Terrance R. Dake noted that this was one of the few "rice bowl" issues he encountered during the operation, and thus it went to the general officer level for resolution. The complicating factor was that the *Wright* was also designated as the TAVB for the 4th MEB/MAG-40 (MajGen Terrance R. Dake intvw, 21Feb96).

will do just the opposite. It will first down-load fixed wing assets at Manama Port and then proceed to Al Jubayl Port where it will operate pierside, primarily supporting rotary wing and AV-8B aircraft.<sup>70</sup>

The Bahrain International Airport served as the common airhead for aviation logistics support for Marine forces in theater.<sup>71</sup>

Ashore at Jubayl, MAG-16 began to notice signs of the harsh desert environment. Sand erosion was found on UH-1N and CH-53D rotor blades after the first weeks of flight operations.\* This problem soon manifested itself throughout the helicopter fleet and extended not only to rotor blades but also to aircraft engines and windshields. The group instituted a combination of measures in an attempt to reduce the effects of sand erosion. These included heavy-duty Teflon tape placed on the leading edges of rotor blades, the maximum use of concrete or asphalt landing zones, and increased minimum flight altitude, in order to reduce the ingestion of sand into the aircraft engines. The wing limited its CH-46Es to eight combat-loaded Marines due to the combination of prior airframe flight restrictions and the effect of the extreme high heat and humidity of the region. Mission capable aircraft availability of the helicopter fleet was at 51.7 percent at the end of August and only began to rise towards the end of October when it reached 58.8 percent as the group struggled with maintenance and supply challenges.<sup>72</sup> 3d MAW's fixed-wing availability was considerably better.<sup>\*\*</sup>

### *The Seabees and Expansion of Wing Support*

With the basic infrastructure already in place at Shaikh Isa Airfield, MWSS-373 was able to devote its efforts toward expanding the tactical aviation fuel-dispensing system (TAFDS), internal transportation, and security. North of the base, a low valley was developed into an aviation ordnance dump. Habitability at the site, although good by most standards, received more attention. The Seabees began pouring cement hardstands for billeting and framing them with lumber in order to provide a modicum of comfort. These improvements were quite modest when compared with the Air Force's new air-conditioned billeting tents springing up around the base, but they were nonetheless greatly appre-

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\*Brigadier General Larry T. Garrett would later comment: "We calculated that about 70 landings out in the unprepared desert was all it took to erode the turbine blades in the CH-53E engines to the point that an engine change was required. This caused us some serious concern as we started looking at the prospects of combat operations lasting beyond a couple of weeks. Seventy landings could be only a few days of work in high tempo operations." (BGen Larry T. Garrett, comments on draft, 27Jun99).

\*\* 3d MAW's overall aircraft mission capable rates for October were 69.6 percent. The break down by aircraft type was: F/A-18A, 79.6 percent; F/A-18C, 78.9 percent; EA-6B, 76.8 percent; A-6E, 78.5 percent; KC-130, 82.9 percent; OV-10A, 59.0 percent; OV-10D, 87.7 percent; AV-8B, 75.3 percent; AH-1W, 64.1 percent; UH-1N, 67.8 percent; CH-46E, 55.7 percent; CH-53D, 63.2 percent; and CH-53E, 43.3 percent (3d MAW ComdC, Oct90).

ciated. Regular or "A" ration meals appeared at the dining facilities after several weeks of "chicken and rice"-type dishes, with MREs covering lunch for most.

The Seabees of NMCB-7 and MWSS-373 cooperated on a variety of projects at the airfield. The Seabee's first priority was the construction of an access road and ammunition supply point (ASP). As the Seabee commander reported:

The work consisted of building berms to create storage cells and act as blast deflection and security barriers. An open bomb storage area with adjacent container stacking areas were leveled. Work started on C+39 and completed on C+118. The customer then occupied storage modules as soon as each was complete. A total of 73,590 cubic yards of fill was used to build this project.<sup>73</sup>

Work on the expansion of ramp space commenced in mid-October. The Seabees leveled and compacted a 600,000-square-foot area north of the existing ramp. The project would not be complete until virtually all the Marine Corps' AM-2 matting (a type 2 aviation matting material used for covering soil to create expeditionary runways, ramps, and helicopter pads) arrived later in the fall. Several Marine and Air Force tenants who had settled in the area—including the tactical air command center's vans and generators—were forced to displace during this phase. Work started near the airfield tower and proceeded to the north along the western side of the taxiway.

At King Abdul Aziz, the focus of effort was on expanding ramp space, but with a twist designed to take advantage of the Harrier's unique capabilities. Navy Seabees began construction in September on a "3,500-foot AM-2 aluminum-matting parallel taxiway-parking area that provided parking with direct access to the runway for 50 aircraft."<sup>74</sup> They did so in a manner that allowed the Harriers to pull directly onto the airstrip, and taking advantage of their short takeoff capability, get airborne with any combat load in under 1,500 feet of roll. This allowed for simultaneous takeoffs and landings, increasing the sortie rate at the airfield. The environs west and north of the soccer stadium became the center of billeting and messing as well as much of the MALS-14 complex. East of the stadium, and to the seaward side of the base, aviation ordnance was staged. The Seabees started expanding the King Abdul Aziz Airfield on 4 September, and described the accomplishments as:

The first part of this multi-phase job was to do the site work and lay AM-2 matting for a 3,600 foot by 72 foot parallel taxiway which would include 20 "hides" for aircraft parking and two access taxiways. Later work included installation of a 150-foot-square Vertical Take Off/Landing pad for AV-8 Harrier jets, a second 42-foot-by-620-foot taxiway of AM-2 matting; eight parking hides for OV-10 Marine reconnaissance aircraft; a 96-foot-by-316-foot helicopter refueling pad; and an AM-2 mat Harrier Jet Engine power test stand. All matting at Aziz was laid on soil cement-stabilized sand. The detachment also did site preparation for a second full-length taxiway that would be

paved by a local contractor. This work also included twenty additional hides for AV-8s.<sup>75</sup>

Jubayl NAF presented MWSS-374's engineers and motor transport personnel a host of challenges. The area's most salient characteristic, aside from its 10,000-foot airstrip and tall air traffic control tower, was very deep sand. Consequently, every temporary construction project rested on an inherently unstable foundation. Nevertheless, with the help of NMCB-5's sailors, the squadron started to erect hardback tents with wooden-pallet flooring. The expansion of aircraft ramp space also required extensive soil stabilization efforts. After locating a borrow pit outside the base perimeter, Marines and Seabees began an around-the-clock effort to mine the gravel and transport it to the southeast side of the runway. There it was dumped on top of a graded sand surface and used slowly, but steadily to build up the surface to the required firmness. It took anywhere from one to three feet of compressed structural fill to achieve the necessary base.<sup>76</sup>

Table: Early 3d MAW squadrons and aircraft locations<sup>77</sup>

Location (Unit)	Squadrons	Number / Type of Air-Craft
(Manifah Bay (MAG-16)	HMLA-369 (Det)	8 AH-1W Super Cobras 2 UH-1N Hueys 4 CH-46s Sea Knights
Jubayl NAF (MAG-16)	HMLA-367/ 369	19 AH-1W Super Cobras 16 UH-1N Hueys
	HMM-161/ 165	24 CH-46E Sea Knights
	HMH-462/ 463	16-20 CH-53D Sea Stallions
King Abdul Aziz (MAG-13)	VMA-311	20 AV-8B Harriers
	VM0-2	8 OV-10 Broncos
Ras Al Ghar (MAG-16)	HMH-465/ 466	15 CH-53E Sea Stallions
	HMH-462	4 CH-53D Sea Stallions (9-26 Sep.)
Dhahran (MAG-16)	HMLA-269	12 AH-W Super Cobras
Shaikh Isa (MAG-11)	VMFA- 235/ 314/ 333/ 451	48 F/A-18 Hornets
	VMA-542	20 AV-8B Harriers
	VMA (AW)-224	10 A6-E Intruders
	VMAQ-2	12 EA-6B Prowlers
Bahrain International (MAG-11)	VMGR-352	8 KC-130 Refuellers

## The Maturing Theater, September-November 1990

### *End Strength Cap and Rotation Plans*

As September turned to October, the efforts of the scattered 3d MAW units in eastern Saudi Arabia and Bahrain began to show significant results. The long-awaited arrival of AM-2 matting on 8 October translated into immediate breathing space for taxiing aircrews and flight line personnel. The last of I MEF's original flow of personnel ended at the point after General Schwarzkopf capped Marine end strength in theater at 42,000.<sup>78</sup> The 3d MAW's share of this total was well below that necessary for the full support of its substantial "teeth." The "tail" would have to make due, and thus the two support squadrons and MACG-38 continued to operate far short of their full strength.

As the U.S.-led coalition's strength solidified, Saddam Hussein backed away from an offensive posture and shifted his military effort to the fortification of Kuwait. This presented a new challenge to President Bush and the other coalition leaders. Depending on the strength and perseverance of the allied coalition, Saddam's effort to hold onto Kuwait might outlast the combined diplomatic, military, and economic effort to dislodge him. One factor in this calculus was the amount of time U.S. forces could remain on Islamic soil without alienating its conservative population. Another was the patience of the highly-trained U.S. combat troops for a year or more of inaction in the often desolate environment of the Arabian Peninsula.

Back in Washington, D.C., the staff at Headquarters, Marine Corps, struggled with various options designed to sustain a MEF-sized force in the Gulf for a year and beyond if required. The Commandant, General Alfred M. Gray, Jr., convened a Southwest Asia Sustainment Working Group to study the question and make recommendations. With a Navy commitment in hand to provide enough amphibious shipping to sustain an afloat MEB presence for a year, the group recommended a reduction of the forces assigned to I MEF in theater. The expeditionary force command element would remain in place, but certain Surveillance, Reconnaissance, and Intelligence Group (SRIG) companies and detachments would be withdrawn. Likewise, the 1st Marine Division headquarters would remain in Saudi Arabia, but withdrawing a reinforced-regiment slice would halve the number of its in-country battalions, from 10 down to five. A regimental combat team back in the States would be designated to reinforce rapidly the division if required. The 1st Force Service Support Group (FSSG) would similarly be halved in strength, but prepared to accept field reinforcements. As these I MEF elements were withdrawn, a brigade from a MPS squadron would be reassembled in theater and staged for rapid distribution of equipment to a reinforcing fly-in echelon.<sup>79</sup>

The situation confronting the structure of the 3d MAW was viewed somewhat differently by the working group. Like the division headquarters, the wing headquarters would stay in theater, but much of the aviation infrastructure would also have to remain on the ground in order that the airfields could quickly accept additional forces. Thus, the working group recommended that all three major 3d

MAW airfields be kept in full operation. This required that the three Marine wing support squadrons currently in theater remain there, as well as their air traffic control and communications support. The better part of three Marine aviation logistics squadrons would also stay in place. A two-battery HAWK battalion would be retained to protect the widely-dispersed critical facilities in the I MEF area of responsibility. In general, Marines in these units would be replaced around the one-year point by a system of individual rotation and detachment rotation which would be instituted.

Based on a planned unit movement of aircraft squadrons to meet long-term commitments to the 1st MAW, Marine expeditionary units, and carrier air wings, the working group recommended retaining the core of the current wing-level capability in the Gulf region. The 3d MAW's fixed-wing force ashore would consist of three F/A-18, one AV-8B, and one A-6E squadrons together with EA-6B, KC-130, and OV-10 detachments. It determined a minimum rotary-wing commitment in Saudi Arabia of two CH-46E, two AH-1/UH-1, one CH-53E, and one CH-53D squadron for the foreseeable future. To sustain this base, the group recommended the immediate withdrawal of HMLA-269, a Harrier squadron, four AH-1Ws from HMLA-369, and a six-plane EA-6B detachment. Even with these adjustments, the group estimated the need to mobilize approximately 2,500 members of the Selected Marine Corps Reserve (SMCR) to sustain the reduced MEF in the Gulf beyond a year. The aviation portion of this mobilization would include an AH-1J squadron, the 4th LAAD Battalion, and portions of 4th MAW's Marine air traffic control squadron and Marine wing support squadron to maintain a minimally acceptable six-month overseas and six-month at home rotation.

These plans mirrored those being worked on by the other Service headquarters in the face of the theater's extraordinary demands, and all required the concurrence of CentCom before they were put into effect. In October, General Schwarzkopf issued guidance concerning the possible rotation of forces from the theater. He instructed that servicemen be rotated with their units whenever possible, and that the forces be replaced with equivalent strength units. This policy obviated efforts by HQMC to reduce the size of the 42,000 Marine contingent in the Gulf region to a level more sustainable for the long term.

#### *The Planned Relief of the Afloat 4th MEB*

Because of the pressure to conform to the Navy's preferred six-month deployment cycle, the replacement of the 4th MEB with an equivalent brigade by early 1991 was a high priority effort for HQMC in October. Early in the month, the Commandant warned the 5th MEB to prepare to deploy between December and early January 1991 as a relief-in-place for the 4th MEB in the Persian Gulf. In order to bring the brigade up to strength, Brigadier General Peter J. Rowe, the commanding general of the 5th MEB and I MEF (Rear), was forced to embed the 11th MEU(SOC) into the MEB. At Camp Pendleton, most of a regimental landing team was assembled around the headquarters of the 5th Marines using active duty units. HQMC filled in gaps in ground combat and combat support units through the mobilization of elements of the reserve.

The preparation of MAG-50 for deployment to the Persian Gulf proved more challenging. Built around MAG-39 headquarters, now under the command of Colonel Randall L. West, MAG-50 faced an uphill battle from the start of its work-up period. Of the remaining medium-lift helicopter squadrons under MAG-16 (Rear), only HMM-268 (Composite) was immediately available for deployment, due to its established position as the air combat element (ACE) for the 11th MEU(SOC), already partly configured to deploy by year's end. The squadron thus had four of HMH-466's CH-53Es assigned in addition to its 12 CH-46Es. To bring MAG-50 up to a fully capable brigade aviation element required two medium-lift squadrons, a heavy-lift squadron, a light attack helicopter squadron, and a composite Marine aviation logistics squadron. The MAG also needed a Harrier squadron, a MWSS, and a large detachment from MACG-38. FMFPac assigned HMM-265 at MAG-24 to MAG-50 as its second medium lift helicopter squadron, but it would have to wait until the 5th MEB arrived in Hawaii enroute to the Gulf before joining up with the group.

General Blot assigned MALS-39, MWSS-372, and HMLA-169, all based at Camp Pendleton, to MAG-50. HMLA-169 could field a dozen UH-1Ns, but it had to scramble to fill out the squadron with attack helicopters after having supported the quick mount-out of HMLA-369 and HMLA-367 several months earlier. It managed to gather six AH-1Ws together by late November by taking several aircraft directly from the assembly line and all the available Super Cobras out of Helicopter Medium Training Squadron 303, save one. This severely limited future pilot training for the Super Cobra. At Yuma, Detachment B, VMA-513 joined MAG-50 with six aircraft while the remainder of the squadron readied for a mid-December deployment to the 1st MAW. The MEB preferred a full squadron, but neither VMA-211 nor VMA-214 would be ready to deploy in squadron strength with their night attack Harriers until the summer of 1991 at the earliest.

HQMC turned to the Reserves to fill out the group. On 13 November, HMA-773, Detachment C, MASS-6, and 15 teams of Battery A, 4th LAAD Battalion, were mobilized and on 23 November joined MAG-50.<sup>80</sup> HMA-773 brought 14 AH-1Js when they arrived at Camp Pendleton from NAS Atlanta.

Even with help from the Reserves, MAG-50 looked thin by Marine Corps and Navy standards. The NavCent commander, despite airing reservations to his amphibious task force and landing force commanders throughout the fall about the viability of a MEB-sized amphibious assault as an offensive option, argued for a robust 5th MEB as a replacement for Jenkins' command.\* In an early November

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\* In a personal message to General Jenkins, General Hopkins, after his 1 October 1990 meeting with Admiral Mauz, reported that the admiral "saw no realistic mission for a brigade-sized amphibious force in the offensive scenario. In his view, the only viable offensive mission for the 4th MEB would be admin offload and employment to improve our force ratios [ashore]." General Jenkins, in reply, relayed his impressions of his discussions with Admiral Mauz. While Mauz and he agreed on a variety of options relating to countering an Iraqi attack into Saudi Arabia, Jenkins noted that there was a lack of interest in amphibious operations—other than raids—relating to a theater offensive to expel Iraqis from Kuwait. Jenkins reported that "[t]here is no question that his staff is mesmeric."

1990 message to General Boomer, Vice Admiral Henry H. Mauz, Jr., USN, expressed concern over MAG-50's shortage of air control, Harrier, and Super Cobra assets in the face of the likely employment of the 5th MEB in theater.

General Boomer concurred with Admiral Mauz's concerns and promised to examine the possibility of transferring some of his ashore assets out to sea dependent on the mission. 3d MAW weighed in against this possibility, citing its greater need for antiarmor assets and arguing for only a small early warning and control (EW/C) facility with MAG-50 based on its limited fixed-wing aircraft and air defense capabilities.<sup>81</sup>

### *II MEF and 2d MAW Replacement Considerations*

With 5th MEB deployment issues well on their way to resolution—although to almost no one's satisfaction—HQMC next turned its attention to the planned turnover of I MEF with II MEF in 1991. As with the case of the 5th MEB, the Marine Corps planned to reach deeply into the Selected Marine Corps Reserve (SMCR) to fill the sizeable gaps in the II MEF line-up. With the 24th MEU(SOC) due to relieve the 26th MEU(SOC) in the Mediterranean in January and the 4th MEB already deployed, the 2d Marine Division had only four of its nine infantry battalions and two of its three infantry regimental headquarters available for duty in the Gulf. I MEF (Rear), already attempting to mount out the 5th MEB, could provide only the 1st Marines headquarters; the 1st Battalion, 1st Marines; a skeletal 1st Battalion, 11th Marines; and a few other scattered companies and detachments. HQMC determined that the reservists of the 4th Marine Division would provide the difference. Likewise, the 2d FSSG looked to the Reserves to make up for the detachments deployed with BSSG-4.

The 2d MAW, with a healthy slice of its fixed-wing aircraft already in the theater with the 3d MAW, expected to rely somewhat less on the Reserves by gaining residual I MEF and 1st MEB units to flesh out its command. Two of four Hornet squadrons, a Harrier squadron, and two fixed-wing Marine aviation logistics squadrons would become replacements for MAG-11 and MAG-13 (Forward).

The replacement rotary-wing group would consist of either the MAG-26 or MAG-29 headquarters, but with four of the six helicopter squadrons coming from FMFPac. MACG-28 would deploy to replace MACG-38 with minor augmentation from the Reserves and FMFPac. On 3 November, after weeks of preparation and consultation with HQMC, FMFLant published its planning order for

ized by the perceived mine threat. They consistently view the employment of amphibious forces as a separate entity without giving thought to other land forces in a coordinated campaign. The attrition of the opposition down to acceptable force ratios prior to engagement is another subject that is not analyzed. We have some of the same problems with our counterparts here. I think that the saving grace will be that the decision to employ amphibious forces if required will come from much higher levels. I believe that the same applies to the decision on the retention of a MEB in the theater." (CG I MEF msg to CG 4th MEB, subj: 4th MEB Employment Options, 020717Z Oct 90; CG 4th MEB msg to CG I MEF, subj: 4th MEB Employment Options, 041400Z Oct 90).

the sustainment of MarCent.<sup>82</sup> The difficulty of keeping a Marine expeditionary force the size of I MEF and a brigade afloat off the coast of Kuwait for an extended period, in addition to meeting daily world-wide commitments, was a complex and difficult exercise for the Marine Corps.

### *Helicopters and Task Force Cunningham*

In the Jubayl area throughout September and October, helicopter availability for training remained somewhat limited in the face of the heavy operational tasking of the rotary-wing fleet. The sustainment of the forward arming and refueling point (FARP Foss) at Manifa Bay continued to be the group's highest priority. HMLA-369 led this effort on behalf of the group. In addition to assault support training, MAG-16's CH-46 squadrons took turns providing a section of aircraft for aerial medical evacuation (MedEvac) duty at FARP Foss. The four heavy-lift squadrons answered calls for support ranging from aircraft recovery to logistics. Perhaps the most unusual mission of the period was HMH-462's repair of an Iranian H-53 that had been commandeered by a defector flying to Saudi Arabia and left at Jubayl NAF. Once minor repairs and test flights were completed, the squadron flew the aircraft down to Dhahran on 2 November for its planned return to the Iranian government.

Assault support training began to take on greater intensity as the 1st Marine Division sought to develop a full range of counterattack options to strengthen its defensive plan. General Myatt wanted to employ heliborne assaults and raids to impede the Iraqi advance. The latter would be conducted using a battalion from RCT-3. Colonel John H. Admire, RCT-3's commander, rotated heliborne training among the four battalions assigned to him in the fall for this purpose. Numerous exercises were conducted. An "Imminent Thunder" series exercised the quick (30-minute notice) FARP mission of the CH-53s with anywhere

*Two AH-1Ws and a UH-1N of HMLA-369 "Gunfighters" are refueled during Exercise Imminent Thunder. Marine, Navy, and U.S Air Force aircraft, as well as Navy ships, participated in Imminent Thunder exercises throughout November.*



from seven to 10 AH-1W Cobras. Several day and night company-sized inserts and extracts were practiced. The night missions were conducted with the aid of night vision goggles (NVGs). At any given time, RCT-3 had the majority of its forces forward along the "Cement Ridge" main defense area, rotating one battalion to concentrate on training and refurbishment at Camp Daly. Starting with company-level raids in October, RCT-3 gradually worked toward the objective of battalion-sized operations.

The largest heliborne training event of the fall, took place on 2 November, when MAG-16 supported the 1st Battalion, 6th Marines with a helilift of 300 passengers and 12 HMMWVs using eight CH-53s and four AH-1Ws. CH-53s became the backbone of the troop assault lifts because of the weight restrictions on the venerable CH-46s. On 24 August, a "Wolfpack" CH-53E from HMH-466 had demonstrated the capabilities of heavy lift as it successfully recovered a sunken Saudi Naval Forces' Dauphine II helicopter that had been forced to ditch in 15 feet of water off the coast.

With the division strung out along a corridor nearly 120 kilometers long but less than 25 kilometers wide for much of that length, General Myatt planned a defense in depth designed to cause attrition of Iraqi armored formations attacking down the main north-south highway along the coast. FARP Foss at Manifa supported the 3d Battalion, 9th Marines, just to the north as well as Task Force Shepherd to the west. Three dozen kilometers to the south, Task Force Taro manned the main defensive line at Cement Ridge. Between Cement Ridge and Jubayl, the heavily-mechanized RCT-7, designated Task Force Ripper, formed Myatt's mobile counterattack punch. With the waters of the Persian Gulf to his east, Myatt's primary concern was the possibility of the Iraqi army splitting the seam between his tactical area of responsibility (TAOR) and that of the XVIII Airborne Corps to his west.

Myatt engaged in an occasionally acrimonious debate with the XVIII Airborne Corps commander about the efficacy of the other's defensive plans and the threat they posed to the Marines' flank. Myatt sought to use well-coordinated attack helicopter and fixed-wing strikes to shore up this flank if required. Given the designation Task Force Cunningham, he sought to build an air maneuver element out of 3d MAW assets that would be in direct support of his division. The massed employment of Hellfire-armed Super Cobras in direct support of the 1st Marine Division's defensive scheme of maneuver was a central feature of Task Force Cunningham.

Myatt's concept ran contrary to Marine aviation doctrine, which positioned the wing in general support of the expeditionary force. The wing commander, based on the MEF commander's guidance and the tactical situation, fed both fixed- and rotary-wing aircraft forward through the wing's direct air support center located with the division headquarters. Rather than have the bulk of attack helicopters tied up in direct support of one task force in the division, Moore argued that it would be far more efficient to retain them under the tactical air command center's control. He agreed, however, to test the concept to see if it provided better support to Myatt. General Moore placed his new assistant wing commander (AWC), Brigadier General Granville R. "Granny" Amos, in charge of the

task force and sent him forward to Jubayl to work with Myatt.

Mixing fixed- and rotary-wing aircraft into the task force also presented unique challenges in the joint environment. Under the joint force air component commander (JFACC) system, all fixed-wing sorties were to be scheduled on the air tasking order (ATO), while the listing of rotary-wing sorties were not.<sup>83</sup>

On 19 October, the Task Force Cunningham concept was briefed to ground and air commanders and their staffs at Jubayl NAF during a meeting host-

*Granville R. "Granny" Amos was promoted to brigadier general after a tour in command of the 22d MEU (SOC), and was assigned duty as Assistant Wing Commander (Forward), 3d MAW, in October 1990. He was a helicopter pilot of considerable renown and had commanded HMM-261(C) during the October 1983 invasion of Grenada, and its subsequent deployment to Beirut, Lebanon.*



ed by General Amos. Many issues needed resolution, with command, control, and communications, not surprisingly, the most significant single constraint. General Amos opted to use a UH-1N equipped with the ASC-26 communications package as an airborne forward command post from which he could talk to the division, the DASC, the aircraft dispatched forward from Manifa Bay, and the main bases to the south. Amos said of the overall Task Force Cunningham concept: “the way we were going to use the Cobras . . . direct support . . . lots of people liked the idea. I was not really enamored with that idea of massive attack, Cobras in direct support of one regiment . . . or whatever . . . because if you shoot your wad at one time, you don’t really have anything to follow-up.”<sup>84</sup>

On the 30th, Task Force Cunningham was exercised in support of the 4th MEB. The mission was to deny the enemy use of the coastal main supply routes, while destroying his armor and support vehicles forward of the friendly force battle positions. The aircraft heavy Task Force Cunningham was also to support the flanks of Task Force Ripper’s engagement and blocking positions, and prevent enemy units moving south. As 3d MAW’s Command Chronology relates:

The employment of TFC [Task Force Cunningham] was dependent on surveillance, identification and proper notification. The enemy must be seen, positively identified and his main body located in the order of march. The mission commander through the use of TAC(A)/ FAC (A), would coordinate Naval Gunfire, CAS, and CIFS employment . . . AH-1s would take advantage of the shock effect of fixed-wing (FW) bombing and the Suppression of Enemy Air Defenses (SEAD) of Naval Gunfire, if available, in order to defeat enemy armor in detail. AH-1s would defeat the enemy in zone, in detail, with priority to air defense artillery (ADA), armor and command vehicles. The goal is overwhelming force in a short period of time to complete the mission.<sup>85</sup>

From the wing’s perspective, the command and control of Task Force Cunningham proved difficult. While attempting to provide close air support aircraft directly to Cunningham, the 3d MAW at the same time continued to answer doctrinal calls for support through the DASC from the division’s other units, such as 3d Battalion, 9th Marines, and Task Force Shepherd. Apportioning resources between the multiple forces slowed down the functioning of the Marine air command and control system and resulted in close air support aircraft encountering lengthy delays in the stack (holding position for aircraft awaiting instructions and clearance to targets).<sup>86</sup>

#### *Tactical Air Operations and Training in the Fall*

As the round-the-clock combat air patrol (CAP) over the northern Persian Gulf entered its second month, MAG-11’s Hornet pilots settled into a predictable routine of CAP missions alternating with training flights. With four Hornet

squadrons on deck, Colonel Rietsch established a plan that rotated units among CAP duty, training, and no-fly days for both crew rest and maintenance. The routine was broken on occasion by unusual Iraqi air activity or heightened U.S. or coalition naval operations. In one such instance, MAG-11 flew combat air patrol for the USS *Wisconsin* when she ventured into the northern Gulf on 27 September.

After weeks of negotiations, the 3d MAW in early October gained access to the King Fahd aerial gunnery ranges. The F/A-18s got the first crack at the ranges on the 3d, dropping MK-76 training bombs. The 3d MAW's integrated air defense system was exercised repeatedly throughout the early fall. In mid-October the 3d MAW hosted a two-day meeting of I MEF air liaison officers and tactical air control party personnel to review procedures for command and control and close air support.

Although short on true all-weather aircraft, General Moore nonetheless stressed night training for his fixed-wing groups. On 19 October, the 3d MAW conducted mass night strikes in multiple training areas to test this capability. The wing also began a series of combined training exercises with the Bahraini Air Force, which focused on the defense of the Emirate from air attack. Joint exercises with the U.S. Air Force followed throughout October. MAG-11 teamed up with the U.S. Air Force for a simulated strike mission on Al Dhafah Air Base in Abu Dhabi on 25 October, and at month's end Marines and airmen executed a joint simulated strike mission against Shaikh Isa Airfield. The mission exercised all phases of an offensive air strike. The wing's vigilance was tested briefly on 2 November when three Iraqi warplanes penetrated Saudi airspace near Rietsch's northern Gulf CAP. This provided a healthy dose of realism for the initial CentCom-Saudi air defense exercise which commenced on 3 November.

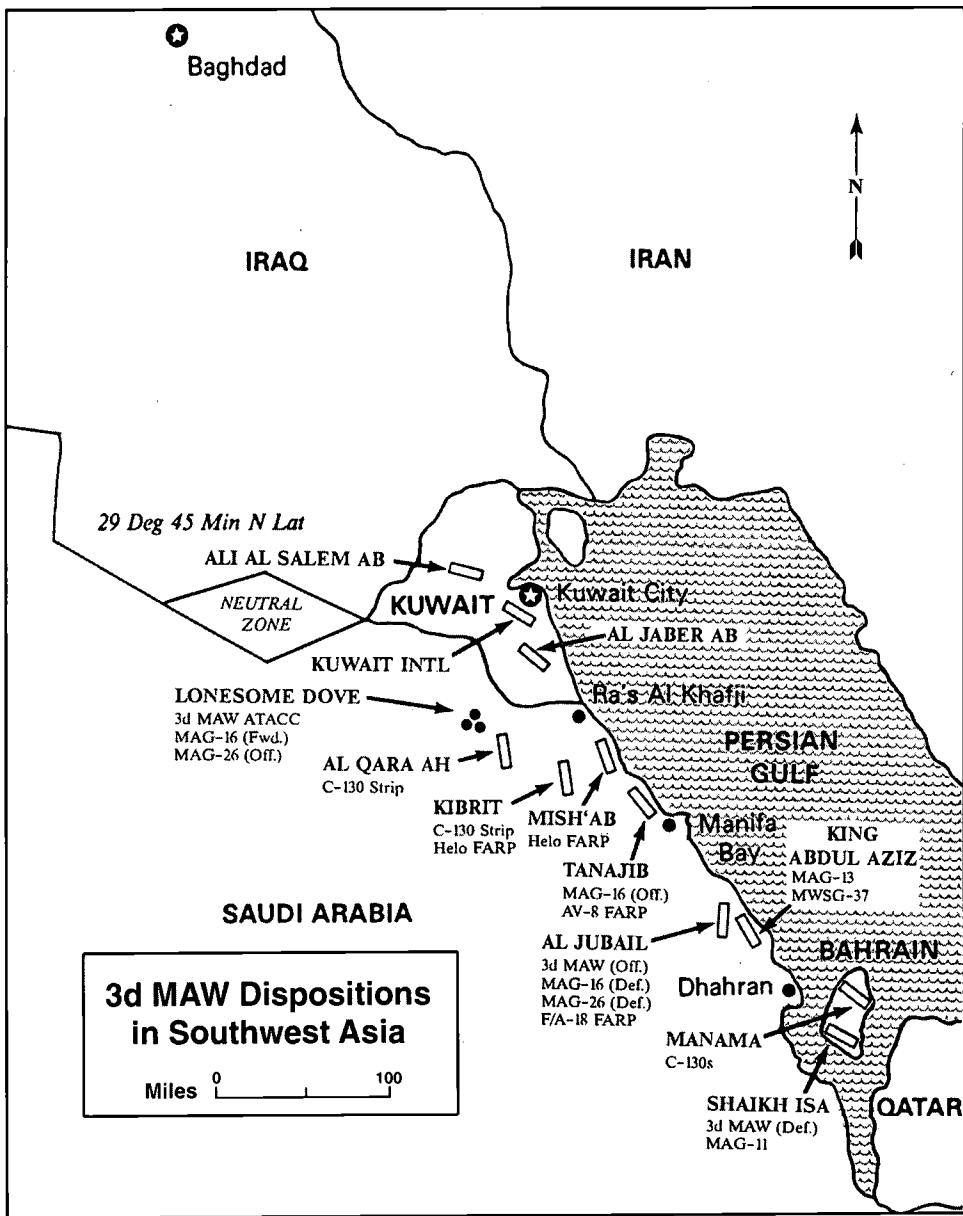
After more than two months worth of sustained effort, the Seabees and MWSS-174 expanded the airfield facilities at King Abdul Aziz Naval Base sufficiently to accommodate more aircraft. Over 4-5 November, VMA-542 moved its 20 Harriers to Abdul Aziz from Shaikh Isa and was transferred to MAG-13 (Forward). The move yielded welcome space at Shaikh Isa, but the facility remained above its aircraft capacity despite ongoing efforts to improve the situation.

## Late Desert Shield

*Early November 1990 - Early January 1991  
The Shift from the Defensive (November)*

*President's Reinforcement Announcement*

As the effort of economic sanctions to force Saddam Hussein out of Kuwait threatened to settle into a long-term stalemate, the Bush Administration decided by the end of October to reinforce CentCom in order to mount an offensive against Iraq in early 1991. With mid-term elections approaching on 7 November, President Bush decided to hold off on the public announcement of this



measure until afterward, but gave the go ahead to Secretary of Defense Richard Cheney and Joint Chiefs Chairman General Colin L. Powell, USA, to prepare plans for the build-up.<sup>87</sup> II MEF and the 5th MEB were already slated to replace I MEF and the 4th MEB in theater in the spring of 1991, but with the build-up, their units would now be added to the command structure already in place.

After quickly providing a generic list of the types of units needed to CentCom on 9 November, General Boomer followed up with a message on the 13th containing a very detailed roster of the forces he desired. To flesh out his current structure in theater, he requested most of the I MEF elements remaining on the West Coast. On the aviation side, this amounted to a fixed-wing group

headquarters (MAG-13), its Marine aviation logistics squadron, an additional Harrier squadron, the 3d MAW headquarters squadron, and the headquarters squadron of Marine Wing Support Group 37. Boomer also asked for the two remaining F/A-18C squadrons in Hawaii under the 1st MEB. From II MEF, he sought Major General William M. Keys' 2d Marine Division reinforced with a strong contingent from the 4th Marine Division. To support the additional forces, Boomer requested most of the 2d FSSG and the 2d Surveillance, Reconnaissance, and Intelligence Group (SRIG), although he specifically noted that neither of their command elements were required.

Out of the 2d MAW, General Boomer needed strong detachments from MACG-28 augmented heavily by the Reserves, as well as a strong Reserve component of the three support squadrons he wanted for the 3d MAW. The greatest single addition of aviation resources came in the form of the I MEF request for a full helicopter group out of New River, with over half of the squadrons to be provided by the Marine Corps Reserve. I MEF staff also saw the need for another squadron's worth of KC-130s, with half coming from the 4th MAW, a Reserve OV-10 squadron, and a squadron of A-6 Intruders.

### *3d MAW Reinforcement Challenges*

With a large aviation combat element already in place, and augmentation instead of replacement as the order of the day, General Moore developed a list of the 3d MAW's reinforcement requirements. These centered on increasing the depth of the wing's reach, improving its night and all-weather attack capabilities, enhancing its combat service support, and adding redundancy to an overstretched air command and control system. Although not a doctrinal approach to force structure decisions, airfield capacity limitations served as a key consideration throughout the wing's planning for reinforcements.<sup>88</sup> In the first week of November, as he looked to potential offensive scenarios after the start of the new year, General Moore, in a message to I MEF, requested a second complete helicopter group, additional fighter and attack aircraft squadrons, and significant augmentation to his air control group.

With MAG-11, MAG-13 (Forward), and MACG-38 headquarters in place, Moore intended that all but the second helicopter group fall under the existing command structure. The wing commander estimated that both MAG-16 and the additional rotary-wing group would have to operate out of bases much nearer to Kuwait if they were to carry out the offensive plans being sketched out at CentCom and I MEF. He emphasized the necessity for additional wing support capabilities in theater. He noted that the air control and wing support assets on board ships with the 4th MEB were not likely to be used in the roles envisioned for the brigade in theater, and thus asked that MWSS-274, H&HS-28, and MACS-6 be brought ashore to join the wing.<sup>89</sup>

Back in Washington, D.C., Headquarters, Marine Corps staff "scrubbed" the I MEF request and attempted to match up General Moore's desires with available squadrons and groups. Working with FMFLant and FMFPac, HQMC judged

nearly all the requested support to be available, but it required some shifting of active units and an extensive mobilization of the 4th MAW to bring to fruition. Unbeknownst to Moore, HQMC added the 2d MAW forward headquarters to the list as well as a sizeable detachment from MACG-28, including a complete air control squadron, a HAWK battery, and two Stinger batteries. The MWSG-37 headquarters, however, was conspicuously absent from the list of planned reinforcements. HQMC also added the headquarters of MAG-14 along with MALS-14 and VMGR-252 (-), the latter reinforced with a detachment from VMGR-234 of the 4th MAW to the fixed-wing element. To meet the 3d MAW's additional fighter and attack requirements, HQMC attempted to orchestrate a ballet of squadrons among the two coasts, Hawaii, and the Western Pacific, while maintaining other deployment requirements around the world. The result allowed for the dispatch of an Intruder squadron, a Harrier squadron, and two Hornet squadrons to the Gulf.

Although generally pleased with the forthcoming support, General Moore took exception to several of the CMC-directed changes to the initial I MEF reinforcement request. In a message to General Boomer, he disagreed with the addition of 2d MAW (Forward) headquarters, MAG-14, and MACG-28 (-) to the force list. He wrote to Boomer that "the obvious intent is to stand up a second wing, albeit skeletal." Speculation abounded in theater as to the possible employment of two MAWs there in support of likely offensive operations, possibly by dividing up some of the six traditional functions of a MEF aviation combat element, or by establishing separate wing areas of responsibility. Moore strongly opposed this line of reasoning and noted that, in accordance with the original I MEF proposal, "it is cleaner, [with] less overhead, to place the additional squadrons under existing groups, with the exception of MAG-26 which is a required element. More importantly, the operational lines are simpler which translates to a more responsive aviation combat element. It is suggested that those command elements, if they come, be integrated into current I MEF ACE units (i.e., 3d MAW, MAG-11, MACG-38)."<sup>90</sup>

Concentrating on the fixed-wing plan, Moore stated "[f]or some reason HQMC does not appear to recognize MAG-13 (Forward) as a fixed-wing MAG." He defended its status, stating that it would operate all of the Harriers and Broncos from King Abdul Aziz and thus it required MALS-14's personnel and equipment in support. General Moore also noted that the planned reinforcing A-6E squadron, if only equipped with four unrestricted aircraft, could better be used as a smaller attachment to VMA (AW)-224 rather than as a separate squadron. He repeated his earlier assertion that much of what he needed by way of air control reinforcement was already in theater on board ships with the 4th MEB. Moore again requested the dispatch of the MWSG-37 headquarters as well as that of the 3d LAAM Battalion. Finally, he stressed the importance of the early arrival of the fixed-wing reinforcements lest they encounter the type of delays experienced in August as they jockeyed for scarce USAF tanker support. HQMC took note of the concerns expressed by Moore and promptly revised the force list to reflect the desired changes.<sup>91</sup>

*2d MAW Builds the Augmentation Force*

With both MAG-26 and MAG-29 at MCAS New River, North Carolina, drawn down by the August dispatch of MAG-40 to the 4th MEB, the provision of a second full helicopter group to the 3d MAW presented a significant challenge for the Marine Corps. Attempting to maintain the scheduled rotation of forward MEUs and a minimal contingency capability, the 2d MAW was forced to mix units to produce a complete group for deployment. The 26th MEU (SOC) with HMM-162 (C) was only halfway through its projected six-month float, and the 24th MEU (SOC) with HMM-264(C) was slated to take its place with the Sixth Fleet in the Mediterranean in February 1991.\*

Major General Richard D. Hearney, the commanding general of 2d MAW, would deploy 50 percent of his aircraft assets, 65 percent of his air command and control assets, and 80 percent of his support assets to the Gulf by the end of the year.<sup>92</sup> General Hearney designated MAG-26, under the command of Colonel Michael J. Williams, as the headquarters of the group destined to deploy to Saudi Arabia. HMM-261, HMM-266, and HMH-362 (-) formed the core of MAG-26. HMLA-167 had one detachment with the 26th MEU and had transferred other aircraft to HMLA-269 before their departure to the Gulf, but was nonetheless slated by the wing to deploy with MAG-26. To help make up for MAG-26's aviation logistics shortages, General Hearney transferred MALS-29 from its parent group to MAG-26. He also sent HMH-464 (-) to MAG-26 with eight CH-53Es. The 3d MAW requested that the number of CH-53Ds deployed not exceed 20, and that no more than eight CH-53Es accompany MAG-26 because of the limitations on ramp space. MAG-26 also transferred HMT-204 and the rest of MALS-26 to MAG-29, together with its remaining CH-53E and CH-53D aircraft. Williams' group was also temporarily assigned a detachment of Broncos from VMO-1.

This intra-wing reshuffling still left shortages across the board in MAG-26. In response, HQMC turned to the 4th MAW for support. It ordered the mobilization in late November and early December of HMM-774, HMM-764, HML-767, and HMA-775 to build up MAG-26. HMM-774, based at Norfolk, Virginia, brought 12 CH-46Es to the mix, while HMM-764 from MCAS El Toro added another dozen Sea Knights. HMA-775 from Camp Pendleton consisted of 11 AH-1J Sea Cobras, while the Belle Chase, Louisiana-based HML-767 operated 12 UH-1Ns. Detachment A, HMH-772 out of NAS Alameda, California, provided six RH-53Ds to the MAG-26 portfolio.

General Hearney initially proposed to cluster the Reserve squadrons at New River prior to their deployment so that they could train with their active-duty counterparts. Because of the time that would be lost due to a cross-country transfer, Detachment A, HMH-772, mobilized at its home station and trained locally

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\* A Marine Expeditionary Unit contained a composite (C) helicopter squadron as the aviation combat element (ACE). This ACE was normally a Marine medium helicopter squadron (HMM) with four CH-53s, four AH-1s, two UH-1s and 4 AV-8 aircraft attached.

while awaiting transportation to the Gulf region. HMA-775 and HML-767 flew to New River and were hosted by New River units while awaiting deployment. In early December, HMM-764 was dropped from the Persian Gulf force list after consultations with the 3d MAW, but FMFLant requested its mobilization to fill out holes in its other contingency response capabilities.

The 3d MAW also recommended that HMLA-167 be retained in the United States in reserve since it was proving to be too difficult to muster enough AH-1Ws to justify its deployment. The 2d MAW concurred, and thus the squadron remained at New River with MAG-29 and attached the remaining CH-53s at New River to its rolls after their parent squadrons departed with MAG-26. VMO-1, also ordered to deploy to Saudi Arabia, was transferred to MAG-29 pending the shipment of its 12 aircraft to the theater.

As was the case with the other 2d MAW communities, the reinforcement of the 3d MAW's air command and control element was greatly complicated by the earlier departure of the 4th MEB. Much of the remainder of MACG-28 was nevertheless committed to the 3d MAW without the group and several squadron headquarters. I MEF and the 4th MEB continued to negotiate the transfer of the MEB's H&HS-28 detachment ashore together with the MASS-1 and MACS-6 detachments and finally reached agreement on 5 December.<sup>93</sup> The 3d LAAM Battalion and the 2d LAAD Battalion each gained a battery from their Reserve counterparts before deployment. MWCS-28 and MATCS-28 also contributed detachments to the overstretched MACG-38 in the theater.

From Marine Wing Support Group 27, MWSS-273 and MWSS-271 readied to deploy to the Gulf. MWSS-273 was a helicopter support squadron, while MWSS-271 at Bogue Field, North Carolina, was prepared to support fixed-wing operations. The status of the shipboard MWSS-274 remained under discussion between I MEF and 4th MEB. Anticipating approval for the shift of rotary-wing assets northward, General Moore remained committed to moving MWSS-274 ashore as soon as possible to undertake the rapid development of the desired airstrip at Mishab.

With the 3d MAW already in possession of much of the 2d MAW's fixed-wing assets, little remained at FMFLant air stations that could be deployed to the Gulf. MAG-14, whose staff was serving as the nucleus of MAG-40, had been reduced to a cadre group consisting of VMGRT-253, VMGR-252 (-), and VMA (AW)-332. VMGR-252 (-), which had already contributed a two-aircraft detachment to support Desert Shield, was ordered to ready four more for deployment. This second detachment was assigned to VMGR-452 (-) out of Stewart Airport, New York, which mobilized on 1 December. Instead of deploying to the Gulf as originally planned, VMGR-234 mobilized at Cherry Point to augment the 2d MAW. VMA (AW)-332 was slated to relieve VMA (AW)-533 in the Western Pacific in December. MAG-32 commanded only VMAT-203 and VMA-223, with the latter responsible for supporting the Sixth Fleet with an on-call detachment. At MCAS Beaufort, MAG-31 was down to VMFA-115, VMFA-251, and VMFA-122, but the latter was scheduled to deploy to the 1st MAW during January 1991 to replace VMFA-312.

The onus of the fixed-wing reinforcement of the 3d MAW thus fell on

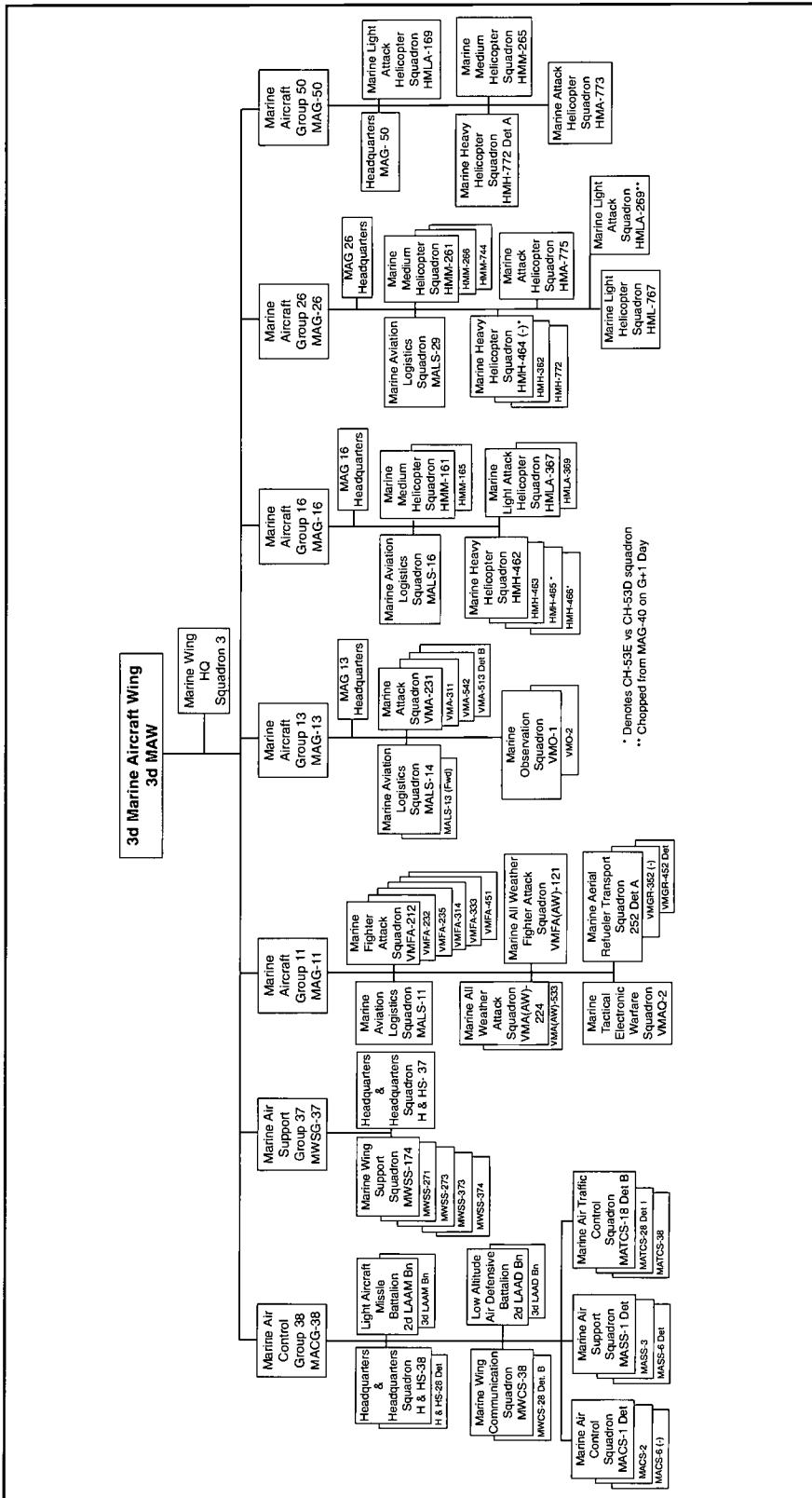


Table: 3d MAW Organization in the Persian Gulf

FMFPac. Lieutenant General Robert F. Milligan, Commanding General, Fleet Marine Force, Pacific, ordered MAG-24's remaining Hornet squadrons, VMFA-232 and VMFA-212, to make ready to join VMFA-235 under MAG-11. He also tapped VMFA (AW)-121, which was in the process of speeding through its F/A-18D transition, to prepare to deploy a detachment to the Gulf region after the start of the new year. VMFA-531 remained committed to replace VMFA-323 at Iwakuni, Japan, during January. Milligan instructed VMA (AW)-533, then deployed to the 1st MAW, but preparing a deployment to the Philippines, to be ready for Gulf duty in late December. VMA (AW)-332 out of MAG-14 would take its place in the Western Pacific with four unrestricted and six restricted A-6 airframes. VMA-231, forward deployed with the 1st MAW since the summer, was ordered to be ready for movement to the Gulf. Its place in the Western Pacific line-up would be filled by VMA-513(-) out of Yuma, Arizona.<sup>94</sup> This ballet accounted for all the Marine Corps aircraft assets moving to cover a worldwide commitment.

#### *The 4th MAW Call-Up*

To cover gaps in the Western Pacific and to hedge against other contingencies, HQMC prepared mobilization plans and orders for much of the remaining Reserve aviation units. HMM-764, dropped from Persian Gulf plans, joined MAG-16 (Rear) and remained at El Toro. The mobilization of many of the rest of 4th MAW's rotary-wing units was postponed until early 1991, when decisions on their eventual employment could be based upon the early results of the looming combat. Detachment A of HMH-772, based at NAS Willow Grove, Pennsylvania, was slated to operate in the desert with MAG-26. The remainder of the squadron was told to prepare for deployment to MAG-36 on Okinawa, Japan. The NAS South Weymouth, Massachusetts-based HML-771 and HML-776 out of NAS Glenview, Illinois, were also tasked to deploy to Okinawa, with six UH-1Ns each. This allowed HMLA-267 (-) to return to Camp Pendleton to sustain the AH-1W training program.

The call for fixed-wing Reserve assets was much smaller than that for rotary-wing. VMO-4 eventually mobilized and moved to MCAS New River under MAG-29. VMAQ-4 based at NAS Whidbey Island, Washington, and flying the older EA-6A model of the Prowler, was already slated to stand down in 1991 in preparation for its transition to the EA-6B. After several months of uncertainty, Headquarters, Marine Corps, ordered its activation in March 1991 in preparation for its deployment to MAG-12 to relieve Detachment X of VMAQ-2. As part of its call up, the squadron undertook transition training on the EA-6B.

The remainder of Marine Corps Reserve fixed-wing aviation consisted of one F/A-18A squadron, three F-4S Phantom squadrons, and four A-4M Skyhawk squadrons. Several of the Phantom and Skyhawk squadrons were slated to transition to older model Hornets as the active fleet took delivery of the F/A-18C. With several of the active-duty Hornet squadrons scheduled to support Navy carrier rotations during the next year, and with others available for deployment in an emergency, a long-term commitment to the Gulf would likely require Reserve

Hornet support. The short-run commitment would be met by the judicious use of active squadrons, and was due mainly to dissimilar aircraft in the Reserves. The Reserve Phantom fleets had been drawn down on spares in anticipation of the impending transition. With a much-reduced aviation logistics base to work from, HQMC decided early on that the deployment of these squadrons was not worth the maintenance and supply headache. The logistical cost of the A-4Ms combined with their presumed vulnerability in the high-threat theater also weighed heavily on the HQMC decision against their activation. Much of the available aviation logistics stocks had been committed to the support of the Free Kuwait A-4 squadron that had escaped Iraqi destruction in August 1990 and was based at Dhahran, Saudi Arabia. The political value of Free Kuwaiti A-4s participating in the eventual liberation of their homeland dictated that they receive high priority support.

### *Exercises Imminent Thunder and Devil Dog I*

While working out the details of the wing's reinforcement, General Moore and his staff set their sights on an approaching joint and combined exercise dubbed Imminent Thunder designed to test CentCom's planned defensive air operations. Running from 15 to 20 November, the exercise aimed to refine joint command and control issues, communications, planning, and coordination. Internally 3d MAW wanted to validate "surge" capabilities for both strike and close air support operations. The wing's training opportunities, however, were curtailed somewhat by an altitude restriction of 9,000 feet imposed by the Saudi eastern sector commander. With a high antiaircraft artillery (AAA) threat expected at lower altitudes, General Moore anticipated the need to train his aircrews to operate from altitudes of up to 20,000 feet.

In conjunction with Imminent Thunder, the 3d MAW provided around-the-clock support for a highly visible practice amphibious landing by the 4th MEB north of Jubayl. Operation Devil Dog I, as the landing was labeled, was

*A Marine of HMLA-369 carries TOW missile tubes as he and another ordnance man run toward an AH-1 Sea Cobra to simulate reloading during Exercise Imminent Thunder. Such training exercises were to prove invaluable when the offensive campaign began.*



originally intended to hit the beach close to the Kuwaiti border at Mishab, but the CINC moved it further south near Manifa Bay in order not to precipitate an unwanted clash with Iraqis. Although through-the-surf operations were curtailed due to heavy seas, the rest of the operation proceeded apace. The wing conducted both barrier and surface combat air patrol for the amphibious task force and supporting surface ships. General Boomer lauded the effort, noting that the two exercises "far exceeded our original objectives" despite the difficult weather.<sup>95</sup>

The 3d MAW pilots reported a "busy sky" in the area of Devil Dog I exercise area, which pleased General Moore because he felt that it gave them a feel for what high tempo air operations would be like. Having validated the defensive scenario in the previous week, General Moore looked forward to concentrating on preparation for offensive operations. In particular, he stressed the need for the improvement of skills such as air combat maneuvering (ACM). The exercises did unveil some problems that 3d MAW needed to correct. One such area highlighted by Moore was the delay in moving close air support (CAS) aircraft to a target quickly. Fixed-wing aviators complained that they were spending too much time in the "CAS stack" while awaiting a target assignment by the direct air support center (DASC). In a post-exercise meeting of Tactical Air Control Party (TACP) personnel, Moore encouraged participants to find a way to minimize the backup of aircraft by the DASC in order to free those aircraft for other sorties.<sup>96</sup>

Aviation training ranges required close coordination and were in short supply. There was a tendency by JFACC in Riyadh to centralize control over a regional process of scheduling ranges. The system in use through mid-November brought all the operators face-to-face on a weekly basis, allowing each representative to articulate the priority of his requests and to arbitrate a schedule that would be set for the following week. General Moore argued that "Centralized control will not improve this system."<sup>96</sup> Other training included mock raids on LAAM HAWK missile batteries and even LAAD teams in stinger profile exercises. The raids would include a wide range of aircraft including U.S. Air Force and coalition aircraft.

The Eastern Sector combat air patrol continued to be a 24-hour-a-day requirement that for the most part was considered "a boring burden" for the Marine F/A-18 squadrons. On occasion the boredom was broken. On 6 November, at 0858, two MAG-11 F/A-18s on the Northern Gulf CAP were vectored on three groups of Iraqi "bogies" heading south, testing the air defense system. The six "bogies" were approaching in three sections, five miles apart. The first section was at 30,000 feet, the second at 24,000 feet, the third at 8,000 feet, and all travelling about mach 1.0. The controlling agency waived the normal 28 degree 30 minute north restriction when the bogies in this stacked attack profile were at 55 nautical miles. The combat air patrol's wingman was away, plugged into the tanker miles back. The closest point of intercept was 10 nautical miles at 28 degrees 50 minutes north and 48 degrees 55 minutes east. The aircraft commander was never given permission to fire by the controlling agency and so weapons condition remained "white and tight" throughout the incident.<sup>98</sup>

Rules of engagement (ROE) were a hot topic of discussion within the

F/A-18 ready-rooms. ROE for the Northern Gulf CAP essentially required that the Marine crews remain south of the arbitrary 28 degree 30 minute north boundary to ensure no provocation or accidental engagements occurred. Second, the bogie had to be in an attack profile, as in a high rate of closure, and/or, his weapon system locked onto your aircraft. The Marine pilots would then turn in an attempt to create lateral separation, and if the bogie continued to take up that separation his hostile intent was confirmed. Third, normally the Navy antiair warfare ship "Red Crown" would be the controlling agency and would identify the type of aircraft and clear the combat air patrol to engage with both secure voice and data link communications. This is where the discussion was to turn to pilot discretion. The controlling agency seemed to the pilots to have to wait for confirmation to be able to lift the tight restrictions on weapons. With every second of hesitation the closure distance was decreasing dramatically.\* The closure distance for one squadron was 12 nautical miles, or if the pilot felt threatened, then there was no set distance for release of a missile.\*\*

This type of ground controlled intercept, with varying attack profiles tickling the northern Gulf defenses, occurred several times during November and would always occur when one of the two F/A-18s were away and plugged into the tanker. The MAG-11 commanding officer, Colonel Manfred A. "Fokker" Rietsch, was the pilot facing the choice of firing a missile on one occasion and on another, Major General Jeremiah W. Pearson, Deputy Commanding General, U.S. MarCent, was "just about to squeeze [a missile off] when they turned away seaward, and so I turned and saw that my wingman had just caught up with me".<sup>99</sup>

Rietsch would recall another anxious moment for the northern Gulf CAP in late November when four of his MAG-11 Hornets were stranded aloft by an unexpected early morning fog that blanketed the entire coast. The pilots had no viable alternate airport, and all the tankers were grounded by the dense fog. Rietsch called the commander of VMGR-352, Lieutenant Colonel Arlen D. Rens, at Bahrain International Airport and laid out the Hornets' plight. A doughty senior crew volunteered and took off in zero visibility weather from the officially closed airport. Airborne, the greatly relieved Hornet pilots plugged into the KC-130 with low fuel warning lights blinking, and offering their heartfelt thanks to the tanker crew. This would not be the only time that the tankers saved aircraft in *in extremis* fuel situations during this operation.

The alert status would be increased for the Christmas period and again as the 15 January United Nations deadline approached. The table, next page, indi-

\* Close coordination between the Navy command and control and the TACC continued to improve through these incidents with liaison visits both ashore and afloat, such as took place on 12 November between the commanding officer and staff of the *Worden* (CG-18) and the TACC.

\*\* According to Lieutenant Colonel Andrew S. Dudly, Jr., commanding officer of VMFA-451: "We normally give down to 12 nautical miles, but I leave that up to the individual flight commanders . . . I also told them that I don't care what Red Crown or anyone else says, if they feel threatened then I would rather one of their guys was going home in a parachute than one of our guys." (LtCol Andrew S. Dudley intvw, 19Dec90)

cates the fixed-wing aircraft alert status that was implemented for the high threat period in December 1990.

Table: 3d MAW alert status during high threat condition set in December<sup>100</sup>

Mission Type	Aircraft	Alert Duration
CAS (A)	4 F/A-18	2 hr standby (24 hrs./ day)
CAS (B)	4 A-6E	2 hr standby (24 hrs./ day)
CAS (C)	2 EA-6B	2 hr standby (24 hrs./ day)
CAP (A)	4 F/A-18	0730-1130 hrs (L)
CAP (B)	4 F/A -18	1330-1630 hrs (L)
Tanker (A)	2 KC-130	30 min alert
Tanker (B)	1 KC-130	2 hr alert

### *Preparing the Strategic Air Campaign*

Even as Imminent Thunder played out in front of the world news media, Marines at Riyadh and Shaikh Isa followed the JFACC staff as it developed plans for an offensive air campaign. Although information concerning the details of the plan was closely held, a general outline emerged consisting of four discrete phases of air warfare. Phase I called for a strategic air offensive to “gain and maintain air superiority, destroy strategic command and control, chemical and biological weapons delivery systems and production facilities, strategic reserves [*Republican Guard Forces Command*, (RGFC)], and Iraqi supply and industrial bases.”\*<sup>101</sup> Phase II focused on an air offensive in the Kuwait Theater of Operations (KTO) against command and control, air defense radar and air defense weapons systems, and *Republican Guard* theater reserves. Phase III concentrated on battlefield preparation through air attacks against forward defensive positions, indirect fire systems, armor reserves, and *Republican Guard* units. Phase IV would be the bread-and-butter mission of Marine aviation: air support for the ground offensive to liberate Kuwait.<sup>102</sup>

While watching the creation of strategic target sets, General Moore in early December directed his staff to begin on the list of targets in the Marine area of interest for the wing. This rapidly became the I MEF target list with considerable MEF input. By mid-December there was a noticeable shift away from the strategic bombing focus to building target folders for targets within the MarCent

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\* Although not included in the early drafts, the Secretary of Defense instructed CentCom to add the RGFC to the strategic target list because they were key to the Iraqi position in Kuwait and a serious offensive threat to Iraq's neighbors.



*Members of a remotely piloted vehicle company prepare to launch a Pioneer. A RPV company included five to seven officers and 50 enlisted Marines, and maintained about five mission-capable Pioneers.*

area of interest. The new focus became the building of a targeting cell which could quickly process intelligence and battle damage assessment (BDA) to shorten the time it took to complete mission planning and get bombs on target. JFACC targeting would only be a piece of overall targets struck by Marine aviation. JFACC targeting was supposed to be controlled by a Joint Targeting Control Board (JTCB), but “the authority of the board was low, as it was staffed with relatively low ranking officers.”<sup>103</sup> Rather than the doctrinal joint targeting review process, “the Black Hole officers developed their own master target list and master attack plan to make target nominations and sortie allocations, and thereby to construct the air tasking order (ATO).”<sup>104</sup> For Marines, the keys to the JFACC targeting would be inside information provided by two Marines on the “Black Hole” strategic air campaign staff in Riyadh, Major Jeffery L. “Oly” Olsen, an F/A-18 pilot, and Captain Rolf A. “Bugsy” Siegel. Two other key factors would be General Moore’s direct and often daily contact with General Horner and Colonel William A. “Bull Moose” Forney, who had previously served on an Air Force staff with General Horner. General Moore would later comment: “Fact is that General Horner would do almost anything for Bull Moose.”<sup>105</sup>

Due to the lack of organic imagery in 3d MAW, the remotely piloted vehicle company (RPV), which flew the unmanned aerial vehicle “Pioneer,” became a critical asset for viewing the near battlefield in real time.\* The RPV company belonged to the 1st Surveillance, Reconnaissance, and Intelligence Group (SRIG), and worked directly for the I MEF. On 28 November, 1st and 3d RPV, which had been set up and operating out of Jubayl was joined by 2d RPV which had its first flight the next day.<sup>106</sup> Once the war started, these unmanned aerial vehicles proved valuable in the targeting process.

Ordnance shortage became a problem in early November when theater-wide requirements for aviation ordnance shifted from a 30-day supply to a 60-day supply. The causes of the ordnance shortage were complex, but can be broken

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\* Each RPV system was comprised of eight air vehicles, associated payload packages, a ground control station, a portable control station, and two remote receiving and launch/recovery subsystems.

down to three basic areas: first, the system constantly questioned any ordnance calculation that was different from the non-nuclear ordnance requirements (NNOR) method.\* Second, CINCPac was tasked to support Marine aviation ordnance, but would not break the “fair share” regardless of the number of aircraft, or the 3d MAW-derived 60-day requirement.\*\* Third, administrative delays along with shipping and supply problems made it obvious that Desert Storm needed worldwide sourcing and was a significant drain on worldwide resources.<sup>107</sup> General Moore on 18 December stated: “Ordnance is being worked hard at all echelons. Had detailed discussion with Vice Admiral Stanley R. Arthur, USN [NavCent], on strike planning and ordnance afloat. What I hear is encouraging, however, the proof will be in the ordnance available after the first 30 days of operations.”<sup>108</sup>

MAG-11 laid out its ordnance requirements simply. The group took the number of F/A-18s in theater (72), times 85 percent availability (60), and multiplied by the 6 days of contingency, 5 days of surge, and 49 days of sustained CAS/DAS operations, for a total of 60 days aviation ordnance supply required. MAG-13 based its requirement on five days of surge and 55 days of sustained sor-

Table: 3d MAW Daily Bomb Requirements<sup>109</sup>

Aircraft	Armament	Surge	Sustain
A-6E	MK-20	108	72
A-6E	MK-82	108	72
AV-8B	MK-20	702	306
AV-8B	MK-82	702	282
AV-8B	MK-83	264	108
F/A 18	MK-20	360	240
F/A 18	MK-83	360	240

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\* Non-nuclear ordnance requirements was a national method used to determine the amount of ordnance by type and by theater. Marine Corps aviation ordnance was procured with Navy “blue dollars” and competed with all Navy ordnance requirements. Full NNOR levels were rarely procured.

\*\* Fleet Marine Force ordnance belonged to the respective CINCs, who earmarked a percentage of the aviation ordnance based on the level of planned participation in the execution of the OPLAN. This percentage was the Marine Corps’ “fair share,” regardless of the actual number of aircraft or the size of the MAGTF.

Table: 3d MAW 60-day bomb requirements

Armament	MAG-11	MAG-13	3d MAW	DON (NNOR)
MK-20	18,372	20,340	38,710	27,260
MK-82	4,212	19,020	23,230	6,797
MK-83	15,408	7,260	22,660	20,910
MK-84			720	1,257

tie rates. The accompanying tables indicate 3d MAW daily bomb requirements and 3d MAW 60-day ordnance requirements for level of effort weapons respectively. MK-20 (rockeye), MK-82 (500-pound general purpose bomb), and MK-83 (1000-pound general purpose bomb) were the level of effort weapons, and shortages of these bombs would most affect 3d MAW's operations. The MK-84 was a 2,000-pound general-purpose bomb.

Once 3d MAW determined its requirements, it had to ensure it had a 60-day supply on hand. This was never accomplished. Even if no ordnance had been dropped on 28 February, at the end of the ground campaign, the ordnance supplies in theater would still not have been at the required levels.<sup>110</sup> General Moore would later state: "And in fact at the end of the campaign 3d MAW had only 7-10 days of ordnance left and this was after a large (on loan) load of MK-82 bombs from the Navy and the Air Force."<sup>111</sup>

One problem was that because of the difference in Department of the Navy estimate of requirements and the 3d MAW requirement, 3d MAW was repeatedly asked to revalidate its requirements.\* The Ships Parts Control Center (SPCC) through which all requests for ammunition to support USMC class V (A) (aviation munitions) in Desert Shield had to flow, cancelled certain ammunition requisitions because either the assets were not available, or Pacific Fleet exceeded its fair share levels. As late as 30 November, 3d MAW's 60-day requirement of MK-82s, MK-83s, and MK-20s were being cancelled. On 4 December, 3d MAW asked SPCC to hold in abeyance cancelled requisitions pending the Chief of Naval Operation's (CNO) response to lifting the fair share limitations. On 6

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\* CNO 060239ZDEC 90 requested the wings to revalidate its "60 day requirements for many weapons such as . . . Rockeye, MK82/83/84, . . . appear excessive compared to global NNOR 60-day requirement and just completed OPNAV operation specific modeling effort" 3d MAW's response was: "The ordnance requirements stated reference are revalidated." USCINCCENT 271230ZDEC 90 requested all components revalidate their 60 day aviation ordnance requirements. CNO 010113ZFEB 91 to CG I MEF "Request you revalidate your first 60 day requirement based on target/OPLAN revisions, actual expenditures and projected expenditures." This ongoing revalidation frustrated and ultimately delayed the arrival of 3d MAW ordnance.

December, CNO stated: “ We will do whatever is necessary to satisfy USMC in-country requirement, but before we break fair-share policy, we must ensure the following actions have been taken.” These actions were: (1) MPS assets are properly accounted for; (2) Marine Corps assets in Europe under NavEur control have been used to offset the requirements; and (3) requirements have been revalidated by CMC and CNO. Lieutenant General Duane A. Wills, Deputy Chief of Staff for Aviation, HQMC, was heavily engaged in these aviation ordnance issues.<sup>112</sup> On 18 December, CNO partially lifted the fair share limits.<sup>113</sup> SPCC interpreted CNO’s authorization to break fair share policy as covering only end items, and so on 16 January CNO directed SPCC to break fair share policy on ancillary components needed to build up the specified ordnance end items.<sup>114</sup> By this time, 3d MAW was at war.

### *Rotary-Wing Training and Operations*

After the Thanksgiving holiday, the pace of helicopter operations increased as the 1st Marine Division began to formulate plans for large-scale heliborne operations in conjunction with possible offensive options. Confronted by two strong obstacle belts, the division looked to the heliborne assault as an important means to unhinge the enemy defense and block the movement of his armored reserves toward the division breach point at the front. RCT-3, with its rear camp adjacent to the CH-53 base at Ras Al Ghar, was chosen by General Myatt to lead this effort. Under Colonel John H. Admire, RCT-3 manned the division main defensive line at “Cement Ridge” north of Jubayl from mid-September and had practiced company-sized heliborne assaults and raids in conjunction with that mission.

Admire was confronted with significant obstacles while planning for the heliborne force mission. Pending the arrival of ground reinforcements from Camp Pendleton and Okinawa, the division assigned RCT-3 to be a mechanized task force through the end of the year, thus causing the RCT commander to split his attention between two very different missions. This was compounded by the availability of helicopters to exclusively support rehearsing a large heliborne mission.

MAG-16’s helicopter fleet, while enjoying better overall maintenance success than before, still struggled to cover all of its taskings. Its UH-1Ns were frequently tasked for visual reconnaissance and command and control missions for the 1st Marine Division, and its heavy-lift squadrons prepared for full employment in conjunction with the move of the force northward in mid-December. Training missions bled off many of the AH-1s and UH-1s in November for close-in fire support (CIFS) work, and the 1st Marine Division continued to call for them into December.

The two CH-46E squadrons shared medical evacuation and troop lift duties, and continued to operate under the onerous 22,000-pound gross weight limits. This essentially restricted the CH-46E to about eight to 10 combat loaded troops. The Naval Air Training and Operating Standardization (NATOPS) maximum gross weight limit for the CH-46 was 24,300 pounds which equated to car-

rying about 16 troops in this desert environment. Out at sea, the 4th MEB felt this limitation on CH-46 squadrons even more keenly. The continued inability to lift a large force ashore resulted in difficulties in assessing accurately any landing plan that relied heavily on the helicopter force. Early on, General Jenkins asked for authority to waive the limits on the CH-46.<sup>115</sup> On 27 August, the commander Naval Air Atlantic (COMNAVAIRLANT) granted authority for the 4th MEB commander to waive the 22,000-pound restriction only if the brigade was committed to combat, or another absolute necessity.<sup>116</sup>

At Jubayl NAF, Colonel Garrett and the MAG-16 staff concentrated on preparations to move the group to Tanajib by the end of January. In the meantime, training continued at a heavy pace to get the group to peak combat readiness. Live fire on Saudi ranges during November included shooting eight TOW missiles, seven Hellfire missiles, and 7,800 rounds, spent training door gunners.\* Support of the MEF's breaching exercises, medical evacuation, mass casualty, and close in fire support were key exercise objectives. There were, however, a number of missions being tasked and flown that had little to do with getting the MAG combat ready. Daily range sweeps, logistics movements, and 413 hours of very important person (VIP) flights occurred in December alone.<sup>117</sup>

Night vision goggle (NVG) training was hampered by the difficulty in getting training areas and the lack of a visual horizon at low levels due to fine dust in the desert environment. Procedures were established in December so that squadrons could operate with NVGs in specific training areas and be assured of separation even without positive aircraft control. Safety was an issue throughout the preparation for combat, and measures were constantly being added to ensure less mishaps on the crowded ramps and nearby airfield airspace. Even so, mishaps took a toll before the fighting began. On 24 November, HMH-465 lost a CH-53E during a NVG flight. The aircraft experienced an engine fire shortly after lifting a dual point external load. The crew set the load down, landed, and removed what components they could before the fire consumed the aircraft. No Marines were injured.

Earlier, on 8 November, a tactical troop insert with two CH-53Ds, two CH-53-Es and two UH-1s as escorts was conducted. Unique to this mission was the inclusion on board of reporters from the *Washington Post*, the *New York Times*, and the American Broadcasting Company. They were present at the brief, shown how to use NVGs, and rode in the UH-1s with General Amos. They quickly appreciated the enhancements that night vision goggles made. General Amos stated, "I wish we could get all of those who have been critical of NVG ops to put on the goggles and experience the ability to literally see in the dark. Once accustomed to the goggles there are few that would feel it was safer to work at night without them."<sup>118</sup> The tone was that standard operating procedure for helicopters at night was with NVGs.

The ground forces would be faced with many competing high-priority missions as well. RCT-3 was limited to small-scale helicopter lifts throughout late

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\* On the night of 30 December, four AH-1W Super Cobras fired four Hellfire missiles with 100 percent success. (3d MAW SitRep, 291701ZDec90).



*A Marine door gunner on board a CH-46. Getting door gunners trained and qualified became a serious squadron focus. Nearly 31,000 training rounds were fired toward that goal in December.*

November and early December. Most of that training was concentrated in the 1st Battalion, 3d Marines, although even it was unable to arrange a single battalion-sized lift during this period. The lifts that could be scheduled generally were conducted using a division of CH-53Ds, although on occasion a section of AH-1Ws practiced armed escort in conjunction with the lift. CH-53Es, designed expressly for the purpose of moving the M-198 howitzer and other large pieces of ground combat equipment, rarely were used for this purpose during practice lifts. In November, MAG-16 had 14 CH-53Es, with only about half of them available on any given day for tasking due to maintenance problems. The balance between day-to-day taskings and the requirement for specific combat event training was as applicable in peacetime as it was in Desert Shield. Colonel Garrett would later remark that the ground combat element "had its eye on a big helo assault from day one in this operation but we were never free of an enormous requirement to move people, equipment, and supplies. There weren't a lot of ways to get things around in the desert and the closer we got to combat ops, the greater the need became."<sup>119</sup>

Confronted with these difficulties, General Myatt, the 1st Division commander, continued to press for the development of a viable heliborne assault capability. On 6 December, Myatt assembled his staff and subordinate commanders

for a map exercise in which possible offensive operations were formally examined for the first time. As Christmas approached, RCT-3, now designated Task Force Taro, displaced its rear headquarters from Camp Daly northward to Manifa Bay to make room for inbound reinforcing units. While a necessity, this action placed the bulk of the designated heliborne force 50 miles from its supporting helicopter group at Jubayl. With minimal fuel supplies at Manifa and an increasing demand for heavy-lift helicopter support for the movement of 1st FSSG units forward, Taro was limited to small-scale heliborne training pending the relocation of rotary-wing assets north. Finally on 5 January, MAG-16 provided a large-scale troop lift rehearsal with 12 CH-46s, 12 CH-53Ds, 8 AH-1Ws, and 1 UH-1 for command and control. A similar rehearsal would take place on 7 January, but with eight AV-8s and two OV-10s added in support of 3d Marines.<sup>120</sup>

### *Supporting the Shift North*

Even while the planning progressed, there was still the mission at hand, defense of the coalition, and the force build up. Additionally, the opposing Iraqi force might not adhere to the U.S.-led coalition's expectations or time line. On 17 November, I MEF, in Desert Shield Order 005, laid out an updated general enemy situation and issued a three-phase plan tasking each major subordinate command (MSC) with mission specific orders. It stated in part:

Iraq continues to consolidate its defensive positions in and around Kuwait. In place is a three-tiered defense consisting of: infantry in the south and along the coast, backed up by armored/mech. in central Kuwait, with a strategic reserve of RGFC [Republican Guard] armor in southern Iraq. Although the Iraqis continue to improve their defensive positions, with extensive engineering efforts ongoing along the

*MAG-16 rehearses a heliborne assault. Not until January did an exercise of this scale take place. Previously, the largest such training event had been in early November as part of Imminent Thunder.*

Photo courtesy of TSgt H. H. Deffner, USA



FLOT [forward line of troops], they retain the capability to conduct a limited attack into Saudi Arabia with one armor and three infantry divisions in 12 hours, or a major attack with four armor and four mechanized infantry divisions in 36-48 hours. This attack could be supported by up to 200 sorties per day less attrition. Use of terrorism/UW [urban warfare], SCUD SSMs [surface to surface missiles], CW/BW [chemical warfare/biological warfare], FAE [fuel air explosives], and ICM [improved conventional munitions] to support either the offense or defense is likely.

From this defensive mission, 3d MAW was tasked by phase to:

Phase I: "Drive the enemy off the coastal road north of Mishab in order to slow attack and destroy this element to the max extent possible. If enemy Corps headquarters can be located, destroy it in order to disrupt C2 [command and control]."

Phase II: "First priority to drive second echelon off coastal road north of Mishab causing at least 30 percent attrition. Second priority is CAS [close air support] to 1st MarDiv."

Phase III: "Be prepared to mass assets against most critical enemy penetration."<sup>121</sup>

Throughout Desert Shield was the worry of chemical or biological warfare, as well as the threat of terrorist activity. Nuclear, biological, and chemical (NBC) training was taken seriously at the individual level. Intelligence indicated that Iraq had the capability and had shown the willingness to use chemical weapons. Pacific Command intelligence stated: "The Iraqis have, however, taken positive steps toward forward basing of chemical munitions to provide ready access to the artillery, helicopter, and aircraft units that would employ them."<sup>122</sup> I MEF elements in the vicinity of Jubayl, Shaikh Isa, and Bahrain International began taking Pyridostigmine Bromide (nerve agent pretreatment) and Cipro (bio-

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\* Supporting units, such as ArCent, were to protect the western flank and to provide tactical ballistic missile defense with Patriot Battery (F Battery, 2-7 ADA) for the port of Jabayl. AFCent, in coordination with the JFACC, would provide "counterair, air interdiction, offensive air, air recon, EW, and control of missiles and aircraft outside the I MEF AOR in support of joint combined operations." NavCent would provide "Naval gunfire and air support as feasible. Provides port, harbor security Det TACON [tactical control] to I MEF to assist in security ops at Jubayl port. Conducts amphibious operations as required." (I MEF MSGID/order/005, 171000Z Nov 90.)

\*\* The intelligence picture painted Iraq's offensive chemical and biological warfare programs as beginning in the early 1970s. In 1983, the Iraqis began using mustard agent, and in March 1984, became the first nation ever confirmed to have used a nerve agent in a conflict. Iraq used chemical weapons in its war with Iran from 1983 until the ceasefire. As the war progressed, Iraqi forces became more adept at using chemical weapons. Their increased use of chemical weapons throughout the war with Iran made it evident that Iraqi leaders viewed chemical weapons as an effective and worthwhile military asset. (PACOM msg, 13Oct90).

logical warfare prophylactic antibiotic) when the threat was upgraded.\* The AR-5 aviation gas mask was new to nearly all units and aircrews were learning the capabilities and limitations of the masks. Helicopter crews took this more seriously than many in the fixed-wing squadrons.<sup>122</sup> Wider decontamination plans were coordinated at the group and wing level. The dissemination and knowledge of the plans varied at each airfield.

As it prepared for the arrival of reinforcements, the 3d MAW staff began to study the best method of supporting offensive operations should Iraqi forces fail to withdraw from Kuwait. With a solid list of inbound units in hand, General Moore considered their time of arrival and base loading before determining their final location. With the expansion of facilities at Shaikh Isa and King Abdul Aziz nearing completion, Moore called for the bulk of the inbound fixed-wing aviation to arrive early. Finding a temporary home with sufficient ramp space for MAG-26 proved more troublesome. Informed by CentCom that Jubayl NAF would be a major aerial port of debarkation for reinforcing air and ground units, Moore was faced with the prospect of the airfield being clogged by several large strategic lift aircraft at a time disgorging vehicles by the dozens and troops by the hundreds. This was a poor operating environment for MAG-16 already in residence even without the addition of another helicopter group.

General Moore and his staff, having set their sights on the acquisition of two airfields near the coast in the northeastern corner of Saudi Arabia for rotary-wing use, pressed CentCom to help the wing gain rapid access to them. The first facility, the airstrip that serviced the Saudi Naval Base at Mishab, was less of an issue to the Saudis because it was already under their military's control. With a pier and deep-water access, Mishab was a strong site from a bulk fuel and ammunition point of view. Its drawback, however, was that it offered few supporting facilities for maintenance, billeting, or refueling, and provided little aircraft parking space. More troubling, its location was barely 50 kilometers from occupied Kuwait. The base lay solidly within the Arab Joint Forces Command-East area of responsibility. Marine ground forces were still prohibited from venturing that far north so as to prevent a chance encounter with the Iraqis. Although desiring entry into the field sooner, the wing was told to expect to place its first units there by the end of December. Unfortunately, nearly a month of engineering and facilities preparation was required before the wing could move a helicopter group there.\*\*

The second facility of interest was an Arabian American Oil Company (ARAMCO) Oilfield support complex near the complex of Tanajib located 30 kilometers to the south of Mishab. It boasted an airstrip with moderate ramp space, and a host of seemingly underused buildings within short driving distance.

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\*I MEF directed units in certain areas to begin taking nerve agent pretreatment and biological warfare antibiotics. (CG I MEF (SURG/G-3) msg, 171252ZJan91). Some units, including the majority of 3d MAW, were directed to stop taking the pretreatments on 24 January 1991 (I MEF msg, 230750ZJan91).

\*\* The approval of Mishab as an operating site did not occur until 1 December and was promptly followed by MWSS-273 beginning camp preparations (3d MAW Sitrep 011710 Dec 90).

Many of the workers had been evacuated from the site in the early days of the crisis, and a small cadre of Saudis and foreign workers had run it on a reduced basis for the past few months. It too, required the expansion of facilities prior to hosting a helicopter MAG, but this promised to be a much easier task than that at Mishab.

Rights to the Tanajib facility, however, were jealously guarded by ARAMCO, which depended on the site to support its highly productive oil wells in the northern Gulf. The company did not want any military activity there that would interfere with these operations. Frustrated at the impasse, the wing passed the issue up the chain-of-command and hoped that a favorable resolution would be found before it was too late.<sup>123</sup>

As an interim measure, General Moore decided that MAG-26's maintenance activity and helicopters would stage at Jubayl NAF pending their eventual displacement to Mishab. The living spaces and squadron administrative areas, however, would be located at one of the 2,500-man tent cities that the Seabees and Marine engineers started to erect on the outskirts of Jubayl in early December. These tent cities were designed to temporarily house the inbound II MEF units while they drew their equipment from MPS stocks or opportune sealift from the East Coast. Given the distance of 10 miles or more between the tent camp and the airfield, this arrangement created undeniable inconvenience for the incoming units. Jubayl, however, was already overtaxed by one group, and the addition of several thousand transients a day was expected to prove an enormous burden even without the addition of others. Colonel Frederick McCorkle, commanding officer MAG-29, and Colonel Robert A. ("Rag") Berns, commanding officer MACG-28, visited in November to obtain information and requirements which would help their subordinate units to prepare for the deployment and attachment to 3d MAW in this austere environment.

The planning for the expansion north now completed, General Moore pushed to have Marine Wing Support Group 37 headquarters established to accomplish the plan. On 18 December, Colonel Robert W. Coop stood up his MWSG-37 staff at King Abdul Aziz. His transition was relatively smooth because he arrived with General Moore in August as the 3d MAW's acting logistics officer (G-4). Several items that plagued his earlier efforts at providing support for the 3d MAW revolved mainly around getting a blanket purchase agreement from I MEF.\* In early January, this would finally become a reality. In contrast, Marines envied the USAF commanders who had been given large spending authority dubbed "Cadillac chits" to cover unforeseen contingencies.

MWSG-37 was the last of 3d MAW's groups to form and there was little responsive communications capability remaining. They purchased and employed

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\*Colonel Coop remarked on logistics difficulties: "Let me say this again. The biggest hindrance of me getting my job done was the fiscal policies of MEF. It became a near show stopper in most cases. It would take weeks and days to get something done at MEF . . . They would question every request to the point of ludicrous[ness]." (Colonel Robert W. Coop intvw, 20Mar91, hereafter, Coop intvw).

throughout 3d MAW a Motorola Saber radio system.\* This system consisted of three repeaters and 100 Motorola Saber III radios, and provided instant, mobile, and secure communications to the secret level. This greatly eased 3d MAW's lower echelon command and control problems.<sup>124</sup>

Table: Marine Wing Support Group 37<sup>125</sup>

Marine Wing Support Squadron	Primary Location	Primary Supported Unit
MWSS-174	King Abdul Aziz, Naval Air Station	MAG-13 (Forward)
MWSS-271	King Abdul Aziz, Naval Air Station	Planned to support MAG-16 at Tanajib
MWSS-273	Ras Al Mishab	Planned to support MAG-26
MWSS-373	Shaikh Isa	MAG-11
MWSS-374	Al Jubayl, Royal Naval Air Facility	MAGG-16 and MAG- 26, 3d MAW HQ

#### *The 3d MAW Air Command and Control System*

In conjunction with the movement of bases and personnel northward, the 3d MAW planned for the northward shift of the Marine air command and control system (MACCS) in order to provide better support for possible offensive options. Although the wing headquarters had resolved many of the difficult communications challenges presented by its location in the far southern portion of the I MEF AOR, General Moore recognized that his air command and control system did not have the high level of redundancy required to wage an extended air war in Kuwait. The physical distance between his headquarters at Shaikh Isa, Bahrain, and the large I MEF concentration in the Jubayl area also occasionally hampered coordination with the other elements of the force. After consulting with General Boomer, Moore decided to move his headquarters into Saudi Arabia to facilitate his command of the wing.<sup>126</sup>

Meeting with his staff and his control and support group commanders,

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\*The Air Force had been using several thousand hand-held Motorola Saber radios effectively throughout the theater and had repair capability for them in Riyadh. MWSG-37 had to send a couple of units to the Air Force for repair and received same-day turnaround on them. (Coop intvw).

General Moore determined that Jubayl NAF would be the location of his new headquarters. Although austere, unlike King Abdul Aziz, Jubayl offered the necessary real estate for a full-blown headquarters. After scouting out possible areas, the staff chose an undeveloped site at the southwest corner of the airfield astride the airport access road. The wing tasked MWSS-374 to prepare the area for the wing and air control group headquarters squadron. Finally nearing completion of the extensive expansion of aircraft ramp space for the airfield, NMCB-5 was also called upon to help out, although all the engineering units in the Jubayl area were heavily involved in the construction of the tent cities around Jubayl. With his at-hand support squadrons pushed to the limit and the airlifted reinforcements not likely to be able to function until early January, General Moore continued to press for the transfer of MWSS-274 from the 4th MEB so that it could be used immediately to prepare Mishab Airfield for the arrival of MAG-26.<sup>127</sup>

For Colonel Della-Corte's Marines at MACG-38, the shift of the MACCS northward was a complex task. Because of the limited air control equipment ashore, this shift would have to occur in carefully timed phases. MACS-2, located at King Abdul Aziz and running the TAOC, was clearly out of position to support offensive operations. A move of the TACC, however, required that MACS-2 be substantially reinforced in place so that it could serve temporarily as the alternate TACC. Only after the TACC was reassembled and functioning smoothly at Jubayl NAF could MACS-2 be then shifted to a more optimal position near Mishab. Starting on 2 December, Marines from H&HS-38 began the shift to King Abdul Aziz to build up the watch team there. This move was assisted by the transfer ashore of the 4th MEB's H&HS-28 detachment.

MWCS-38 consolidated the communications system at Shaikh Isa to be able to recover and stage as much equipment as possible for use at Jubayl NAF. The squadron benefited greatly from the early arrival of elements of Detachment B, MWCS-28. The new TACC at Jubayl was operational and control transferred on 23 December after having operated temporarily out of King Abdul Aziz. Now MACS-2 could begin to move the tactical air operations center forward to the Ras Al Mishab area. On 18 December, the advance party had departed and within 14 days the new TAOC at Mishab was up and fully operational. Additionally, individual efforts in tweaking the MACCS were ongoing. Software changes in November and December dramatically improved the Tactical Digital Information Links (TADIL) connectivity, reliability, and information flow. There were high levels of "anomalous propagation and weather ducting" peculiar to the Gulf region that interfered with the AN/TPS-32 and AN/TPS-59 radars. The problems were not just physical. General Moore on 29 December would state: "I have a full plate of issues and requirements that must be worked in concert with AFCent and NavCent."<sup>128</sup> He directed his staff to ensure that procedures were in place that allowed aircraft from an aircraft carrier in the Gulf to enter the Marine air command and control system.

With I MEF consisting of only one division until December, the location of the DASC was in accordance with Marine Corps doctrine which assigned its position with the division headquarters. I MEF would shortly consist of multiple

ground combat elements, and the question of the employment of a full DASC capability with each division came to the forefront of the discussions. Colonel Della-Corte now wrestled with the best air support system to support two Marine divisions in the attack. In Vietnam, both the 1st and 3d Marine Divisions had DASCs co-located with their headquarters, but they were situations involving semi-permanent divisional areas of responsibility. Temporary DASCs were often formed, however, for specific situations.

Although plans were still in the formative stage, I MEF envisioned a rapid advance by both divisions to Kuwait City and possibly beyond. This clearly called for highly mobile air support agencies with each division, but it also seemed to necessitate a higher-level DASC to apportion air support and coordinate with the MEF-level FSCC envisioned by General Boomer.

With a dearth of assets in theater but reinforcements on the way, Della-Corte and Lieutenant Colonel Dennis C. Sorrell, the commander of MASS-3, felt that a DASC with each division was within reach in terms of resources and was doctrinally sound. They believed that it was the proper role of the TACC to apportion assets between divisions based on the MEF commander's mission guidance. The MEF, on the other hand, favored a strong FSCC and DASC clustered at the MEF's main headquarters, with the divisions relying on their organic FSCC and division air officers to meet their combat requirements. Over the objection of the 3d MAW and MACG-38, General Boomer decided in favor of the MEF-level DASC. He promised significant augmentation to each division—soon labeled an air support element (ASE)—to help coordinate and manage their air support needs.

Pulling a fully manned DASC away from the 1st Marine Division proved to be an awkward task for Colonel Della-Corte. General Myatt, accustomed to the DASC being co-located with his headquarters and relying heavily on 3d MAW close air support and close-in fire support for the planned assault into Kuwait, balked at losing this valuable resource. On 6 January, MASS-3 sent out ASE I led by Captain Patrick A. Coronado, to support Myatt's 1st Division, and on 14 January, sent out ASE II under Captain David F. Stadtlander to support 2d Division. Each ASE was physically co-located with the division fire support coordination center, providing limited air support control functions and information communications relay capability to the MEF DASC. The combined demands of the two ASEs and a DASC, as well as an airborne DASC capability, forced MACG-38 to strip radio vehicles and additional communications assets from its other squadrons to meet the demand. MASS-3 was able to cover the heavy personnel commitment through the augmentation of MASS-1 personnel. MACG-38 initially manned the airborne DASC with a reserve crew from Detachment C, MASS-6. On 8 January, MASS-3 executed the movement order to start the relocation of the main DASC to support I MEF headquarters at Safaniya to the south of Mishab.

#### *The Concept of the Helicopter Tactical Air Command Center (HTACC)*

The restructuring of the MACCS throughout the I MEF area of responsibility, although promising to shorten communications lines and thus ideally

improving their reliability and redundancy, still left a dilemma for General Moore in the realm of aviation command and control. Throughout the late summer and fall, the 3d MAW had wrestled with the issue of how best to control helicopter aircraft in flight. The MACCS, although in theory a system of control for all aircraft and missiles, was optimized more to the needs of fixed-wing aircraft and antiaircraft missiles. Rotary-wing aircraft if tasked to fly in support of a division, checked out upon departure from their base and then checked in with the DASC when entering a division TAOR. The DASC then handed them off to their designated forward air controller or air officer as appropriate. The DASC, however, would seldom have direct radio contact with that forward air controller.

Control of helicopters between home base and the DASC was often quite tenuous. Flying north of Jubayl at very low altitude, they were frequently unable to make radio contact with the TAOC at King Abdul Aziz while enroute to the DASC. In-flight diversions or maintenance-related landings could not be quickly confirmed or reported in this communications-free area, thus leaving the group operations sections of the DASC uncertain of the status of the mission for long periods. The repositioning of the TAOC to the Mishab area promised some improvement in this area, but General Moore and his helicopter group commanders believed that more could be done to improve this situation.

Moore decided that the detachment of H&HS-28, recently moved ashore from the 4th MEB to help man the ATACC and support the TACC's move to Jubayl, would be moved northward once this task was complete to serve as the wing's helicopter TACC, or HTACC. Described by some as an expanded version of a helicopter direction center (HDC) employed on board ship, the HTACC attempted to bridge the doctrinal and physical gap between the TACC at Jubayl and the DASC to be co-located with the MEF main command post. It was not, however, a separate control agency, but rather an entity designed to allow most helicopter-related decisions to be made in the northern area of responsibility—and thus presumably more aware of the situation on the ground—rather than left to the TACC in the south. In January, General Moore dispatched his Assistant Wing Commander, Brigadier General Amos, to set up the HTACC to control helicopter aviation in the offense.

### *Developing the Marine Offensive Plan*

As the 3d MAW wrestled with reinforcement, basing, and air control issues, I MEF and 3d MAW staff officers examined a variety of offensive plans. CentCom in late November gave the Army's central command (ArCent) responsibility for the main ground attack in which its two corps would penetrate Iraqi lines far inland beyond the Wadi Al Batin and then sweep north and east in a giant encirclement of Iraqi forces in the Kuwaiti theater of operations (KTO). To facilitate the ArCent effort, General Schwarzkopf instructed General Boomer to plan a supporting attack into Kuwait with the purpose of fixing the Iraqi *III Corps* and Saddam's operational reserves in southern Kuwait and isolating the Kuwaiti capital from the rest of the theater.

Although without a specific written order to do so, but relying on the CinC's broad guidance, in early December, General Boomer examined a variety of offensive options covering possible attacks on a variety of axis into southern Kuwait designed to cut off Kuwait City and the Iraqi *III Corps* from the rest of the Kuwait theater of operations. On 15 December, the staff briefed possible courses of action that boiled down to two primary plans of attack. A so-called "Southern Option" called for I MEF ground forces, led by the 1st Marine Division, to penetrate Iraqi lines in southern Kuwait to the east of the Al Wafra Oilfield and then link up with an amphibious assault on the coast below Kuwait City before encircling the capital. A "Northern Option" called for Marine ground forces positioned around the Kuwaiti "heel" to cut across the lower portion of Kuwait, meet up with an amphibious assault from the sea, and then complete an encirclement of the capital. This offered a shorter axis of attack and split the seam of the Iraqi defense between the *III Corps* in southern Kuwait and the *IV Corps* to the west of the capital.

From an aviation perspective, both options had strengths and weaknesses that varied greatly depending on what community was involved. In preparing the staff estimate, the MEF developed its primary aviation planning assumptions listed in the accompanying table.

Table: Aviation planning assumptions

Rotary Wing	Fixed Wing
70 percent aircraft availability	Air superiority
6-8 flight hours per aircraft	SAMs reduced by 75 percent
50 nm sortie radius	85 percent aircraft availability
FARP(S) Required	Ordnance will be available
Transports available for	
Immediate re-supply/ MEDEVAC	
Moonlight Waxing above 20 percent	

With I MEF preparing to move its initial support units northward into the Mishab area, the southern option looked to be the less problematic of the two. A single axis of attack, shorter medical evacuation trips, and the eventual over-water support offered by an offensive up the coast favored rotary-wing operations, while fixed-wing operations would benefit from simplified command and control, shorter distance to the objective, and limited exposure to enemy fire. It would also give more time for air to interdict Iraqi operational reserves before they could be

brought to bear against the attacking Marine divisions. The major drawback, apparent to the MEF staff, was the fact that the southern option required the divisions to attack through a greater concentration of frontline Iraqi strength to get to the MEF objectives. This also left significant enemy strength on the interior flank of the I MEF attack capable of threatening a counterattack against the point of penetration.

The MEF staff recognized that the northern option was the bolder of the two and that it might accomplish the mission more rapidly. It viewed the southern option, however, as being more deliberate, providing greater operational flexibility, and offering the effective employment of the amphibious forces. In the end, the staff recommended to General Boomer that the southern option be adopted. Boomer took the recommendation under consideration, but he was troubled by the thought of attacking into the enemy's strength and continued to press for other options.<sup>129</sup> Complicating this task was the decision in mid-December by General Schwarzkopf to transfer the British 1st Armored Division from I MEF to the U.S. VII Corps. Although promised an armor brigade from ArCent as partial compensation, the net effect of this transfer was to seriously reduce the combat power of the MEF. This in turn heightened the role of Marine air in the pending conflict.

A result of the delayed ground scheme of maneuver selection was that MACG-38 units became some of the northernmost Marine units within the area of responsibility. While this was a unique position for command and control agencies it afforded the tactical advantage of not having to displace these agencies during critical periods when the ground combat element was moving forward in the offense.<sup>130</sup>

### *Reinforcements Begin to Arrive*

As agreed to by I MEF and FMFLant, the massive flow of reinforcements arrived in the theater beginning with fixed-wing aircraft from FMFPac in mid-December. VMFA-212 and VMFA-232 finished their long journey from Hawaii to Shaikh Isa on 16 December. Next, on 19 December, came the first of two detachments of VMA (AW)-533 routed from the Philippines westward through Diego Garcia. The remaining detachment arrived on the 21st. The following day, VMA-231 flew into King Abdul Aziz after travelling eastward around the globe from Iwakuni, Japan. Finally, on 14 January, the long awaited F/A-18Ds from VMFA(AW)-121 with their two seat, night and airborne forward air control capability arrived with five aircraft.

Large advance parties from MACG-28 and MWSS-27 units arrived at Jubayl during the third week of December. After drawing their equipment from the recently-offloaded MPSRon-1 at the port, MWSS-273 sent its lead elements to Mishab on the 29th. Marines of Detachment B, MWCS-28, accompanied them northward, and together they immediately began preparing the base for MWSS-273. On the 30th, the MAG-26's advance party arrived at Jubayl, leading a long flow of helicopters starting with 12 UH-1Ns from HML-767 the following day.



*F/A-18C Hornet strike aircraft from VMFA-212 "Lancers" fly in formation during Persian Gulf operations. The Lancers began their long journey from MCAS Kaneohe Bay, Hawaii, on 10 December, and flew via MCAS El Toro, California; MCAS Beaufort, South Carolina; and NAS Rota, Spain.*

To cover the build-up in the north, MACG-38 on 17-18 December moved a HAWK fire unit from Bahrain to the vicinity of Mishab together with the MACS-2 advance party. After two weeks of around-the-clock effort, the TACC at Jubayl became fully operational at noon on the 23d. That accomplished, MACS-2 shut down the TAOC at King Abdul Aziz just before midnight on the 27th and began to shift it to its new site west of Mishab with the goal of becoming operational no



*The F/A-18D flown by LtCol Stephen F. Mugg, Commanding Officer of VMFA(AW)-121 "Green Knights," is pictured at Shaikh Isa.*

later than 3 January. The squadron quickly brought up its TPS-63 radar to the new site, and on the 30th it reported radar coverage into Kuwait City down to 4,000 feet.<sup>131</sup> The air control tower, as well as a tactical aerial navigation beacon (TACAN) operating on low power to send a signal out to only 30-40, miles was operational on the 15th. Aerial resupply of aviation ordnance to build up a three day supply began immediately.

In late December, VMO-1 loaded six OV-10Ds on board the USS *Theodore Roosevelt* (CVN-71) and five OV-10As and one OV-10D on board the USS *America* (CV-66) for the Atlantic leg of their journey to join MAG-13

*An OV-10 of VMO-1 takes off from the America for Rota, Spain. From there it flew to the Persian Gulf. VMO-1 had been flying OV-10Ds since 29 February 1980. The D model "Bronco" had a laser range finder designator system. The Gulf War was the Bronco's swansong, with the aircraft being retired from Marine Corps' service shortly afterwards.*



(Forward) at King Abdul Aziz. Although not matching the extraordinary journey of VMO-2 five months earlier, it was nonetheless an impressive effort to get the squadron to Saudi Arabia. On 8-9 January 1991, as the carriers neared Spain, the squadron flew its aircraft off the decks to NAS Rota. Met by there by Marine KC-130s, the first echelon of VMO-1 began its "Trans-Med" on the 11th with three Broncos assigned to each Hercules. Stopping enroute at Palma de Mallorca, Spain; NAS Sigonella, Italy; Souda, Crete; Cairo, Egypt; and Jeddah, Saudi Arabia, the leading echelon arrived at King Abdul Aziz on 17 January, where it met the squadron's main body of ground personnel. The second echelon of aircraft arrived at King Abdul Aziz on the 26th with the last aircraft arriving two days later.<sup>132</sup>

Table: 3d MAW personnel levels, 16 Dec 1990-15 Jan 1991<sup>133</sup>

Date	Total 3d MAW Personnel in-Theater
16 December 1990	8,823
18 December 1990	9,078
20 December 1990	9,414
25 December 1990	10,113
1 January 1991	11,088
10 January 1991	13,817
15 January 1991	14,480(*)

(\* At this point 3d MAW included 342 female personnel.)

The movement of the MACCS along with the preparation of bases and facilities for the inbound flow of forces was an all-consuming task for 3d MAW. From a 16 December base of 8,823 total personnel assigned to 3d MAW in theater, there began a dramatic increase. Now the close air support; nuclear, biological, and chemical; night vision goggle; gunnery; and other combat readiness training would have to be covered with all the inbound reinforcements. The F/A-18s, in particular, needed the time to work up their mission of suppressing of enemy air defenses with the Block III HARM missile. Some of the inbound units had anticipated being assigned to the Gulf and conducted all the basic training they could. VMFA-212 in MAG-24 actually deployed from Hawaii to Yuma, Arizona, as an entire squadron to conduct fleet contingency training that was Gulf area tailored prior to further deploying to Shaikh Isa on 10 December. VMFA-212 complained about the fact that the first "hands on" usage with the tactical aviation mission planning system (TAMPS) was in theater, and "having no working FLIRs

(forward looking infra-red) available to train on prior to deploying.”\* VMA-231 mentioned that the “last to go” left with less experience and depth in aircrew and maintenance due to filling out the table of organization of the “first to go” squadrons. This filling out the “first to go” occurred in helicopter squadrons as well.\*\*

Marine Aircraft Weapons and Tactics Squadron 1 (MAWTS-1) located in Yuma, Arizona, sent a detachment on 22 December that was a welcomed source of expertise in a variety of fields. General Moore was especially interested in an in-depth look at the best way to structure the MACCS to meet the needs of different echelons of command.<sup>134</sup> The flying squadrons were not so thrilled to have to support additional augment pilots with combat flights and flight hours.

At 1200 on 14 January the tactical information broadcast system (TIBS) was brought on line at the TACC, and would give real time information to the intelligence section. Two weeks earlier the KC-130 began carrying the Senior Scout signal intelligence (SIGINT) package which helped fill the void in organic airborne SIGINT collection capability and provide near real time input to the TACC via TADIL link. This adjusted warning would be critical in the rapid development of aerial engagements. The EA-6Bs from VMAQ-2 would continue to fly the “junkyard track,” a block of air space adjacent to and south of the Iraq and Kuwait border. Primarily they were conducting electronic surveillance missions using their tactical electronic reconnaissance processing evaluation system (TER-PES) to add to the electronic order of battle. The TERPES cell from VMAQ-2 consisted of two officers and 20 enlisted Marines and served as the interim intelligence fusion center with the wing and group intelligence personnel and the secret compartmented information facility (SCIF).<sup>135</sup> On occasion the information collected directly helped predict SCUD (Soviet surface-to-surface ballistic missile) launches. Some of the early intelligence analysis showed that Iraqi aircraft had increased their activity over their own active surface to air missiles (SAMs) without any pattern of corridors. This indicated that Iraq could schedule and coordinate fighter engagement periods with their air defense assets. Without the sector defense centers to coordinate this, the Iraqi pilots would be reluctant to fly over their own standing free-fire SAMs in Kuwait.

The shift from Operation Desert Shield to Operation Desert Storm would take place on 15 January with the start of the air offensive bombing campaign; however, this did not mark the end of flow to theater of 3d MAW’s air assets. A

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\* The TAMPS machine that was designated to come out to MAG 24 never made it past FMFPac, where it was used in the intelligence briefings instead of making it to the tactical squadron, or at least, the group level where tactical planning was being conducted. (LtCol James M. Collins intvw, 18Mar91).

\*\* Lieutenant Colonel John F. Petine, commanding officer, HMM-266, described the process his squadron went through beginning in August: “We ended up giving one of the squadrons that did go [then] air planes and pilots and people. I had to give them a detachment that became part of their squadron, and I never saw those guys again . . . I had to rebuild with 10 new pilots in November.” (LtCol John F. Pettine, C.O. HMM-266, intvw, 21May96.)

combination of two major factors slowed the final determination and disposition of 3d MAW's forces. The first was the I MEF's late decision to go with a course of action that required two breaches in the Iraqi defenses, one of which was further west than either aviation or logistics were currently in position to support. The second was that the aluminum and airborne tanker bridges were backlogged with forces flowing to theater.\*

## Desert Storm: The Air Campaign

### *The Eve of the Storm*

As the two Marine divisions and the direct support command positioned themselves around Kibrit in early January, General Moore and his staff settled into the new wing headquarters area at NAF Jubayl. The 15 January deadline imposed by the United Nations Security Council for Iraq to leave Kuwait rapidly approached. Although many important details needed to be finalized in the short time remaining, overall 3d MAW was prepared to begin its portion of the air campaign. Its fixed-wing aircraft groups and the MACCS were fully operational and rehearsed in both the deep air and push-close air support. Two major issues of long-term consequence remained unresolved, sustaining 3d MAW's aviation ordnance stocks and relocating the rotary-wing force.

The wing possessed an estimated 15 days worth of ammunition stored in its dumps ashore for a sustained sortie rate.\*\* Faced with the possibility of a longer air campaign, General Moore sought to build up sufficient stocks to carry him through General Schwarzkopf's mandated 60 days. More ordnance was available afloat in the region and on ships enroute from the U.S., but to General Moore's disappointment Vice Admiral Stanley R. Arthur, USN, who as the senior naval officer was responsible for all naval ordnance in the theater, chose to retain this large reserve ordnance stock afloat for use by both NavCent and MarCent. General Moore expressed repeated concern to General Boomer about the efficacy of this plan.<sup>136</sup> He was concerned that Arthur would decide to husband these assets rather than release them to the 3d MAW when needed.

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\* In August, strategic airlift missions totaled 1,668, while in January and February they totaled 3,272 and 3,052 respectively. The C-5s and C-141s along with the CRAF aircraft were flying what would become known as the "aluminum bridge." (James K. Matthews and Cora J. Holt, *So Many, So Much, So Far, So Fast: United States Transportation Command and Strategic Deployment for Operation Desert Shield/Desert Storm*. (Washington, D.C.: Office of the Chairman of the Joint Chiefs of Staff and United States Transport Command, 1996), p. 39.

\*\* On 16 January, 3d MAW had on hand 13,056 MK-20s, 4,623 MK-82s, and 2,812 MK-83s which was a 22-day, 12-day, and 8-day supply of those level-of-effort weapons, respectively. (John D. Parsons, Benjamin T. Regala, and Orman H. Paananen. *Marine Corps Desert Storm Reconstruction Report: Third Marine Aircraft Wing Operations*. (Alexandria, Virginia: Center for Naval Analyses, Feb92), pp. 95-107, and 3d MAW daily ordnance reports).

The helicopter-basing situation also remained uncertain. The development of the Mishab base proceeded, and it looked probable that MAG-26 could move there starting at the end of January. The Saudis, however, continued to delay the opening of Tanajib to MAG-16. If the delay continued much longer, assault and close-in fire support for the divisions would be in jeopardy. With the start of the air campaign only days away, General Moore also was anxious to clear out Jubayl so that MAG-11's Hornets could use it as a FARP site and divert base. He planned to do the same for MAG-13's Harriers at Tanajib. Moore also wanted to make room at Jubayl for the KC-130s destined to operate the airborne DASC and the Senior Warrior signals intelligence package.

3d MAW continued to expand daily, which was a tremendous administrative, as well as logistical burden. The 3d MAW OPLAN for Desert Storm, dated 15 January 1991, described a stop-loss plan for personnel assigned to Marine units. It contained an authorized "suspension of provisions of law and Navy/USMC policy relating to the retirement and separation of personnel engaged in the conduct of operations in and around the Arabian Peninsula, or engaged in direct support of the . . . operations."<sup>137</sup> This effectively stabilized personnel in the deployed force.

### *Heliborne Assault Training*

With the 1st Marine Division now out of the Jubayl area and largely based between Manifa and Mishab to the north, General Myatt and his staff turned their full attention to preparations for offensive operations. Myatt put into motion a plan to reorganize the division in order to form two mechanized regimental combat teams built around Colonel Carlton W. Fulford, Jr.'s 7th Marines and the inbound 1st Marines under Colonel Richard W. Hodory. Task Force Ripper, as Fulford's command was designated, consisted of the 3d Tank Battalion; the 1st Battalion, 7th Marines; and the 1st Battalion, 5th Marines. Hodory's task force, to be designated Papa Bear, included the 1st Tank Battalion; the 1st Battalion, 1st Marines; and the 3d Battalion, 9th Marines.<sup>138</sup>

A third RCT was in the process of being built around the headquarters of the 4th Marines, which had nearly finished turning over its four-month rear-area security mission to the recently arrived 24th Marines. Commanded by Colonel James A. Fulks and designated Task Force Grizzly, RCT-4, by late January, included the 2d Battalion, 7th Marines, and the 3d Battalion, 7th Marines. General Myatt envisioned using Task Force Grizzly as a dismounted infiltration force to secure the flanks of the planned division breach.

Even as the first combat service support units moved northward into Mishab, the division's now-truncated Task Force Taro (RCT-3) prepared courses of action for heliborne operations as directed by the 1st Marine Division. On 7 January, Taro practiced a regimental heliborne raid supported by MAG-16 in the vicinity of Kibrit. Involving two dozen transport helicopters, eight AH-1s, two UH-1s, and a section each of Harriers and Broncos, this was Taro's first opportunity to exercise a heliborne operation of this size. The exercise scenario featured an Iraqi corps headquarters as the objective of the raid, with a battalion-sized

blocking force built around the 3d Battalion, 3d Marines, used to isolate the objective while the assault force—the 1st Battalion, 3d Marines—destroyed the corps' command, control, and communication facility. The raid was set up on a two-and-one-half-hour time line from landing zone departure to withdrawal.

Despite the large number of helicopters involved, only a reduced weapons company was actually lifted into the zone during daylight hours. In the course of the lift, a HMMWV mounted with a MK-19 40mm automatic grenade launcher was dropped by an aircraft and severely damaged. This underscored for Taro the difficulties faced when relying upon the external helilift of vehicles. The task force therefore planned for the use of modified M151 jeeps and small commercial pickup trucks instead of the larger and heavier HMMWVs in future heliborne operations as the smaller vehicles could be loaded in the cargo bay of the helicopters.

Task Force Taro conducted an extensive series of debriefs with MAG-16 and other supporting elements in the wake of the exercise. With the arrival of MAG-26, Colonel Admire looked forward to some relief from the limited helicopter availability for training that had constrained his force for several months. As the task force prepared for its next heliborne exercise slated for 14-15 January, it welcomed its 2d Battalion to the Arabian Desert as it deployed from Okinawa.

### *The Evolving I MEF Offensive Plan*

After several weeks of considering the “Southern Option” plan that he reluctantly approved in late December, General Boomer in early January decided to alter the route of I MEF’s assault into Kuwait. Instead of attacking just to the east of the Al Wafra Oilfield, he switched the 1st Marine Division’s breach point inland another 20 kilometers to an area in the southwestern corner of lower Kuwait. The revised plan was labeled as the Southwest Option. After several more weeks of detailed planning, Boomer formally approved the Southwest Option on 22 January.

The heliborne assault maintained its viability as an option in the new plan. Although not without risk, it appeared to be the only recourse to relieve some of the burden of the assault regiments attacking into the teeth of the Iraqi defense. With MAG-26 now on deck at Jubayl, General Moore had a force of nearly 200 transport, attack, and utility helicopters from which to support a heliborne assault. If the basing issue could be resolved quickly, all of the aircraft would be positioned at Mishab and Tanajib by early February. The wing, however, was still constrained by the 22,000-pound restriction on the CH-46, which made realistic training and rehearsals impossible.\*

On 12 January, General Moore proposed to I MEF that the peacetime lift

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\* Colonel Garret would later emphasise, “This was a fairly significant detractor from helo support to the GCE and FSSG up to this time. Lots of our frag activity was moving people and it doesn’t take a calculator to figure out the effect of flying aircraft around for months at half or less of their passenger capacity.” (BGen Larry T. Garret, comments on draft ms, 27Jun99)



*Marines relax in the shade of a CH-46 Sea Knight, as maintenance crews check the rotors prior to takeoff during Operation Desert Storm.*

restrictions on the CH-46E and the 18-passenger restriction for the CH-53 be lifted because of the pending hostilities.<sup>139</sup> Concurrence came and both MAG-16 and MAG-26 were authorized to operate their transports at prescribed combat loads.

Unfortunately, with Task Force Taro's mid-January displacement to its assigned TAOR between Mishab and Kibrit, there was little possibility of taking advantage of this new capacity to train for large heliborne operations. Further complicating the situation, the shift of the 1st Marine Division to the west left both northern helicopter bases well off to the flank of the projected assault. General Moore planned to overcome this handicap by relying more heavily on the FARP site at Kibrit as a staging area for helicopters supporting the assault. This increased the burden on the 1st FSSG by requiring even greater stocks of fuel to be transported and stored at Kibrit.

With the Southwest Option now on the table, the 1st Marine Division published its Operations Order 1-91 on 16 January which detailed General Myatt's planned offensive scheme of maneuver for the upcoming battle. Myatt directed his two mechanized RCTs—Task Force Papa Bear and Task Force Ripper—to breach Iraqi forward defensive positions while Task Force Grizzly conducted a night infiltration of the defenses on the flanks of the mechanized breaches. Task Force Taro would, on order, conduct a heliborne assault on Al Jaber Airfield "in order to secure the airfield and to provide mutual support to the [1st Marine] Division advance by blocking or delaying, as directed, an enemy counterattack."<sup>140</sup>

The plan further directed that when the breaching of the two defensive

belts had been accomplished, the 2d Marine Division, reinforced with the Army's 1st Brigade (Tiger Brigade), 2d Armor Division, would pass through the 1st Marine Division and continue the attack up through the key terrain west of Kuwait City at Al Jahra.

#### *JFACC Apportionment Issues*

In accordance with General Moore's August 1990 agreement with General Horner on the apportionment of Marine sorties to the joint air effort, Marine planners in Riyadh worked carefully to ensure that Marine air was integrated fully into the upcoming air campaign without being held hostage to it. To accomplish this fine balancing act, the Marines on the wing and MarCent (Rear) staffs attempted to match 3d MAW sorties with targets of Marine interest where possible. Fortunately, they were able to do this often because many targets of primary interest to MarCent in the Kuwait theater of operation were also targets of interest to AFCent.

Major General Norman E. Ehlert became deputy commander, U.S. Marine Forces Central Command, on 18 January, replacing Major General Pearson. Ehlert and Colonel Robben worked closely with the AFCent targeting group to identify appropriate targets and strike packages. Although relatively slow and less maneuverable by the standard of the day, the two A-6 Intruder squadrons out of MAG-11 featured prominently in these packages because of their true all-weather attack capabilities and their large ordnance capacity. The A-6Es were employed almost exclusively at night, and had the sole fixed-wing capability in 3d MAW to self-designate targets by laser. Faced with a sophisticated enemy integrated air defense system (IADS), the planners considered VMAQ-2's 12 EA-6Bs to be a vital part of every strike package. General Moore informed AFCent that he would not push Marine strike packages north without their jammers. He was adamant that if sufficient numbers of EA-6Bs were not available, then Marine strikes would not go.

With the A-6E nearing the end of its useful life and vulnerable to air-to-air weapons, Moore also considered strong fighter support essential to Marine strike packages. He expected that the Iraqi Air Force would not be able to contest control of the skies over Kuwait and Iraq for long, but during the first few days they could do significant damage if given the opportunity. Thus, Marine Hornets would provide close escort to the Intruders. More important, the Hornets of MAG-11 would perform the vital function of suppressing enemy air defenses (SEAD) using radar-killing AGM-88 HARM missiles. Although the EA-6B Prowler could carry several HARMs under its wings, Moore wanted to employ them initially in a standoff mode wherever possible to lessen the risk to these valuable platforms.

On 15 January, after reviewing the growing list of targets desired to be hit by I MEF during the first phase of the upcoming air campaign, General Moore reversed his earlier decision and authorized the use of Harriers from the opening day of the campaign. He determined, however, to use the Harrier in a very con-

servative manner until the early returns from the theater-wide strikes against the Iraqi IADS could be assessed. The concern of I MEF was to target artillery and missiles that could range the Marine divisions that had moved closer to the border. What would hold the Harriers back from the first day's planned strikes would be the lack of electronic jamming escort assets. MAG-13 (Forward) retained its responsibility to surge close air support sorties on short notice if the call came in from the Marine divisions. Colonel John R. Bioty, Jr., therefore prepared to keep 12 of his Harriers on strip alert: four aircraft at 15 minutes, four at 30 minutes, and four at 60 minutes.<sup>141</sup>

### *JFACC Targeting, Control, and 'Kill Boxes'*

While the integration of Marine aviation into the master attack plan and the D-Day air tasking order (ATO) of the strategic air campaign proceeded smoothly, a variety of joint air control issues remained thorny as mid-January approached. Although reasonably assured that the requisite number of Marine sorties would be retained by I MEF, both the types of enemy targets to be hit and their location on the battlefield were a source of disagreement among the Air Force, the Army, and the Marines on the other.

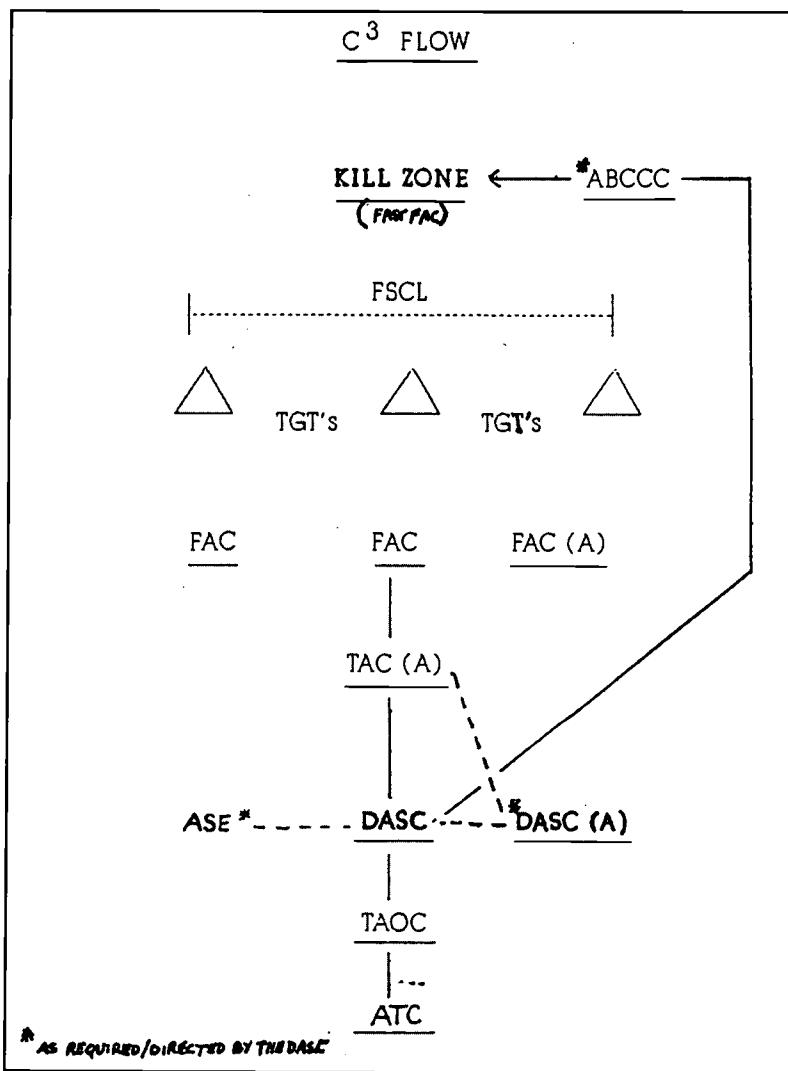
The senior Army leadership, led by Lieutenant General John Yeosock USA, the ArCent/Third U.S. Army commander, expressed their strong dissatisfaction at AFCent's priorities on the initial CentCom target list. General Schwarzkopf in earlier planning sessions had ordered attacks from the outset against the *Republican Guard* formations sitting astride the Kuwait-Iraqi border.<sup>142</sup> He saw the *Guard* as an essential element not only of Iraqi ground strength but also as a vehicle for Saddam's control of the Iraqi State. The *Guard* was to be the primary target of the VII Corps after it cleared the Iraqi border defenses west of Kuwait. Yeosock and his subordinates assumed that Schwarzkopf's specific guidance would translate into early and repeated attacks against the *Republican Guard*. Thus, they were surprised that the planned first days of the air campaign virtually ignored this target in favor of what the AFCent targeting cell determined were true "strategic" targets.

The Marines also nominated what they considered to be key targets in the I MEF area of interest in southern Kuwait to the Joint Force Air Component Commander, only to see them fail to make the final cut for the D-Day air tasking order, and several days thereafter. Although frustrating to Generals Boomer and Moore, this action was not unexpected, and so they planned to strike them with Marine aircraft as soon as possible. Colonel Bioty would add: "People thought that you were on the ATO, so therefore you were a JFACC type sortie. That is not the case. The ATO was a coordinating, facilitating type document."<sup>143</sup> Long range bombing missions were clearly a JFACC function and were considered JFACC sorties. The air tasking order had to cover all fixed-wing aircraft. The MEF commander had all his Harriers, half of his F/A-18s, his OV-10s, and his assault support aircraft to influence his area of operations/influence. Boomer nominated targets to the joint force air commander and 3d Marine Aircraft Wing to attack targets in the MEFs area of operations. That area was beyond the fire support coor-

dination line, but generally before the strategic target area.

The joint air structure, however, conspired to make this a difficult action to undertake. Under the operating rules laid down by the joint air component commander, targets beyond the joint fire support coordination line had to be both nominated and approved through JFACC, and struck through the joint air command and control system. Marine aircraft taking off would coordinate through the MACCS (the ATC, TACC, TAOC, and DASC), and then the Air Force airborne command and control. This would be true for all but the large strike packages, which usually departed under reduced radio communications (minimize emissions control, MinCon). Air Force assets, primarily A-10s, would also attack the MEF's targets nominated to the joint air component commander and provide close air support when needed.

Table: C<sup>3</sup> Flow of Aircraft to Target\*



\* Enclosure 2 to Tab A to Appendix 4 to 3d MAW OPLAN Desert Storm (u).

The facility that AFCent established to control deep air strikes was a high-orbiting Air Force C-130 Hercules transport modified to serve as an airborne battlefield command, control, and communications (ABCCC) post. Several ABCCCs, orbiting along key sectors of the Saudi border, were linked by radio to the Air Force TACC in Riyadh. In conjunction with the TACC, the ABCCCs coordinated deep air strikes as directed on the air tasking order. To further facilitate control, AFCent divided the airspace over Kuwait and southern Iraq into "kill boxes," originally "fighter engagement boxes," corresponding roughly to latitude and longitude that measured 30 miles by 30 miles. Later in the war, these would be further subdivided into four 15-mile-square boxes. Aircraft required a specific target assignment, and would be directed by the ABCCC to a kill box for aircraft separation and ease of control, where the aircraft could attack its target.

General Moore could thus control Marine aircraft providing close air support to I MEF ground units in need, but he could not directly attack targets beyond the FSCL. These deep strikes had to be coordinated with the Air Force TACC and run through the sector ABCCC. Judging that this system was simply not responsive enough for Marine needs, Moore took several actions designed to improve coordination within the established system and to provide a viable alternative. In August 1990, he had established a group of Marines based in Sharjah, United Arab Emirates, to operate as permanent liaison officers on board the ABCCCs of the 7th Airborne Command and Control Squadron. This small cell labored throughout the fall to ensure the closest coordination between the ABCCC crew and the 3d MAW TACC watchstanders. They engaged in numerous exercises, briefings, and meetings with the MarCent (Rear) staff, I MEF, and 3d MAW in preparation for Desert Storm. Starting out with just one Marine major, by late January the Marine liaison staff to the ABCCC had grown to five members.<sup>144</sup>

As an alternate plan, General Moore ordered that several Marine KC-130s carrying the AN/UYQ-3, a van module that had 13 communications stations, be used as a modified direct air support center airborne (DASC [A]). This would be the near equivalent of the ABCCC for I MEF. Initially manned by Marines of MASS-3 and mislabeled as the Airborne DASC, Moore intended the platform to serve not purely as an airborne extension of the DASC or as a separate agency, but as a link between the divisions, the DASC, and the Marine tactical air command center. Besides MASS-3 personnel, it often carried aloft representatives from the 1st Marine Division and the 3d MAW. Relying on the ground DASC to service the divisions' close air support needs, Moore wanted the DASC (A) to coordinate the deep air battle.

As early as 21 December, Colonel Joseph W. Robben, Jr., the Marine liaison at AFCent, reported to General Boomer on the issues of airspace control for offensive operations. His view was that if the Marines had sector control, or the lesser control of HIDACZs, it would provide a more flexible and effective system to react to the enemy within the MEF commander's area of interest. However, proactive liaison officers on board the ABCCC and at AFCent could work within the current Air Force system to ensure full support of the MAGTF. The addition of "untargeted" air interdiction (AI) could add flexibility to work within the sys-

tem. Colonel Robben further added that: "Personal discussions between Lieutenant General Horner and Marine LNOs, reflect a strong opposition to Marine air sector."<sup>145</sup> This would set in motion a series of work-arounds to the air tasking order and JFACC control.

Using General Moore's push-CAS system, attack aircraft arriving on station up north, if not needed for a close air support mission, would be handed off to the a two seat F/A-18D (Fast FAC) above Kuwait.\* The fast FAC would in turn either direct the aircraft onto a specific target it had identified, or send it further to a "kill box" in which it could strike a suspected target. As of 15 January the 3d MAW OPLAN would read: "In the absence of an assigned target a forward air controller (airborne) will be required for locating and marking targets beyond the FSCL."<sup>146</sup> The Fast FAC thus would not serve a single function, but instead would be employed in a flexible manner, as the situation demanded. The airborne DASC would support this process through communications rely and coordination between the two divisions, the DASC, and the TACC.<sup>147</sup> These extra measures could be integrated within the planned joint air command and control system to allow 3d MAW to do its job more effectively. Moore thus had in place an alternative to press on General Horner.

### *The 3d MAW Battle Plan*

As slowly spelled out through the past two months of activity, AFCent's offensive air plan boiled down to an extensively planned three-day air tasking order followed by the more generic four-phase air campaign. The broad outline of the JFACC's planned four-phase air war suited General Moore, but he fought up to the last minute to keep the 3d MAW's independence to act in the best interest of the MEF.<sup>148</sup> Planning to follow his apportionment agreement with General Horner to the letter, he nevertheless designed a conservative sustained sortie rate through the first three phases in order to husband 3d MAW strength for Phase IV, "Air Support for the Ground Offensive." Many officers on the AFCent staff, and particularly Colonel Warden's former Checkmate airmen, believed that the planned strategic air offensive would utterly smash the Iraqi leadership's will to remain in control of Kuwait, thus obviating the need for a ground assault. General Moore took the opposite approach, and strove to ensure that the wing was at peak strength on G-Day when the Marines of I MEF would need air support the most.<sup>149</sup>

To execute this strategy, General Moore directed that Marine air first concentrate its non-JFACC sorties on targets in southern Kuwait near the Saudi border area. The 3d MAW would then progressively shift its aim further north, hitting Iraqi corps facilities, logistics areas, and communications routes in the I MEF area of interest. As G-Day drew closer, Moore planned to shift his attacks back down to the Iraqi frontline divisions to soften them up to the greatest extent possible. The wing's effort would peak just before G-Day, when Moore would put

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\* The two seat F/A-18D was referred to as a fast forward air controller and was more survivable than other airborne forward air controllers such as the OV-10.

the maximum number of attack aircraft in the air to support the ground offensive. They would be force-fed to the DASC day and night, thereby ensuring that close air support would be available when needed.

With only a handful of 3d MAW pilots having faced combat action before, General Moore was forced to rely on the leadership abilities of his squadron commanders, whose skills had been built up over many years of peace-time training exercises. Some of those exercises, most notably the Navy's "Top Gun" and "Strike University" schools, the Marine Corps' Weapons and Tactics Instructors (WTI) course at MCAS Yuma, Arizona, and the Red Flag series run by the Air Force at Nellis Air Force Base, Nevada, approached the level of intensity experienced in combat. Still, they at best only approximated the conditions of combat, and none really prepared aircrews for the day-in, day-out pressures of sustained operations in the face of enemy fire.

Confirmation of two decades' worth of Marine air combat training methods would come shortly. While the world seemed to hold its breath, the last minutes of the United Nations Security Council's 15 January deadline ticked by, without the expected coalition onslaught against Iraq. Not wanting to appear to rush things, the Bush Administration chose to delay slightly the start of the air campaign against Iraq. A few days prior to commencement of the air campaign, Moore called his group commanders together in a room at his new headquarters at Jubayl. With a guard at each door, he told them that at 0300 on the morning on the 17th an Air Force stealth F-117 was going to drop a 2,000 pound bomb on the telecommunications building in downtown Baghdad and the air campaign would begin. At 0900 on the 16th, General Moore called his key staff, his group commanders, and his squadron commanders to Jubayl for a final briefing, telling them that "now they would have to earn their flight pay."<sup>150</sup> As the western news media speculated endlessly over the causes and tactics of the apparent delay, General Moore proceeded to inform his subordinates that unless otherwise directed, they were to prepare to execute their first-day strikes early the next morning.

The pilots would have to face a significant variety of surface-to-air missile threats that included SA-2,-3,-6,-7,-8,-9,-13,-14, and-16; Roland; and possibly U.S. HAWK missiles left behind by the Kuwaitis. The primary antiaircraft artillery (AAA) threats were the 23mm, 37mm, 57mm, 85mm, and 100mm. The AAA would be barraged-fired with the main exception being the ZSU-23-4, a self-propelled, 23mm, four-barreled radar or optically guided weapon. Tactics against all radar-guided threats would include the employment of the EA-6B for jamming and HARM escort for targets of opportunity after the first day of the campaign.

With NavCent's aircraft carriers moving into positions in the central Persian Gulf, General Moore coordinated the Navy's relief of the northern Gulf combat air patrol manned since early August by MAG-11's Hornets. With combat actions imminent, General Moore could no longer afford the diversion of Marine aircraft in support of this mission. The thousands of combat air patrol sorties flown by the wing's F/A-18s in that time undoubtedly contributed greatly to their heightened state of combat readiness as war approached, but the time was now at hand for those pilots to push their aircraft across the border into Kuwait

and Iraq. The last MAG-11 Northern CAP mission was flown at 2400 on January 16th. After a long respite from this mission, the Navy would have to use its carrier-based F-14s and F/A-18s for the defensive combat air patrol over the fleet.

## The Storm Begins

### *The First Hours*

Aircrews of the 3d MAW did not have long to wait after General Moore's brief to their commanders. Around 1600 most of the squadrons would be briefed that the scheduled Day One, Wave One rehearsal would be real and not a rehearsal. Major David F. Goold, the executive officer of VMFA-451 who flew in the first wave noted that: "there was actually some disbelief [among the pilots] that we were actually going to kick this thing off, but once we crossed the border there was no doubt in anyone's mind."<sup>151</sup> By 0230 on 17 January, the first wave of 46 MAG-11 aircraft were airborne off of Shaikh Isa to join a massive armada of coalition aircraft heading for strikes on key Iraqi command and control facilities across Iraq and Kuwait. The JFACC tasked targets included Shaibah, Tallil, Qurnah, and Al Rumaylah airfields, as well as Al Amarah and targets around Basra. Lieutenant Colonel Waldo B. Cummings, Jr., commanding officer of VMA (AW)-533, leading a division of four A-6s to destroy SCUD missile maintenance buildings at the Qurnah Airfield 30 miles north of Basra described that first night's missions:

As we penetrated Iraqi airspace, I looked down and saw the biggest light show I had ever seen. Continuous lines of red and orange tracers covered the black void below us. It seemed that every Iraqi who could put his finger on a trigger had pressed down and wouldn't let go. Most of the airbursts were below us, but some were going off near us as well. We soon lost count of the numbers of small white dots of fast moving light that continually arched over our canopies. They were surface-to-air missiles fired blindly in the hope that one would hit something. We could also see the small blue flames that our escorts' high-speed anti-radiation missiles let out as they went streaming by us to seek out the enemy radars. Several miles from the target, I pushed the nose of my aircraft down into a 30-degree dive as 'Condor,' my bombardier/navigator, picked out his aim point on the radar. Passing 13,000 feet I started our recovery to make time on target 0409 and banked hard left as I felt the aircraft suddenly get 6,000 pounds lighter when all three of our bombs were released . . . I saw two bright blue flames, which highlighted one of our escort fighters as he lit afterburners and began to climb away. The target below was engulfed in flames and secondary explosions.<sup>152</sup>

These first missions would be complex, minimum to no communications flights with night tanking and rendezvous at various altitudes for separation. The

fighter escorts, high-speed antiradiation missiles (HARM) shooters, tanking, and jamming all had to be precisely timed on each target and with the various coalition forces all choreographed through the JFACC ATO process. Some of the very few Distinguished Flying Crosses earned would go to the overall strike leaders of these large complex strike packages in the first few days of "The Storm."

As the aircraft returned unscathed to Shaikh Isa, elated aircrew greeted each other with a mixture of pride and relief. The reality struck home to the flight line crews as they saw the planes come back without their ordnance and just the fusing wires dangling.

The Iraqi guided missile system had clearly been overwhelmed by the jamming and suppression actions of the escorts. One hundred HARM missiles were fired during the first day of the air campaign which accounted for nearly half of the 233 HARMs that would be fired by Marines during Desert Storm.<sup>153</sup> The Iraqi's ground-based antiaircraft artillery, although often firing without its radar direction, nevertheless put up what appeared to be a wall of shell fire through which Marine aircraft had to fly. With weather far from ideal over the target area, battle damage assessment was sketchy, and the Marine Corps had no dedicated photo reconnaissance assets. The Air Force RF-4s stationed at Shaikh Isa were controlled by CentCom and seldom had duplicates of photos, even if they by chance covered a Marine-struck target. A system was put into place to duplicate as many of the photos from the Air Force RF-4s as possible by attaching Marines to the Air Force processing lab.<sup>154</sup>

At Shaikh Isa the SCUD alert sounded and the remaining troops had to break open the plastic, sealed bags that contained the nuclear, chemical, and bio-

*LtCol Leif R. Larsen, the maintenance officer for VMA(AW)-533, explained that they painted on a small bomb for each mission an aircraft flew, and at the end of the war painted the total number of missions flown inside the larger bomb outline. These VMA (AW)-533 aircraft are parked on the flightline at Shaikh Isa.*



logical gear. They donned the charcoal-impregnated green two-piece suits, put on the rubber boots, gloves, and gas masks and went outside. There were no over-all plans to get into any shelters, which were still not built. They would eventually get the all clear, but few would take the "chemical suiting" portion of the SCUD alerts very seriously after that night. Colonel Rietsch worried about the many spurious SCUD alerts for two reasons. First there was only one chemical protection suit per Marine, and once it was opened it had a short lifespan. The second reason was that the loudspeakers and sheer number of alerts in the middle of the night were robbing his aircrew of their desperately needed sleep. "I finally ordered the loud speakers to be disconnected in the sleeping areas."<sup>155</sup>

The squadron operations duty officers did not have base radios for the aircraft to check back in on, but did have a telephone and communications wired line down to the aircraft maintenance tents.\* As the aircraft pulled into the tactical hot refuel pits, they were greeted by the sign "A.M./P.M. You Kill'em, We Fill'em."<sup>156</sup>

MAG-13 Harriers were originally scheduled to strike more than 60 targets in the MEF area of operations (mainly long-range artillery, FROG rockets and anything that could range the 1st and 2d Marine Divisions), but due to lack of EA-6B jamming assets to knock out the AAA and SAM radars the missions were cancelled. As Colonel "Hunter" Bioty recalled: "General Moore called about 0730 . . . and said what's your status . . . . We have an OV-10 reporting Iraqi shelling in the Khafji area . . . . He said go ahead and launch the ready Harriers."<sup>157</sup> It was Major Richard C. Branch, VMA-311's executive officer who would lead that first section of Harriers at about 0740 carrying four 1,000-pound bombs each. "From then on we were very much involved in the war."<sup>158</sup> The mission was controlled by an OV-10 airborne FAC that was off the coast. Colonel Bioty described the OV-10's heads-up display (HUD) camera film as showing spectacular results of artillery pieces being thrown around with secondary explosions.

### *The Early Days of the Air Campaign*

After dawn on the 17th, 3d MAW aircraft shifted their attention to targets in northern Kuwait and Iraq. Despite poor weather across the KTO, Harriers hit artillery positions near Khafji. The ABCCC ran USAF A-10s on interdiction targets in the MarCent area of operations from the very first day. In one incident on the first day, an A-10 dropped one MK-83 in close proximity to a reconnaissance team that was controlling it, but caused no casualties.<sup>159</sup> The assault support helicopters were also busy starting on the 17th with an aerial resupply of ordnance to Mishab where they were directed to build up a three-day supply. This would prove to be a valuable foresight. The 3d MAW support troops continued building at all the airfields. In addition MWSS-174 started a security fence around King Abdul Aziz Naval Base to augment the line of empty storage containers lined up to block

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\* After five months, communications had not reached the minimal peacetime standards that the Marine Corps has at each Marine Corps air station.

direct line of sight from the highway of the crowded AV-8s parked along the airfield's ramp.

The tactical air command center at Jubayl was where 3d MAW's overall strategy was determined, as well as day-to-day adjustments in accomplishing that strategy. General Moore would have a daily breakfast meeting with four key individuals who stood the watch in the TACC: Assistant Wing Commander General Amos had the 0600 to noon; Chief of Staff Colonel William A. Forney, the noon to 1800; Colonel William D. Carr, Jr., the 1800 to midnight; and Colonel Melvin W. DeMars, Jr., was on duty from midnight to 0600. The morning meeting covered the current day's ATO. General Amos recalled the process: "We would meet every morning at seven to kind of go through the day's evolution. Then, at 1300 we would meet with the plans side of G-3 to look at the next 12-, 24-, 48-, 72-hour plan, and that is where General Moore made his input into changing . . . the frag process."<sup>160</sup> The 1300 staff meeting would last about an hour, and it was where decisions were made for tweaking the ATO process after adjusting for the input from the two fixed-wing groups, divisions, and MEF.

Some difficulty was encountered with the direct air support center that was co-located with the Marine expeditionary force headquarters at Safaniya. In the first two weeks of the air campaign, various staff members of the MEF would make diversions of airborne aircraft to new targets. On several occasions this caused aircraft to hold for 15 or more minutes trying to get the new target briefed. They would then have to return to base without dropping any bombs. General Amos would find this one of the most frustrating problems of the war, as he later noted: "the MEF would run into the DASC and divert airplanes willy-nilly . . . They were trying to do the TACC's job . . . Some officers thought it was their asset and not the tactical air commander's asset . . . Once you beat those crazies out of the DASC, things moved smoothly."<sup>161</sup> This is not to say that there was no flexibility built into the process. The airborne DASC became the controller of the deep air, or as more appropriately described by Air Force terminology, the battlefield air interdiction (BAI). These targets were to become predominantly MEF targets as the targeting process smoothed out and as F/A-18Ds became proficient in the Fast FAC role.\* (Only six F/A-18Ds were in theater at this time, and they had arrived the day before the start of the air campaign).

Colonel Rietsch, MAG 11's commanding officer, was also concerned with the functioning of the direct air support center co-located with the MEF, and later stated:

The DASC wasn't used in its doctrinal role . . . the MEF absorbed the DASC and it became almost a competition between the TACC and the DASC as to who was going to control airplanes and the flow of airplanes . . . They [the DASC] attempted to control airplanes where their job was really coordination, not control, and a couple of times they actually put some airplanes into some situations that they should-

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\* "Fast FAC" was the term used for the F/A-18D when it coordinated interdiction missions as the Forward Air Controller. This differentiated it from the FAC (A) which could be an OV-10 or other assault support aircraft.

n't have been. Telling them to go after some ridiculous target in a dangerous situation. It didn't work the way it was intended. Again, the way I see the DASC, he's a bean counter who services the ground side—not to try and control the battlefield beyond the FSCL [Fire Support Coordination Line]—and that's what we tried to do with the DASC.<sup>162</sup>

The initial fire support coordination line was the border between Saudi Arabia and Kuwait. Areas inside the FSCL were clearly over-the-head of Marines on the ground, and required coordination with the Marine command and control system. During the early stages, the Air Force would keep control of all air space beyond the FSCL, as a restrictive measure where all aircraft ordnance dropped required Air Force coordination and approval. The Marines viewed the FSCL as a permissive control measure beyond which weapons could be used to influence the MEF commander's area of operations. That view would slowly become the prominent view as the ground war approached. The driving factor in this change in viewpoint would be the short-comings of the targeting and battle damage assessment (BDA) process.

As the first day of a fully scripted ATO air campaign closed, the infamous fog of war began to show in many diverse areas. General Moore would comment that "BDA is beginning to come in, although the picture is largely incomplete."<sup>163</sup> The next day he would be pressing to get more of the unmanned aerial vehicle time to be able to plan air operations. Even at this early stage concern existed that if too many Phase III (battlefield preparation) targets were destroyed, the Iraqis would replace the material and additional strikes would be required. Literally into the fog, helicopter pilots bemoaned the fact that Loran-C, the navigation system available in many helicopters, was unreliable in the northern sectors. MAG-26 yelped the loudest as they had none of the new global positioning systems (GPS) installed in their aircraft. The struggle for ordnance was ongoing with the first of a daily munitions report coming out. MAG-16's use of Tanajib was far from complete because of lack of ramp space usage in the agreement. The helicopters could operate directly from the desert, but as General Moore stated, "I am holding that movement until the latest time to preserve engines and blades."<sup>164</sup>

On the morning of the 18th, the second scripted and rehearsed day of the ATO would begin to unravel due to weather. Only three JFACC-tasked missions made it out to their targets: the Tallil Airfield; the *Medinah Division*; and a *Republican Guard* armor battalion. Even with the weather-aborted missions MAG-11 flew a total of 99 sorties: 6 airborne forward air control; 36 interdiction; 8 Escort; 10 suppression of enemy air defense (SEAD); 14 on-call support, 10 electronic warfare (EW); 3 airborne direct air support center; 2 training; and 9 refueling missions. MAG-13 flew 66 sorties with the AV-8s flying interdiction and the OV-10s flying reconnaissance and close air support.\*

Four AH-1Ws from HMLA-369 operating out of Mishab reported

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\* Sortie numbers are those reported in 3d MAW daily SitRep messages and differ from those reported in the Gulf War Air Power Survey.

destroying two 120mm mortar tubes, ammunition trucks, and two buildings using 14 TOW missiles, 19 rockets, and 20mm guns. Of note, the AH-1W Cobras were launched from alert when the reconnaissance teams in the Khafji region received artillery fire from some heavily defended positions. Captain Steven G. Springer and First Lieutenant Gregory D. Anderson would receive Distinguished Flying Crosses for that night's work with Hellfire and TOW missiles against an enemy observation post and antiaircraft sites while under intense antiaircraft and artillery fires. They displayed leadership by taking control of the flight when the original lead aircraft lost its radios<sup>165</sup>

This action was just a part of several observation posts that were destroyed by aircrews working with a command and control UH-1N Huey, flown by Lieutenant Colonel Kurth. They worked closely with both "Sea Lion," a Navy SEAL team, and an OV-10 aircraft. Each flight as they rotated through took small arms, artillery, and even tank fire. The enemy observation posts controlled artillery that at times were placing dangerously close rounds on the Marine reconnaissance and surveillance teams around Khafji. The Cobras stood the alert at Mishab and would return to Mishab for fuel and stop at Safaniya to rearm.<sup>166</sup>

At 0910, the wing suffered its first aircraft combat loss when an OV-10 of VMO-2 piloted by the squadron commander Lieutenant Colonel Clifford M. Acree, with Chief Warrant Officer-4 Guy L. Hunter in the observer's seat, was shot down by an Iraqi infra red surface-to-air missile (IR SAM). The loss, 14 miles northeast of Mishab over Kuwait, was not observed by friendly aircraft. Both officers were presumed dead.\* The aircraft, call sign "Hostage 75," was flying at about 8,000 feet. The pilot later recalled sensing something coming up at him and looking over his shoulder as the right engine exploded and the wing folded. The OV-10s were not allowed to go north of the border due to their vulnerability, with the exception that the DASC or TACC could waive the restriction for an emergency mission. Colonel Bioty said of the incident: "We did not know that they were alive until we saw them on TV. . . . I never saw Cliff until after the war to ask him if that was an emergency type mission, and obviously the answer was yes it was . . . . [The aircraft going down] was really a shocker and that squadron took a real significant hard swallow, . . . because there was a lot of leadership and experience in that airplane and here it got hit on the second day of the war."<sup>167</sup> Major Steven J. Antosh took command of the squadron, and MAG-13 asked for some MAWTS assistance.

Also, on the 18th, the Air Force airborne battlefield command and control (ABCCC) ran an A-10 flight against a fire control radar dish located in Southern Kuwait. Marine liaison officers with the ABCCC also ran a flight of A-10s against artillery batteries in southern Kuwait.<sup>168</sup> Marine FA/18s and A-6Es would not begin to join these interdiction missions which supported primarily the MEF objectives until the 19th.

On 19 January, two large JFACC packages of 28 and 26 aircraft each attacked the Basra area bridges and *Republican Guard* units. Now that the pre-

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\* A message two days later from USAFCENT/JRCC to COMUSARCENT reported that the crew had been captured (*Gulf War Air Power Survey*. Vol IV, part II, p. 162).

scripted ATO was complete, the F/A-18s and A-6Es would begin to fly about half of their sorties against MEF objective targets. VMO-1 initiated combat operations after being in theater only 48 hours. The AV-8s continued to attack targets primarily south of the 28 degree 45 minute line, an east-west line south of Al Jaber Airfield in Kuwait. Six division-size (four aircraft) AV-8 packages had good effect on a variety of targets and worked closely and effectively with EA-6B jammers. Weather was still a factor in getting to some of the targets, such as the OV-10 FAC (A) mission with A-6s on a multiple rocket launcher just north of the border which resulted in no ordnance being dropped, or the canceling of three other AV-8 divisions. The ABCCC worked 30 A-10 sorties against I MEF targets through the DASC.<sup>169</sup>

Other 3d MAW personnel and assets were still arriving in theater. First Lieutenant Michael J. Bergerud was sitting in his home at Cherry Point watching, along with most Americans, the kick-off of the air campaign on the Cable News Network. He thought, to his chagrin, that he had missed this war, because the larger portion of MASS-1 was afloat in the Gulf with MAG-40. The next day, he was ordered to pack his bags and catch a flight, as a portion of MASS-1 (Forward) was going to join 3d MAW.

General Moore met on the 19th with the commanding officer of MACG-38 along with MEF representatives, operations officers, and other squadron commanders to discuss targeting, tactics, and control. General Moore described the meeting as “a spirited discussion to examine the most effective way to get bombs on Iraqis.”<sup>170</sup> MASS-1 (Forward) would be a part of the solution. Led by

Table: 3d MAW Personnel

Date	Total 3d MAW Personnel In-Theater
15 January 1991	14,480
20 January 1991	14,776
25 January 1991	14,848
30 January 1991	15,016
5 February 1991	15,239
10 February 1991	15,223
20 February 1991	15,399
25 February 1991	15,594
28 February 1991	15,655

Lieutenant Colonel Robert D. Hughes, the remainder of the squadron would provide the necessary crews to man the DASC (A) on a 24-hour basis and flesh out the main DASC. The MASS-1 Marines replaced some of the Reserve MASS-6 detachment which moved forward to work with the newly formed DASC at Safaniya.

The memory that would stick in Lieutenant Bergerud's mind upon landing at Jubayl was that the war effort must be totally dependent on the non-stop forklifts moving gear all over the field. If Saddam Hussein could somehow stop the forklifts, he could win this war. Bergerud would later add copy machines to that list of overworked "show-stopper" ingredients of the war.<sup>171</sup>

The newly created air support elements (ASEs) with each division consisted of four AN/MRC-138s (HF) and two AN/MRC-110s (UHF and VHF), which are communications packages mounted on high mobility multi-purpose wheeled vehicles (HUMMWV). Communications exercises (CommEx) were ongoing, however, the CommEx on 19 and 20 January forewarned of problems with the air request and air tasking order system. Comments on the CommEx revealed that in the 1st Division, battalion air officers were using AN/PRC-104s (a low-powered, high-frequency radio) on the tactical air request (TAR) net while their MRC-138s had to be taken for use on other circuits. The ASE had communication with nine of 14 battalions and on the second day with only six of 14 battalions. Communications with the DASC was worse. In the 2d Division, the battalions had their MRC-138s and the ASE and DASC could receive all the stations at one time or another, but not consistently, as would be required in an immediate air request. A significant glitch was found in relying on the DASC (A) to take the function of the DASC, should it become a casualty, due to the fact that both its HF radios would be required to monitor the two divisions TAR nets, which left no long-distance capability to stay in contact with the tactical air command center.

*A view of part of the ordnance load carried by an F/A-18C Hornet from the VMFA-235 "Death Angels" during Operation Desert Storm.*



The overall clear concerns from the CommEx were the distances and net saturation controlling the large number of aircraft expected in the Kuwait theater during the ground portion of the war.<sup>172</sup>

“Bomb art” became rampant with almost 50 percent of the bombs being delivered having some marking on it. The markings were usually in chalk or white paint. It seemed nearly everyone had an uncle, aunt, grandparent, mother, or wife who wanted a personal bomb dedicated to “Saddam.”

On 20 and 21 January, bad weather forced cancellation of sorties both airborne and before launch, rather than just in the target area. On the morning of the 21st, Shaikh Isa was totally fogged in. The A-6s got out at night and focused their bombs primarily against Iraqi multiple rocket launchers (MRLs) that were sending harassing fires toward Mishab. The aircraft saw some secondary explosions but BDA was difficult with the cloud coverage. Infrared surface-to-air missiles seemed to be more active. This was precisely the environment that the attacking pilots feared most, coming down through the clouds for attacks where they could not see the launching of inbound missiles. (IR missiles give no radar warning receiver [RWR] indications).<sup>173</sup> Package bombing criteria were slowly developed. Primarily the mission commanders made the abort weather call. During this period for missions using high-altitude ingress and egress to the target, 15,000 feet of clear airspace above the overcast to react to surface-to-air missiles was the norm. For medium-altitude ingress and egress the pilot had to see the ground.<sup>174</sup>

Based on Joint Surveillance Target Attack Radar System (JSTARS) information, on the 21st the ABCCC ran 16 F-16s into southern Kuwait on a 100-vehicle convoy travelling with suspected “free rocket over ground” (FROG) systems.<sup>175</sup> The same day, Al Kibrit opened with five vertical/short takeoff and landing (VSTOL) pads, a tactical airfield fuel dispensing system (TAFDS) with six refueling sites, and available crash fire rescue support.<sup>176</sup> MWSS-271 received some of its equipment that was being offloaded at the piers. There was a redistribution of ambulances so that MWHS-3 could better provide medical services. Some ordnance arrived in country and the shuffle among the various ammunition storage points (ASP) was a full-time mission for the wing ordnance section. Liaison over the Air Force ordnance continued with attempts to obtain laser-guided bomb (LGB) components and an additional 200 high-speed antiradiation missiles.

At Shaikh Isa the population breakdown, according to the 11 January water supply data report, was: 4,500 MarCent; 1,500 AFCent; 300 Civilian/USN; and an estimated 200 Bahrain defense force, for a total of 6,900.\* The Air Force had better living accommodations than the Marines, with their air conditioned and heated tents, as well as separate, but unequal recreation facilities. Being first in country, the Air Force had managed to get one revetment to use as a headquarters/maintenance facility. Within four weeks of their arrival the Air Force had

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\* The MarCent water data report went on to state that the base had 800,000 gallons of water storage capacity with 500,000 gallons on hand for 3.6 days of supply. Similar statistics are available for several of the bases and can be found in the author's notes or at Marine Corps Research Center, Quantico, Virginia.

built additional taxiways at the south end of the field and constructed steel/sand revetments simular to those used in Vietnam for their old F-4 Wild Weasels, while the Marine Corps' highly valued EA-6Bs remained on open flight lines. It was not, however, until the Air Force erected modern environmentally controlled restroom facilities, that underlying camp warfare broke out on the base. In front of the new restroom facilities were signs: "No Marines!" Marines continued to use fifty-five gallon drums that were sawed in half with plywood seats mounted over them. Sabotage of the new Air Force facilities became common. The Air Force initially responded with barbed wire around the facilities, and then double barbed wire, and finally guards, but various ingenious attacks continued. In the end, the Air Force won the latrine war when Marines were assigned the duty to guard the Air Force's beautiful restroom complex.<sup>177</sup>

On 22 January, MAG-13 reported 100 percent weather cancellations either before launch or in flight. The ABCCC ran 16 A-10 sorties against Marine targets. It would also be a source of intelligence to the DASC concerning surface-to-air missiles, enemy troop and vehicle movements, and Iraqi fire support units. Marine observation post six was involved in a "friendly fire" incident when a USAF A-10 fired rounds long while attacking an SA-2 site during egress after striking his primary target. No Marines were injured.<sup>178</sup>

Finally, on the 22d, the first of MAG-26's aircraft began arriving at Al Mishab. The site was far from complete. A portion of the water there was made potable by using reverse osmosis water purification units (ROWPU). Other amenities would be considerably less than those that were built up at Jubayl.

On the 23d, 3d MAW non-JFACC targets continued to be Iraqi *III Corps* surface-to-air missile sites to develop a larger area for the wing to be able to work on MEF target priorities. Weather finally allowed free access to targets over the Kuwait theater, but a new weather system was bringing lower ceilings and rain over Iraq. Battle damage assessment began to improve as limited use of national-level assets "looked at" some Marine targets. And General Moore openly fretted in his situation report that MK-83s and other high-use ordnance levels needed resupply. He would not be at ease until they were on the ground instead of at sea.

In Riyadh, the senior Marine on the joint targeting board was a lieutenant colonel. The board proved to have limited input into the targeting that was taking place in the "Black Hole." General Boomer was briefed that the JFACC was trying to "apportion 'x' number of sorties to each of the components," and do away with the joint targeting process. The MEF's firm response was to try to maintain the joint targeting process.<sup>179</sup>

On 23 January, the ABCCC diverted eight A-10 missions to the DASC for work against Marine targets.<sup>180</sup> Major Maurice B. Hutchinson, the executive officer of MASS-3, and one of three senior experienced watch officers in the DASC, would recall: "We would sometimes get a call from the TACC that we were going to get, . . . say 10 A-10s to work . . . a good half of the time they were not on the ATO for us, and we'd call over to the MEF-do you guys have targets?" Lieutenant Colonel Dennis C. Sorrell, the commanding officer of MASS-3, would add: "It was almost as if jointness was being pushed on us, us being the Marine Corps."<sup>181</sup>

Targeting information from Joint Surveillance Target Attack System (JSTARS), an Air Force prototype (Boeing EC-18C) airborne system flying mainly at night, was feeding the MEF good intelligence on moving targets by this time. This information was being shared with 3d MAW. It showed a considerable amount of the movement and resupply going on at night. Marine A-6s had been brought to bear on the backed-up road intersections in the Kuwait theater of operations the previous two nights, but clouds restricted battle damage assessment of the bombing. General Boomer would state at his evening briefing on the 23d that “Senior Warrior[ Marine electronic warfare equipped C-130] seems to be—I contrast it with J STARS. It came up and is working. I don’t get the same impression with Senior Warrior.”<sup>182</sup> The new terminal at MEF to receive the feed from Senior Warrior was still down. As an indication that the build up for war was continuing, the intelligence staffs throughout the MEF would receive 82 out of a requested 152 intelligence personnel from continental United States on this day.

The air tasking order was still creating a backlog in the message traffic system. It was more than 400 pages at the beginning of the air campaign. As of 23 January, there was no way to break out just the Marine portion from the entire ATO. The message centers at both divisions complained to the MEF about this process.<sup>183</sup> In an effort to reduce the number of communications centers that were receiving the ATO, I MEF Rear at Jubayl put the ATO on the local area network (LAN). General Moore commented that the ATO was difficult to keep on a timeline: “The input is received late much of the time and often conflicts with plans my staff has put together to service MEF targets.”<sup>184</sup> The ATO indicated JFACC strikes as lettered (A,B,C), while MEF strike packages were numbered. A typical helicopter ATO for this period contained the following missions:

Table: Representative ATO from 17 January to 23 February<sup>185</sup>

Mission	Aircraft
CIFS (standby)	10 AH-1J/ W
MEDEVAC/ TRAP standby	6 AH-1J/ W, 6 CH-46E
Tactical Recon, VIP standby	7 UH-1N, 2 CH-46E
Range sweep	1 CH-46E
Troop lift (standby)	4 CH-46E, 4 CH-53D/ E
Courier	1 CH-46E
Supply (standby)	1 CH-46E, 10 CH-53D/ E



*Maintenance crews take a break as their A-6 squadron was tasked to fly all night.*

In addition, on the 23d, one of the first artillery raids took place with the support of 17 aircraft. It had several planning kinks that were smoothed out as more missions were conducted. Another worrisome event had Marine F/A-18s in the same kill box with F-111s escorting a B-52 strike.<sup>186</sup> The proverbial “big sky, little bombs” helped provide the touch of luck that kept this from being a tragedy. Additionally, a downed RPV was located and recovered by a Huey from HMLA-369, as was a CH-46 from HMM-161 about six miles south of the Kuwait border.

Safety was an issue throughout Desert Shield and Desert Storm. Most squadrons indicated that they concentrated on the basics and tried to fly the same in the desert as they flew in peacetime. Lieutenant Colonel Stuart would add: “Maintenance and ordnance personnel did an excellent job of turning the aircraft around in a rapid safe manner. It was encouraging to note that safety procedures practiced during peacetime were not abandoned now that the squadron was engaged in combat.”<sup>187</sup> There were, however, some things that were different, such as loading ordnance on the flight lines, then arming just prior to takeoff, or having dearmed ordnance still on the aircraft while in the fuel pits. These procedures never occurred in peacetime, but allowed for a more rapid turn-around of the aircraft, and provided more sorties from the crowded single runway airfields. Because of the large expenditure of ordnance and lack of storage space near the flight line at Shaikh Isa, the sides of the parallel taxiway became the ordnance storage area for the next 24 hours of operation.<sup>188</sup> No problems or incidents were recorded with these “wartime” procedures. A terrorist might wreak havoc with such munitions in close proximity to so many aircraft, but the risk was weighed and security was kept as tight as possible.

On 24 January, the ABCCC reported a second friendly fire incident when a Marine observation post (OP) received fire from coalition aircraft. There were no casualties.<sup>189</sup> A new FSCL was established about 10 kilometers beyond the

Kuwait border to help avoid friendly fire incidents. The MEF fire support coordination center logbook entry stated: "The precipitate cause of change was another A-10 strafing short of the FSCL."<sup>190</sup> A clear understanding of the ground units maneuver and positions were needed. General Moore and select members of his staff went to a MEF wargaming exercise, which proved beneficial in integrating air into the ground scheme of maneuver.

Three large strike packages made it out on the 24th to hit the Shaibah Airfield, while MEF target packages continued to strike primarily the Iraqi *III Corps* SAM sites. Two Iraqi F-1s were "locked up" by HAWK batteries as they were heading south down the seam of the coastline. They were intercepted by Saudi F-15s and both shot down. Marine Aircraft Group 13 had an excellent day in the interdiction mode striking surface-to-air missile sites. At night, A-6s on their battlefield interdiction missions struck two artillery positions, barracks, and vehicles on the move, while ABCCC worked an Air Force AC-130 on Marine targets in an arc near the first obstacle belt.

On ordnance, the Air Force 35th Tactical Fighter Wing delivered 200 HARM missiles to 3d MAW. The entire world's supply of 1,700 five-inch white phosphorus rockets were reported inbound to 3d MAW. These WP rockets (nick-named "Willie Pete") were used by the airborne forward air controllers for marking targets. The five-inch WP was no longer produced and was programmed to be replaced by an advanced rocket system, which had not yet gone to production.<sup>191</sup> During this period there were constant remarks made on the ordnance situation, such as: "slipping arrival dates for inbound ships, type and amount of ordnance," and "the fact that aircraft are now going out with the available ordnance vs. the best required for the target."<sup>192</sup> MK-20 Rockeye were dropped because they were available in the large numbers instead of the preferred weapon of the F/A-18, the MK-83. The F/A-18, using the tactics of medium- to high-altitude steep dive-bombing was extremely accurate with the MK-83. Rockeye, developed for dropping from lower altitudes, was not very effective from these initial high to medium altitudes. Pilots were briefed repeatedly not to drop ordnance if they were unable to have good effect on target, but rather to bring it home.<sup>193</sup>

Bombing weather was mixed from the 23d through the 27th, but occasionally allowed for some good results and accurate battle damage assessment. One ammunition dump hit on the 25th caused a smoke cloud to rise to 30,000 feet. One of the Iraqi *III Corps* headquarters re-strike packages was held on the deck as their mission was changed to strike an oil refinery pumping station that the Iraqis were using to pump oil into the Gulf.\* For the pilots the war was beginning to take on a routine and sortie counting among aircrew became common. No one wanted to miss their share of missions.

While intelligence and imagery was excellent for the air packages for the first three days of combat, once less advanced planned targeting started the pilots were now finding that intelligence briefings depicted threats that were not there. This caused many missions to unnecessarily "one pass haul ass" as Major David

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\* An act of bio-terrorism only matched by the Iraqis setting on fire virtually all of Kuwait's oil wells a short time later.

H. Peeler, the executive officer of VMFA-212, put it. "We finally adjusted tactics to the actual threat by relying heavily on the Fast FAC." The tactics evolved around the basic sanctuary above 10,000 feet, which was beyond the range of most antiaircraft artillery, and most hand-held infrared surface-to-air missiles. In an attack, the first aircraft over the target would not see any air defense activity, but "dash six, eight, etc., would see unaimed optical stuff. What we would do is run away from the wind so that the guys on the ground couldn't hear us until we were running away. Even at 8 [to] 10,000 feet we had great success with point targets."<sup>194</sup>

During this time 3d MAW was tasked to test the effectiveness of a 1,000-pound laser guided bomb against the large sand-berm that marked the Saudi/Kuwait border. It showed that bombing would have little effect in assisting the breaching of this obstacle. Additionally bombing was determined to be ineffective against mine fields.<sup>195</sup> On the positive side, ordnance was finally authorized to cross over the causeway connecting Bahrain to Saudi Arabia on the 27th, easing the transfer of ordnance among the Marine aircraft groups.

By 28 January, the TAFDS at Tanajib was operational, and soon allowed the Harriers a forward area arming and refueling point to increase the number of sorties MAG-13 could produce. General Moore requested that at least one of the seven in-country special operation capable forces deliver 15,000 pound bombs be reserved for disorientation of the enemy during ground phase breaching operations. And, the last of VMO-1's OV-10s arrived from Cairo bringing the squadron total to 12 aircraft.

At about 1000 local time on the 28th, the second 3d MAW aircraft was lost. An AV-8B, call sign "CAT 36," was shot down. Captain Michael C. Berryman of VMA-311 was leading a section to attack a preplanned target. The section was unable to find the original target and while circling back to a FROG missile target of opportunity, the lead aircraft with Captain Berryman was shot down by an infrared surface-to-air missile. He would become a prisoner of war, but his fate would be left as missing in action as the Iraqis never showed him on TV, or acknowledged his capture.

Four lettered JFACC packages and two numbered MEF strike packages went out on 29 January with varied results, as the BDA other than from pilots was limited. The two MEF packages hit huge corps-size logistics areas with numerous vehicles. The JFACC packages struck the Lataifiya solid propellant plant, the *Republican Guard*, SA-2 site, and the Rumaylan storage bunkers.

On the 29th the remaining six F/A-18D's were enroute to 3d MAW when an in-flight fueling incident started an engine fire and stopped the trans-Atlantic movement at Naval Air Station, Brunswick, Maine. General Moore adjusted the ATO to reflect shorter alert times to have better effectiveness on the enemy with the OV-10 and F/A-18Ds targeting. Moore's ordnance concerns were ever at the forefront when he stated: "At this point a balance must be struck between the ability to generate sorties and the amount of ordnance available."<sup>196</sup>

*The Impact of SCUDs*

In January, Iraq launched the first of several modified Soviet surface-to-surface missile (SCUD) attacks against targets in Israel and Saudi Arabia. Although General Schwarzkopf initially dismissed the SCUDs as a nuisance weapon of little military value, the uproar in Israel, and to a lesser extent in Saudi Arabia, soon forced him to direct an extensive air effort in an attempt to suppress the fixed and mobile SCUD firing batteries in western Iraq. The AFCent staff fought to limit the diversion of aircraft for this (from their viewpoint) secondary purpose, but their efforts were to no avail.

At Jubayl, General Moore and his staff watched this evolution with concern. They too recognized the limited military utility of the SCUD missile, but a brief glance at the headlines drove home the point that its political impact was undeniable. Of more immediate concern to the wing was the down-stream result of the continued diversion of Air Force strike aircraft in the seemingly fruitless attempt at SCUD suppression. While sympathetic to AFCent's difficult tasking, the wing did not want to divert its aircraft toward this effort.\* After the initial days of the air campaign, 3d MAW stuck close to the established priorities for Marine air. General Amos noted the initial exception, "when on day four or five we went, basically, went SCUD crazy."<sup>197</sup> In fact, with the first phase of the air campaign succeeding well beyond the coalition's most optimistic hopes, Moore looked forward to being able to pull back some of the 3d MAW aircraft committed to JFACC sorties. The cumulative effect of the now-widened "strategic" campaign prevented this action, and General Horner continued to call for his full share of 3d MAW sorties through the end of the month.<sup>198</sup>

### ATO Issues *'Opting Out' of the ATO*

With the Iraqi integrated air defense system (IADS) suppressed and the Air Force's F-117s operating virtually at will in the night sky over Baghdad, General Moore decided to try to work around the wing's heavy JFACC commitment in order to begin attacking some of I MEF's high-priority Phase II targets. At the top of General Boomer's list was the suspected headquarters of the Iraqi *III Corps*. The 3d MAW had attempted earlier to get this site targeted as part of Phase I, but it did not pass the Air Force acid test as a "strategic" target. As early as 27 January, General Moore openly stated "JFACC is absorbing the full 72 plus F/A-18 sorties each day, as well as A-6, EA-6B and KC-130 sorties. That will make a large contribution to the MEF target list if turned in that direction, and we can't really put our heart in Phase III until relieved of the Phase I load."<sup>199</sup>

Colonel Rietsch, MAG-11's commanding officer, would be the most vocal on the subject of the ATO from a standpoint of the unit that had to carryout the taskings. As he pointed out:

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\* Major General Terrance R. Dake noted that the SCUD hunt seemed "like packing sand down a rat hole." (MajGen Terrance R. Dake intvw, 21Feb96).

We were able to do our job in spite of the ATO process and that's really true. From the Air—Force point of view this thing will probably come out as a big success—the ATO—because they are going to say ‘yes it worked.’ Well, my answer: it worked—we did our job in spite of it. It was not flexible, [and] most days we got the ATO after the ATO day had already started. I mean we were launching airplanes before we got the ATO.<sup>200</sup>

He felt no pressure to carry out each and every flight assigned by the ATO. The more important thing was to be ready to fly the “line number” and have that “ticket” to get into the JFACC controlled air space. Rietsch continued:

The things that we did to make it work for us—we put extra line numbers into the ATO so that we would have some flexibility. That bothered the Air Force because they wanted to see—be able to match up—line number for sortie flown. Well, we would have a lot of line numbers that never flew because we had to build some flexibility into the system in order to make it work for us.<sup>201</sup>

A very valuable part of the ATO process from 3d MAW’s perspective was the assignment of an Air Force officer to the 3d MAW tactical air command center. Major Robert Sands, an A-10 pilot, whose father had been a Marine was that knowledgeable Air Force liaison officer assigned the mission to help 3d MAW work out its ATO issues. General Moore would say “Major Robert Sands did a superb job for us. He knew the process and how to do what we needed to do to influence the process, and it worked.”<sup>202</sup>

The central JFACC mission planners did not have a complete view of the battlefield, nor did the flyers who flew over the battlefield daily noting numerous lucrative targets. Instead, they flew on to their assigned targets, where there may or may not have been anything to strike. The JFACC assigned missions did not often come with the necessary imagery to effectively plan and engage the target. There was a need for mission and intent orders so that the air assets could focus on the desired effect. Colonel Rietsch and his commanders were frustrated by what seemed to them a ponderous and slow reacting targeting process. It soon became obvious to them that in the KTO the Iraqis hunkered down during the day and preferred the apparent safety of the night to carry out activity and movement. By week three of the air campaign, VMFA(AW)-121 was carrying out three to four nightly reconnaissance sorties using night vision goggles and on-board targeting and navigation FLIR systems. These were good enough to actually detect individual Iraqi soldiers smoking in their trenches as well as more important targets such as artillery and armor. Thanks to a new type of laser-ring gyro on the F/A-18D, they were able to note the locations of these targets to within 100 meters. Rietsch would then arrange with the senior watch officer in the Marine TACC to launch excess sorties using ATO blank mission lines to strike targets while they were still hot. This informal but highly effective system eased the frustration. As Rietsch commented:

But we were being sent on, as I mentioned, targets of questionable value and that we were in fact not able to concentrate on the area that affected our Marines. As we drew close [to the ground campaign] one of our frustrations also was [that] there were certain areas where there was a lot of enemy activity that appeared to be untouched by the JFACC central planning—and I'm primarily talking about areas of northern Kuwait—that never seemed to be hit where you had reinforcements and resupply activities that we could see and could not get targeted for.<sup>203</sup>

As the end of January approached the 3d MAW's portion of the air campaign began to focus more heavily on I MEF's area of operation. The Iraqi forces would be targeted with as many aircraft as 3d MAW could sustain. Additionally, General Moore made every effort to obtain more JFACC aircraft to attack I MEF targets. The recent good weather and the new emphasis on Iraqi forces in the Kuwait theater of operations helped stimulate a reaction by Iraq.

## The Battle for Khafji and Its Fallout

### *Air Support for Artillery Raids*

The commencement of the air campaign did not adversely affect I MEF's ground combat preparations throughout northeastern Saudi Arabia. Both the 1st and 2d Marine Divisions planned and executed a series of artillery raids against Iraqi concentrations in Kuwait along the southern border region. Both division commanders hoped to provoke a response from the Iraqis, thus revealing their positions. Iraqi counterbattery fire, once detected, was immediately pounced upon by 3d MAW aircraft. The result was a deep reluctance on the part of Iraqi artillerymen to employ their guns against Marines for fear of a quick and deadly reprisal.

A typical raid package would consist of four aviation elements: an OV-10 reconnaissance aircraft to spot any counterbattery fire; a package consisting of an F/A-18D to mark the target for two A-6Es to bomb; a suppression of enemy air defense (SEAD) package of an F/A-18D and two F/A-18s to suppress any anti-aircraft artillery (AAA); and an EA-6B with an F/A-18 escort to jam radar near the raiding parties. A ground FAC would coordinate these raids and the artillery. The wing supported eight such raids between January 23d and February 23d.

As the artillery raids continued, Marine ANGLICO teams assigned to the Joint Forces Command East north of Mishab worked closely with the 3d MAW to arrange offensive air support for its drive into Kuwait.\* Toward this end, General Moore expected to provide close air support to the Arab force, JFC-E. Although important from a political perspective, he did not want to over-commit Marine air

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\*Joint Forces Command East was the joint command for the Arab coalition forces operating along the coast on I MEF's eastern boundary. ANGLICO was the Marine Air and Naval Gun Fire Liaison Company.

to the diverse Saudi coalition force. With no tradition of close air-ground cooperation to speak of, these forces were not fully capable of exploiting the synergy of such a relationship.

In accordance with Marine procedures, attached ANGLICO teams were to contact the 3d MAW DASC operating near the I MEF main headquarters at Safaniya. This process would be more difficult after the first week of February, when the I MEF (Main) and the DASC were slated to move 50 kilometers to the west to the developing combat service support area (CSSA) at Kibrit. Both divisions had already started to move their forces into the area south and west of Kibrit. Task Force Taro, however, remained in the Mishab area to back stop JFC-E and protect I MEF's lines of communications out to Kibrit.

#### *Marine Air in the Battle of Khafji*

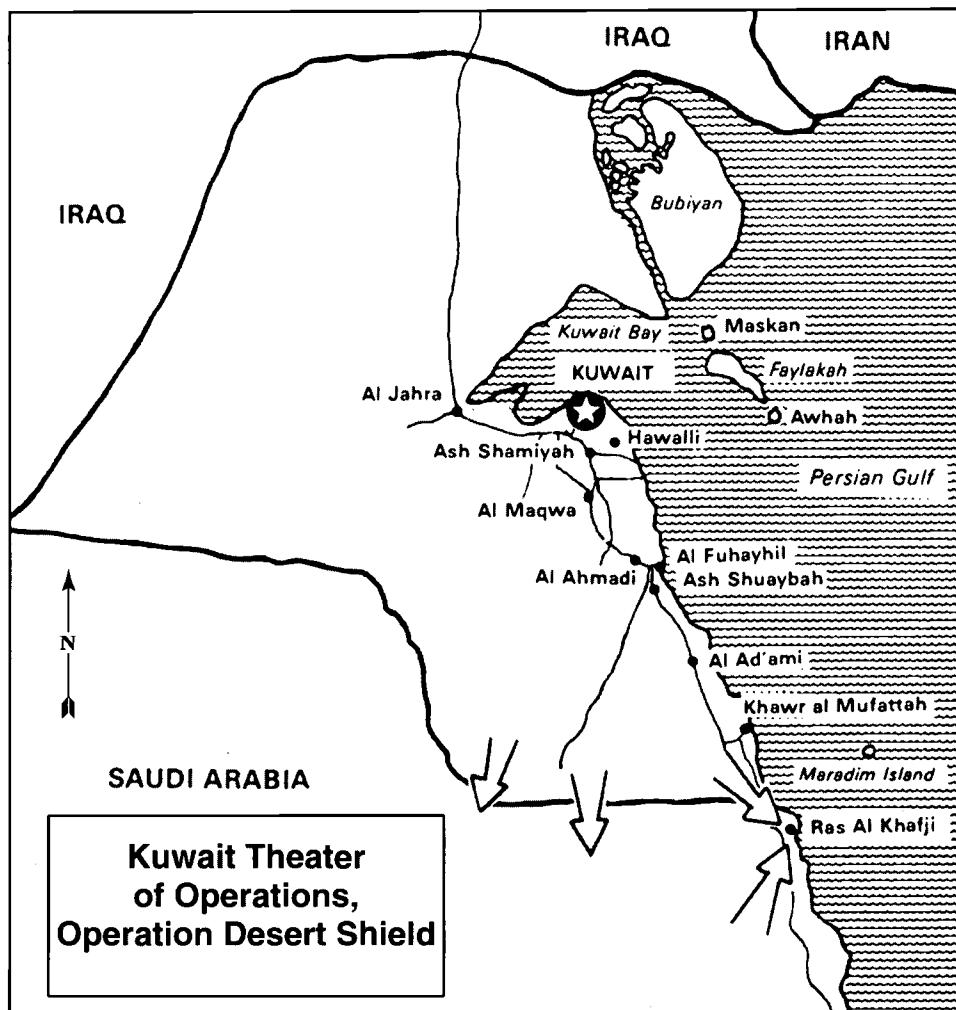
As the end of January approached, the Marine build-up around Kibrit in northeastern Saudi Arabia proceeded as planned. Other than occasional rocket and artillery fire, the soldiers of Iraq's *III Corps* seemed content to bide their time in their fighting positions and thereby to force the Marines to uproot them in an all-out assault. Task Force Taro, in order to familiarize itself with the area north of Mishab, conducted a reconnaissance in force on 25-26 January, up to the recently-evacuated coastal town of Khafji, located a mere 10 kilometers from the Kuwaiti border. Coalition forces manned outposts in and around the town, as did teams from a force reconnaissance company. The mission to Khafji proved useful but uneventful and Taro withdrew to its positions around Mishab. Its battalions quickly started to move west to the Kibrit area to join up with the rest of the division, leaving behind a company-sized element for security wielding HMMWV-mounted TOW missiles and .50-caliber machine guns.

General Moore noted on the 28th, in his situation report, that it appeared the Iraqis were on the move. Even during the significant events on 29 January, the report indicated a "business as usual" approach, with the only notes: "A-6 BAI reacted to Iraqi mech/armor night attack."<sup>204</sup>

The quiet on the ground front was broken in a dramatic fashion on 29 January when elements of an Iraqi brigade from the *III Corps* caught the coalition forces unaware and seized Khafji. This night attack was part of a complex drive across the *III Corps* front and included a commando assault from the sea in high-speed boats from *IV Corps*. Three prongs of the attack would succeed in crossing the Saudi border. The commando assault was stopped off the coast by British and American naval forces and helicopters. Two of the prongs hit the central and western border areas in the I MEF area within a few hours. The Arab forces quickly evacuated Khafji in the face of the onslaught. The dozen Marines in the town stayed in place, and keeping a low profile, managed to avoid discovery while calling in air and artillery strikes against the invaders. Task Force Taro positioned its TOW missile equipped combined antiaarmor teams (CAATs) north of Mishab to back up the Arabs and coordinated artillery strikes in support of the Arab counterattack. Colonel John H. Admire would state:

For me the Battle of Khafji involved one of the most difficult decisions I've ever had to make . . . It was truly the opportunity of a lifetime for a Marine. I believed in our Marines, and I was confident in their capabilities. But it was also an opportunity for us as Americans to demonstrate our belief, our trust, our confidence in the Arab Coalition Forces . . . We encouraged them to be the main attack and we accepted the secondary role as the supporting force . . . Khafji was truly an Arab victory.<sup>205</sup>

Marine air, called in by the reconnaissance Marines and the ANGLICO units, responded swiftly. Major Michael W. Quinlan's division of four Cobras standing the alert was launched at 2138 on 29 January. Arriving on scene, he swung his division of AH-1W Cobras around the east side of the city and attacked Iraqi armor on the road running north of the town toward the border. The aircrews reported the deadly accuracy of their weapons as they destroyed tanks and APCs. Major Michael L. Steele would lead a division of Cobras launched at 0045 on the



30th. Lieutenant Colonel Kurth would again direct Cobras using an experimental forward looking infrared system from the Huey. Steele's division engaged six BMPs (Russian-made tracked personnel carrier Boevaya Machina Pekhota) on the hardsurfaced road north of Khafji with 2.75-inch rockets and 20mm guns, while receiving 73mm fire from the BMPs.<sup>206</sup> That night the available Harriers attacked more targets along the road, ranging across the border to strike concentrations attempting to reinforce the Iraqi battalion-sized force in town. This force was later identified as the remnant of what started out as three battalions.<sup>207</sup>

The first night, AC-130H gunships with numerous coalition aircraft "shut down" the coastal road while a large number of aircraft were assigned to work the AG-4 and AG-5 kill box areas of southern Kuwait to hit moving targets of opportunity. These attacks continued throughout the 29th and 30th paving the way for the Saudi Arabian National Guard (SANG) forces, reinforced with Qatari tanks and supported with coalition air power, to reclaim the town on the 31st. Seven on-scene Cobras remained until the town was recaptured, shuttling as required for more fuel and ordnance. Five of HMLA-367's "Scarface" Cobras worked closely with the ANGLICO Marines and the Saudis to destroy several tanks with TOW missiles in close-in city fighting. The fire support coordination line for fixed-wing remained well north of Khafji. Just at nightfall on the 30th there was a lull in retaking the town due to an abort call by a ground FAC team, and the reorganization of Saudi forces. About nine sections of F/A-18 stacked up as the ground units were sorting themselves out.

The Marine OV-10 going off station would climb to altitude and make a fast dive over the border then break 'feet wet' to take a peek about 10 kilometers into Kuwait to report what they saw to ANGLICO. The OV-10 "Bronco" was the most effective eyes out in front of the Khafji ANGLICO units, with the forward looking infrared particularly effective at night for the ground troops equipped with only night vision goggles.<sup>208</sup> In this sprint for a peek, the Bronco saw a tank column that was heading south and forwarded the GPS grid coordinates to ANGLICO, which promptly released the F/A-18s to go after them. The lead and rear tanks of the column were hit and the Iraqis bailed out for the desert. The forward looking infrared tapes documented a portion of the tank columns' subsequent destruction. As Major James R. Braden of ANGLICO stated:

We had a pretty good comfort level that air was there if we needed it . . . . The next day we had Cobras at our side all day and ran about five fixed-wing CAS missions into the city . . . those were AV-8s and one A-10 . . . . The [Saudi's] learning curve was pretty steep . . . . They got to the point where they got very confident that they could fight a ground fight against the Iraqis. Mainly because if anything went wrong they always felt air was there to help them.<sup>209</sup>

On the battle, Colonel Bioty would later state:

I think Khafji sort of happened. We didn't really know how significant it was until after it was all said and done. And then after the war as we

started to look into it, it became a larger evolution than I could have imagined.<sup>210</sup>

### *Fratricide Issues and Preventative Measures*

On 29 January, the battles further to the west, coming under the cover of darkness in a largely featureless landscape, proved more difficult to resolve. At the Saudi police post at Al Zabr, known as OP-4, was Company D, 1st Light Armored Infantry Battalion with seven LAV-AT (antitank versions of the light armored vehicles) attached from Weapons Company. Company C was at OP-6 and had their own engagement. OP-4 bore the brunt of the attack from the Iraqi T-62 tanks. At 2000, they first detected the column of 30-35 tanks and APCs approaching from the north towards OP-4. The attack began with jamming of the tactical radio nets, but the company nevertheless held its own in a seesaw battle ranging across the border area. Reconnaissance forces actually in the border outpost, began the engagement by having the FAC (A), an OV-10, direct two Marine A-6s to drop Rockeye onto the approaching Iraqi advance. The Rockeyes had little effect. The outpost was left to engage the Iraqis with hand-held direct fire weapons as they approached within small arms range. The LAVs fired TOW missiles, but the advance continued, and the reconnaissance platoon signaled their withdrawal. The Iraqis briefly manned OP-4 with two tanks and BMPs and again were engaged by the OV-10 with another section of A-6s dropping Rockeye to little effect.

At about 2045, the Airborne DASC, responding to a call for air support from Company D, directed in a pair of Air Force A-10 "Thunderbolt II" attack aircraft to help. The company's executive officer had the OV-10 mark the friendly position in front of the LAVs with a rocket. The rocket landed directly in front of the friendly LAVs. Handed off to the FAC with Company D, the lead A-10 aircraft fired his 30mm gun with good effect causing secondary explosions on the tanks at OP-4. The second A-10, confusing the rocket mark for the enemy during the chaotic encounter, launched a Maverick missile that locked on to the LAV-25 nearest the mark, destroying the vehicle and killing seven Marines inside. Only the driver survived. Not long before the A-10 mishap, an LAV-AT was involved in a similar mishap, when it launched a TOW missile at another LAV-AT, taking the life of four others. The attack at OP-4 was beaten back by daybreak with the help of A-10s and Cobras cleaning up the Iraqi tanks left to hold the observation post. The second alert division of Cobras from HMLA-369, led by Major Sidney E. Mills, Jr., launched at 2314 the evening before and was routed to work with 1st Light Armored Infantry Battalion.

Sergeant Greg J. Michaels of Company A, 1st LAI, summed up the fratricide picture well:

The man at the controls of the aircraft will ultimately decide whether the speck on the ground below him is friend or foe. To me that is a huge burden of responsibility. The shifting lines on the map that represent

boundaries for friendly units are not good enough to ensure the survival of ground combatants. What is needed in the here and now is a technological advance in IFF [identification of friend and foe] to aid the pilot in making the decision about the speck on the ground below him. For the rest of the Storm I didn't worry so much about the enemy, I worried about the friendlies. I worried about buzzing aircraft intending to drop their bombs, and I worried about itchy fingers on triggers, combatants eager to be involved in the shoot-out. After the battle at OP-4 . . . We were professionals as before, but now we had experienced the harsh realities of armored combat, we knew the penalties enforced by confused execution.<sup>211</sup>

The aftermath of the two fratricide incidents left difficult questions to answer about the level of positive identification of friend and foe necessary on the modern battlefield. At I MEF, General Boomer appointed a "Tiger Team" of Marines headed by Colonels Jerry G. Henderson and Charles J. Quilter, to find the causes of the five separate incidences of friendly aircraft attacking I MEF forces from 17 January to 2 February. The most severe of these was the Marine controlled USAF A-10 which killed seven Marines when it fired a Maverick missile at a light armored vehicle (LAV-25) on the night of 29 January near the Saudi border police post (OP-4). Four nights later a Marine A-6E dropped a Rockeye on the 5th Battalion, 11th Marines, causing the death of one Marine. Working under a severe time constraint, as the expected beginning of the ground offensive approached, the Tiger Team presented its findings to General Boomer on 10 February.

The team noted that the air-to-ground friendly fire incident was due to a combination of the lack of situational awareness at several levels, a poor identification of friend or foe (IFF) system, and a lack of a visually defined battlefield at night. Colonel Quilter recommended that the quickest and most effective gains could be made in situational awareness and marking the night battlefield. The IFF systems, he noted, would be of marginal value, but worth the effort.<sup>212</sup>

The report listed the capabilities for navigation accuracy:

- (1) Inertial navigation systems for all jets were good to about 1,000 meters.
- (2) LORAN-C on OV-10s and some helicopters was good to about 200-400 meters with variances even greater in the northern Saudi region.
- (3) Global Positioning System(GPS) on some helicopters was good to 10-20 meters, but was clumsy to use due to temporary, stopgap installation.
- (4) Mapping radar in the A-6E and F/A-18s was good to 100-200 meters around radar significant features. There were no radars on AV-8 or OV-10s.
- (5) FLIR, although not a navigation, system could effectively identify

in clear weather most targets at lower altitudes than the threat currently permitted. The A-6s, some OV-10s, and about 25 percent of the F/A-18s had FLIR capability.

(6) On the ground, map reading in the desert was good from 100-5,000 meters depending upon the terrain features and training.

(7) Position Locating and Reporting System (PLARS) for ground use was good to 10-20 meters.

The recommendations of the team were detailed and numerous with an emphasis on being simple, practical, and timely. The key recommendations were: orient the PLARS use toward fratricide prevention; focus efforts to continuously update the friendly positions; immediately implement High Density Airspace Control Zone 8; encourage location reporting in both grid and latitude/longitude; place a TACAN close to the southwest corner of the Saudi-Kuwait border; and make some limited marking of friendly positions and vehicles.<sup>213</sup> Colonel Rietsch later noted that none of the F/A-18s were involved with fratricide incidents and attributed this to the improved situational awareness provided by the Hornets' moving map display.<sup>214</sup>

### *Al Jaber Mission Planning*

As I MEF Marines settled down in the wake of the Battle of Khafji, Task Force Taro again turned its attention to planning for a heliborne assault in support of the upcoming ground campaign. Based on guidance from 1st Division, Taro on 4 February prepared Fragmentary Order (FragO) 6-91, which detailed the heliborne assault mission:

[On order] TF Taro conducts a helicopterborne assault to seize Al Jaber Airfield (Grid QT7204) in order to secure the airfield and provide mutual support to the Division advance by blocking or delaying, as directed, any enemy counterattack. Be prepared to conduct linkup operations with advancing friendly forces.

Al Jaber Airfield, designated as MEF Objective A, was located in south central Kuwait, nearly 30 kilometers due north of the planned 1st Marine Division breach. General Boomer viewed the airfield as an essential position from which to support I MEF's rapid exploitation northward to isolate the capital and cut off the Iraqi *III Corps*.

In his planned attack, Colonel Admire intended to "use surprise and fire-power to overwhelm the Iraqi airfield defense." He envisioned that Task Force Taro would "use our vertical envelopment [helicopter assault] to attack [the] Iraqi forces from inside his own perimeter and utilize night to consolidate our forces and prepare the defense of the airfield."

Taro was faced with a daunting mission. The task force intelligence staff painted a disturbing portrait of the objective: "The enemy possesses the capability to defend Al Jaber Airfield in-place with one mechanized battalion, elements of

one armored battalion (-), and AAA units of unknown size and number." Additionally in the immediate vicinity of Al Jaber intelligence estimated that the Iraqi army could reinforce the airfield with elements of the *1st* and *5th Mechanized*, and *3d Armor Divisions* within 2-3 hours. The mechanized and armor units within the airfield remained in well-bermed positions as was the anti-aircraft and expected hand-held surface-to-air missiles. The most worrying problem was that Iraqi *III Corps* could mass fires from its considerable artillery in the area.

To accomplish its mission, Task Force Taro planned a three-phased operation. In phase one, for the main attack, a reinforced infantry battalion would conduct a heliborne assault directly onto the airfield in a single wave. It would then seize the airfield and clear it of enemy forces. The task force command group planned to accompany the first battalion into the airfield. Meanwhile, the aircraft from the first wave would return to friendly territory, pick up a second battalion, and helilift it onto the objective where it would join the initial battalion and assist in consolidating control of the airfield.

In phase two, once the airfield was secured, Taro would establish a hasty perimeter defense. Taro's third infantry battalion, designated as the task force reserve, would if possible, be transported to the airfield in an additional helilift to assist in the defense. Otherwise, the reserve battalion would move north to the airfield by vehicles. During phase three, Taro would link up with friendly forces approaching the airfield from the south. The task force would then prepare to conduct follow-on offensive operations in support of the I MEF assault. In the fragmentary order, Taro designated the 3d Battalion, 3d Marines, as the main attack, the 1st Battalion, 3d Marines, as the follow-on wave, and the 2d Battalion, 3d Marines, as the task force reserve.

MAG-16, one of the two groups that would be providing the helicopter support for Taro, was still gathering squadrons together at Tanagib from Jubayl and Ras Al Ghar. Colonel Garrett and his staff carefully examined the assault helicopter proposal. Taro anticipated the first wave would require 45 CH-46Es, 24 CH-53Ds, and 17 CH-53Es. Together, the two helicopter groups could muster, on a perfect maintenance day, 60 CH-46Es, 34 CH/RH-53Ds, and 23 CH-53Es. When taking maintenance aircraft into account, the first wave of Taro would require essentially all of I MEF's likely available transport helicopters. Given probable casualties suffered on the first wave, even fewer would be available for subsequent waves and other assault support tasks.

## Early February, Phase II of the Air Campaign

### *The Breach is Shifted Again/Al Jaber is Scratched*

On 6 February, after discussions with his subordinate commanders, General Boomer abandoned the plan for a single-division breach in the southwestern corner of Kuwait in favor of a two-division breach of Iraqi lines further north on either side of the Umm Gudair Oilfield. Boomer designated General Keys' 2d Marine Division, conducting the more northerly of the two breaches, as

the I MEF main attack force. Freed from the constraints imposed on a single-division breach by the acquisition of additional combat engineering equipment and the planned relocation of his main combat service support base northwest from Kibrit, Boomer reexamined all aspects of offensive planning to date.

Already of doubtful utility to General Schwarzkopf, Boomer ruled out a large amphibious assault on the coast south of Kuwait City except as a response to an unforeseen emergency. Marine forces afloat would now be used primarily in tying down as many Iraqi units as possible into the shoreline defense of Kuwait as a deception. While Al Jaber retained its importance as I MEF's forward logistics and helicopter base, its immediate seizure by heliborne assault appeared much less necessary for the success of the ground assault than a month before.

From General Boomer's perspective, the planned assault on Al Jaber suffered several major shortcomings. First, its execution would require the use of virtually all the force's available helicopters on G-Day. This would leave too few for logistics support, medical evacuation duty, close-in fire support, and command and control. Second, the antiaircraft threat presented by the Iraqi forces in the area made the planned assault a risky proposition for those called upon to fly the mission. Thus, for the same reason that an amphibious assault onto a well-defended beachfront looked prohibitive in terms of cost versus benefit, so too did a large heliborne assault into a well-defended objective area.

Task Force Taro presented its concept of operations brief on 9 February to the MEF staff. Because of his concern over aircraft vulnerability and high casualties, General Boomer rejected the plan. The heliborne assault option, however, was not dismissed completely. General Myatt quickly assigned Task Force Taro the mission of infiltrating the obstacle belt on the right flank of the 1st Division breach area, leaving Task Force Grizzly to perform the same mission on the left flank with two battalions. Myatt ordered one of Taro's battalions—the 1st Battalion, 3d Marines—to detach on 15 February and to constitute the heart of an independent task force under the division's direct control. Myatt assigned the task force, designated X-Ray, the single mission of: "O/O, [on order] conduct heliborne assault to occupy BP (battle position) X-Ray and guard division right flank north of 2d obstacle."<sup>215</sup>

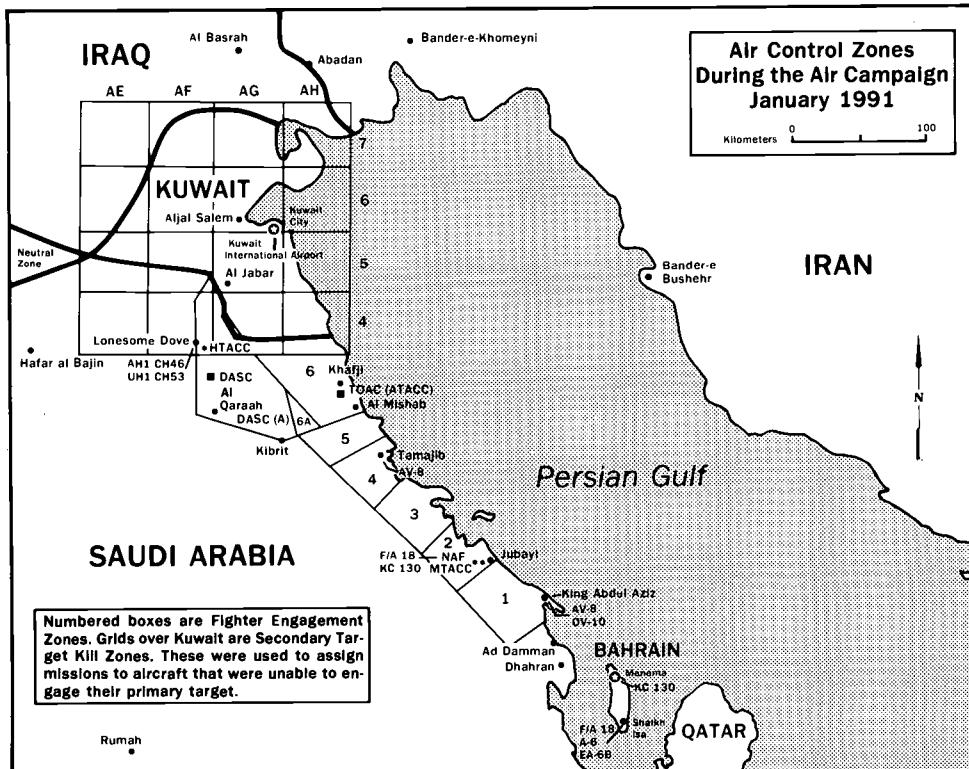
### *Targeting and Intelligence Issues*

General Moore discussed insufficient imagery hampering mission planning and targeting with anyone he could get to listen. In his situation report of 28 January, Moore stated the corollary that would go hand-in-hand with lack of imagery, and that was the last minute changes to the JFACC package missions: "Targeting continues to take a great amount of attention. I have made it a policy that only the AWC or I approve JFACC targets. I want to reduce the number of changes and turmoil that they create." MAG-11's commanding officer, Colonel Rietsch, was likewise critical:

Old imagery, poor quality—we were lucky to get even that. Getting up to date imagery or something of good quality was the exception—I

mean the big exception—because it only happened a few times. We were asked to go attack targets where all we had was a LAT/LONG—pull something off a map. The way the system should work—all that stuff should be fed to you. It didn't work that way. One of two things happened. Either the higher headquarters [had] up-to-date imagery which identified the location of a valuable target and we didn't receive the same imageries, so therefore we couldn't tell what the target was, or else they based a mission on outdated imagery and so when we went to that place the thing that had been there and was the designated target was no longer there. Consequently, we ended up [flying] many, many sorties where we went where we couldn't identify a target that they thought might have been there or the target had moved and the people who made the decision to send us to the inset target were based on that two week old, three week old, two month old imagery of a tank battalion, for example, that very well might have clanked away and gone somewhere else.<sup>216</sup>

VMFA-451 and VMFA-314 pilots would mention that when a team was formed for briefing a package that one officer would be assigned the job to hunt down and find any imagery that was available. This would take nearly all his time for that day. On the plus side of planning, the Tactical Aircraft Mission Planning System (TAMPS) was universally praised for providing navigation planning, fuel planning, and updated threat planning. TAMPS' updates came from the EA-6Bs,





*Ordnance was stored on the open flight line at Shaikh Isa Air Base, Bahrain.*

the USAF F-4 “Wild Weasels,” aircrew debriefs, and national assets, and were input into TAMPS in near real time.<sup>217</sup>

In late January, the MEF set target precedence by category: Category One targets were nuclear, biological, and chemical; Category Two were indirect fire weapons; Category Three were command posts; and Category Four were the maneuver units of armor, mechanized infantry, and infantry. This gave some guidance to a flight leader who had arrived at his assigned target only to find nothing but sand at that grid coordinate. He then became an armed reconnaissance in a large kill box. This was a dramatic shift from the 3d MAW OPLAN requirement not to drop ordnance except on “assigned targets” or FAC (A) “marked targets beyond the FSCL.”<sup>218</sup> Targets were now being bombed in the larger alpha numeric kill boxes, with relationship to the MEFs prioritized unit target list, however, MEF needed to hit specific units to shape the battlefield for the upcoming ground campaign.

#### *The Aviation Ordnance Shortage*

After more than two weeks of the sustained air bombardment of targets in Kuwait and southern Iraq, General Moore began to grow increasingly concerned at the drawdown of his aviation ordnance stocks. While the allied coalition suffered remarkably low losses when compared to prewar estimates, their leaders felt no rush to attack on the ground into Kuwait. The airmen enjoyed relative immunity from damage yet seemed to score continued successes against a host of vital Iraqi targets with their precision guided munitions (PGMs). This perception was reinforced by CentCom’s and AFCent’s selective release of high-quality videotapes of Air Force aircraft scoring impressive hits on buildings, bridges, and vehicles with their so-called “smart” bombs. These “best hits” videos did not represent the reality of allied attack aviation in theater, which still relied heavily on traditional “dumb” bombs guided to their targets only by the

skillful flying of the aircraft pilot. This was particularly true of naval aviation, which relied overwhelmingly on hitting targets with single and multiple drops of 1,000- and 2,000-pound unguided iron bombs.

General Boomer placed artillery concentrations near the top of his list of targets to be attacked. With an estimated 1,242 artillery pieces in the Iraqi *III Corps* area alone, the 3d MAW was not without targets as January turned to February.<sup>219</sup> Although “smart” bombs proved extremely effective against point targets so far in the war, the typical dispersion of Iraqi artillery batteries in southern Kuwait (almost all of which were towed) meant that they were not the optimum weapon for the mission. Unlike self-propelled artillery pieces, towed artillery was almost impossible to destroy. Essentially a narrow tube of hardened steel, they offered an indistinct aim point for PGMs to hit, and near misses often did little more than flatten tires or strip off peripheral equipment. While the damage caused by such a strike may have been beyond repair, post-strike aerial photography generally could not confirm whether the pieces were put out of action.

3d MAW’s attack on artillery therefore concentrated on attacking artillery positions with the intent to kill or injure some crewmen, damage the pieces, and set off ammunition stored near the battery. Weaponeering dictated that a mix of “old-fashioned” 1,000-pound bombs and MK-20 Rockeyes were the best ordnance for this purpose. By 24 January, 3d MAW reported that stocks of MK-83s were extremely low. Facing a shortfall in a few weeks just as the divisions would go on the attack, General Moore requested that NavCent release the stocks of MK-83s and Rockeyes to his command. After some delay, on 7 February, Admiral Arthur concurred, and beginning on the 9th, 3d MAW took delivery of sizeable quantities of the two essential bombs.

Also on 9 February, 3d MAW lost an AV-8B and a damaged F/A-18 had to make a recovery at Shaikh Isa. The Harrier from VMA-231 flown by Captain Russell A. C. Sanborn, was “Dash-Two” in a section, call sign “Jump 51.” The section was controlled by a Fast FAC at about 1630. After making a couple of runs on a marked target, the F/A-18D marked a new target, a revetment, about two miles away from the original target. The “Dash-Two” made a run in to drop its remaining ordnance. Captain Sanborn made the drop and was struck by an infrared surface-to-air missile on pullout. His parachute was sighted by his lead, Colonel Bioty, and Captain Sanborn became 3d MAW’s fourth POW.

The first combat damage to a Marine F/A-18 occurred on the morning of the 9th. The F/A-18 was in the lead position on a four-aircraft division attack on a SA-2 site. The aircraft from VMFA-451, call sign “Clover 21,” was struck in the right fuselage-mounted AIM-7 Sparrow missile as it was pulling off target. The rocket motor of the missile caught fire and scorched the aft fuselage and engine bay door. Once “feet wet” over the more friendly waters of the Gulf, the pilot jettisoned the sparrow and made an uneventful landing at Shaikh Isa. Probable cause was an SA-16 infrared surface-to-air missile.<sup>220</sup> The aircraft was repaired and on the following day’s schedule.<sup>221</sup>

*"Fast" FACs and Isolating the KTO*

Fast FAC was a mission flown exclusively by the two-seat F/A-18Ds. During the first three weeks of the war the Fast FAC as well as the strikers were learning their trade and becoming accustomed to the threat level. Aircraft would use the high sanctuary, entering and egressing the area at 20-30,000 feet. A typical Fast FAC mission would include 30 minutes over the kill box area, refueling by airborne tanker, and then return to the box for a second 30 minutes on station. The Fast FAC would stay high and attempt to find the targets from the MEF's target list for the area with the back-seater using high-powered binoculars, or night vision goggles. Colonel Rietsch commented on the beginning of the Fast FAC mission:

We did not deal really with the traditional FAC of the helicopter war and the OV-10 since neither one was survivable—or appeared to be survivable—during the majority of the campaign . . . We got into the Fast FACs somewhat by accident. There were very few people who were trained in the Fast FAC role and there was a learning curve for us. What the Fast FAC did for us (A)[it] got us through the bureaucracy of the command and control system, and (B) I think we became a hell of a lot more efficient as far as putting ordnance on target instead of putting ordnance into sand, because the Fast FAC—especially during the earlier part of the campaign—was able to stay in a relatively safe altitude, and have the guy in the back seat check out targets, whether they were in fact valid targets or whether that was something that had to be taken out.<sup>222</sup>

There were seldom any photos of the enemy positions, and the MEF targeting list was several hundred items long. A hot targeting board was made up by VMFA (AW)-121's operations section, which listed high-threat areas and lucrative target areas. The Fast FAC would always be escorted by a single seat F/A-18, to keep situational awareness of the air-to-air threat as well as to carry HARM

*A two-seat F/A-18D from VMFA (AW)-121, the "Green Knights," flying by the burning oil wells of Kuwait. The "Green Knights" flew primarily the Fast FAC mission in Desert Storm.*



missiles to suppress radar-guided SAMs. These escorts would often get their ordnance crews to load at least one bomb to break the escort tedium and to "get some" in any lull in the flow of aircraft to the Fast FAC. In the first weeks, only two to three sections could be controlled in the 30-minute on-station time. The DASC had difficulty in smoothly flowing aircraft to the Fast FACs. Ordnance drops were often inaccurate from the higher altitudes.<sup>223</sup> Some of the inaccuracy can be attributed to the lack of peacetime bombing training at these altitudes due to a perceived lack of survivability in a high SAM threat. The second reason for inaccuracy was the lack of software support and delivery tables in both the AV-8 and F/A-18 aircraft for the higher altitude drops of the MK-20 Rockeye. Most aircraft would pull out by 12,000 feet in the early weeks.

Six more F/A-18Ds arrived on 31 January, bringing the total to 12 aircraft. Only four of these new aircraft would be equipped with a targeting FLIR. Forward looking infrared was practically mandatory to be effective at night. Searching for targets with the FLIR at high altitude would not give enough definition to identify the target, and could be likened to searching the battlefield through a soda straw. Smoke and high humidity also made the search for targets more difficult. The use of night vision goggles improved the ability to control aircraft and detect targets, but as with the FLIR, few crews had been fully trained on either system. With 12 F/A-18Ds now in country there were still only four sets of AN/NVS-6 "Cats Eye" night vision goggles.<sup>224</sup> Night attacks presented more problems when it came to marking the target for non-FLIR-equipped F/A-18s. The 5-inch white phosphorous marking rocket was extremely difficult to see at night even with the FLIR. Many F/A-18 wingmen were forced to drop their ordnance on their leader's hits, or adjust from the leader's hits, because they could not actually acquire the target themselves. Night attacks were still a difficult proposition, and near to impossible without illumination, forward-looking infrared, or night vision goggles.

As General Moore intended, the majority of the Fast FAC controlled targeting was in the southern KTO during the first two weeks. The third week brought the targeting toward the central KTO region and Al Jaber Airfield. Fast FACs showed exceptional success in striking armored personnel carriers and trucks in staging areas around Al Wafra on 29 January. Over the KTO the heaviest antiaircraft artillery and surface-to-air missile activity were around Al Jaber, along the coastal roads, and in urban built-up areas. By the fourth week, air command and control smoothed out with the use of the airborne DASC playing a major role. Pilots were more comfortable in the area, especially when controlled by the Fast FACs. The bottom attack altitudes were dropped to about 8-10,000 feet, and accuracy in bombing improved dramatically. If the weather was good, and the threat cooperated, Fast FACs could now run as many as 10 sections of aircraft onto targets in an hour by stacking the follow-on sections overhead to see the targets being bombed. Intelligence and battle damage assessment remained a problem, but the hot-target board was now run at the group level. Familiarity with the KTO led to the naming of various kill boxes. For example, the "Ice Tray" was an area north of Al Jaber on a main east west supply route where numerous artillery batteries were attacked.

During the first through third weeks of February, aircrews became more comfortable in the KTO area. Artillery and armor formations, when found, were attacked until destroyed. Major James S. Robertson later recalled that by this time in the air campaign, "Enemy vehicles were never allowed to use the main supply routes without being attacked."<sup>225</sup> The threat now boiled down to the Iraqis illuminating aircraft with their tracking radar to make the crews flinch and optically guiding surface-to-air missiles and antiaircraft artillery in areas they felt were key to their defenses. Threats in the KTO were more sporadic but seemed to have a greater intensity during the hours of darkness.<sup>226</sup> The occasional skillful use of the hand-held infrared surface-to-air missile would prove to be the most effective antiair weapon the Iraqis possessed.

Early morning JFCCC and MEF strike packages were moved later by an hour, to avoid the difficulty in target acquisition in the low sun angle shadows and haze. On 17 February, the Iraqis began destroying oil well heads and lighting them off. The resulting smoke over succeeding days severely affected the ease of target prosecution that the Fast FAC teams had developed.

By the fifth week of the air war and the week before the ground campaign, the shift in focus of the bombing campaign moved west and onto trench and artillery positions. Large numbers of artillery and entrenched armor were attacked near the Ali Salem Airfield.

### *I MEF Swings West Again*

In November, before thoughts of a western option, and before the switch to a two-division breach that required moving combat service support further west to Al Khanjar, the movement of supplies and sustainment rested mainly on the backs of trucks and forklifts. One day of supply was in excess of 7,000 short tons of material, and that was required to be moved distances of more than 150 miles. The Army was unable to-fully support Marine line haul, and as a result MarCent leased in November, some 450 high-bed trailer trucks, 110 heavy equipment trucks, 50 five thousand gallon water trucks, 50 five-thousand-gallon fuel trucks, and 63 fork lifts of various sizes. The Marines requested at least 100 more forklifts (material handling equipment-MHE) be shipped with the MEF sustainment being loaded out of Blount Island. A message released by General Boomer's headquarters stated: "It is imperative that sufficient MHE be available to ensure the timely turn around on transportation assets at each transfer point."<sup>227</sup> Now, with the shift west, there was little time to find more line haul assets to get I MEF in position to begin the ground offensive.

The KC-130s helped with moving fuel and some supplies as far as Kibrit, while CH-53s moved passengers, mail, and high value, quick response cargo. Within this environment, where anything that could move west was carrying something for the divisions or the combat service support element, 3d MAW was asked to build a base further west. The base had to be far enough out west to have the helicopters support both divisions' breaches and their further attacks into Kuwait.

3d MAW's OPLAN required each site to have five days of supply (DOS)

of fuel storage in USMARCENT tactical storage or USMARCENT owned stocks in plant account systems based on wartime usage rates.<sup>228</sup> MWSG-37 was required to install and operate fuel and water equipment and report for both. In addition, they supported forward arming and refueling point (FARP) operations.\*

Table: 3d MAW Fuel Requirements

Location	Use Rate (Per Day)	Capability Required
Shaikh Isa	672,117	4,000,000
King Abdul Aziz Naval Air Strip	253,680	1,768,400
Jubayl Naval Air Facility	365,142	1,825,710
Tanajib / Alternate Forward Airfield	91,176	1,000,000
Al Mishab Airfield	266,355	1,331,775
Ras Al Ghar	39,416	197,080
Abraq Al Kibrit	441,790	2,208,950

Table: 3d MAW Water Storage Capabilities\*

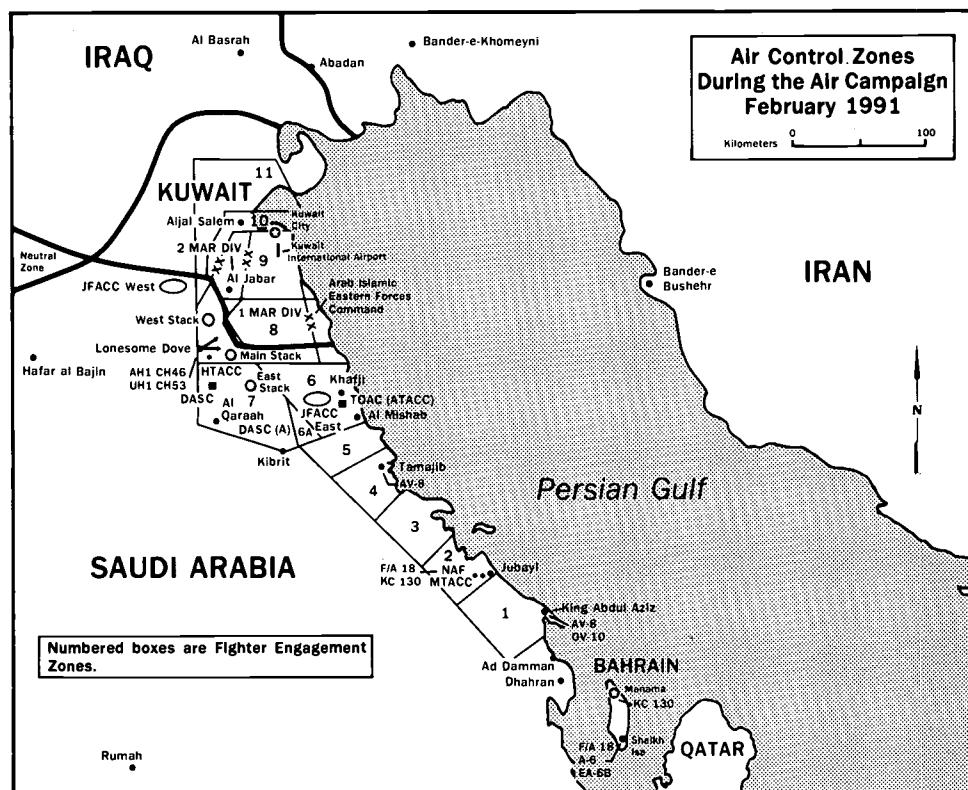
Location	ROWPU	20K TANK	50K TANK
Shaikh Isa, Bahrain	8	0	2
King Abdul Aziz Naval Air Strip	5	2	0
Jubayl Naval Air Facility	7	2	0
Manifa Bay	12	6	4
Al Mishab	20	2	10
In reserve	93	30	30
Totals:	145	48	54

\*The planned storage and water reserve capability was also designated by area.

### Middle February, Phase III of the Air Campaign *Preparing the Battlefield*

Preparation of the battlefield actually began the first day of the air campaign, as well as during the Phase II suppression of enemy air defenses. The num-

\* Both fuel and water storage capacity for a Lonesome Dove Air Base near Al Khanjar would be added after this 3d MAW OPLAN was signed on 15 January 1991.



ber of sorties that 3d MAW dedicated to battlefield preparation increased as the air campaign progressed. Those sorties had not always been effectively coordinated into the MEF's desire to shape the battlefield. The frustration of not being able to degrade specific enemy units due to lack of timely targeting intelligence, resulted on 10 February in a COMUSMARCENT message that established new "kill boxes" based on a maneuver box (M-box) and fire-support box (A-box) concept. Up to that point in the air campaign, intelligence had difficulty in maintaining up-to-date target locations because of enemy movement and camouflage. (M-boxes and A-boxes were relatively small areas associated with Iraqi units.)

The MEF would continue to focus its intelligence and collection efforts on units to be struck the next day. When those efforts did not produce targetable information, 3d MAW could attack units that the MEF desired results on by attacking targets in specific M-boxes and A-boxes associated with those units. MarCent's intent as laid out in its 10 February message on target nominations, was to destroy the enemy with emphasis on those forces that could threaten "our assembly areas, line of departure, and breaching areas. Target priorities will then shift outward from the breaching area, and then collapse back to the breaching area by G-Day." This was something General Moore had keyed on from the beginning of the air war.

The 10 February MarCent message laid out prioritization by type of target that was similar to the original precedence list:

- a. Attack known chemical delivery weapons systems and associated ordnance as identified.
- b. Attack high threat/high value weapon systems that pose a threat to MarCent forces (SCUDS/FROGS, MRLs, long range artillery, BM-21s).
- c. Destroy/neutralize fire support assets that pose a threat to the accomplishment of the MarCent mission.
- d. Destroy command, control, and communications capabilities of KTO forces by attacking all known headquarters in a top to bottom priority.
- e. Destroy/neutralize maneuver units that pose a threat to the mission.
- f. Eliminate the capability of Iraqi forces to sustain or reinforce committed units by attacking major logistics sites and lines of communications.<sup>229</sup>

This was quite an order for aviation to attempt to meet, but the new maneuver boxes and fire-support boxes would refine the effort. For example, on 12 February MarCent executed its sequenced targeting strategy by striking targeting areas (TAs) M-6,-7,-8,-9, and -19 corresponding to the enemy units in these areas:

- a. *80th Independent Armored Brigade*
- b. *54th Armored Brigade, 3d Armored Division*
- c. *12th Armored Brigade, 3d Armored Division*
- d. *7th Infantry Division*
- e. *29th Infantry Division*
- f. *8th Mechanized Brigade, 3d Armored Division*<sup>230</sup>

Until 20 February, the assigning of targets, and then the fall back of searching the maneuver and fire-support boxes, was used by 3d MAW. By the 20th it was obvious to even the JFACC that targeting was unable to keep up, and so General Horner finally allowed missions on the ATO with a maneuver or attack box as the designated target.<sup>231</sup> In other words, armed reconnaissance was now JFACC approved. It was now designated as untargeted air interdiction. The way now officially existed for prepping the battlefield with as many sorties as could safely be run into the KTO. Intent and motivation would be provided shortly as 3d MAW began to increase the number of daily sorties.

General Boomer gave 3d MAW its mission and intent orders. In the few days prior to the ground offensive (G-Day) General Boomer and a team came to brief the two fixed-wing groups on the ground scheme of maneuver, expected FSCLs, targets, and objectives, if everything went according to plan. Colonel Bioty related General Boomer's final words at the required gathering of all MAG-13's pilots:

General Boomer lead it off by saying, I want to tell you a story which is not really a story, because it is true, but in the form of a story. I woke

up at two or three o'clock in the morning . . . shaking soaking wet . . . from a terrible bad dream where two divisions on line attempting to go through two breaches . . . being bogged down in the mine fields and extensive obstacle belts . . . and in the middle of all that somewhere between 11 hundred and 14 hundred artillery tubes were raining a fiery death and destruction." Then he said, "My Marines are dying." He put his hands behind his back . . . walked back and forth on the stage in silence, which seemed to be eternity, and he turns around and says, "Go get the artillery!" It was about 8:30, 9:00 at night. I had guys who wanted to go man airplanes and go get artillery!<sup>232</sup>

#### *Planning for Task Force X-Ray*

Task Force X-Ray would be plagued with changes from its conversion from Task Force Taro on the 15th through its final execution. Aircraft availability for planning purposes would be guaranteed at only about 35 aircraft, so a two-wave, 500-troop, and 40-vehicle screening force insert was initially planned. A full rehearsal was out of the question due to heavy tasking of assault support aircraft before G-Day. On G-2 the force mix was changed to 130 troops and 40 vehicles making up combined antiarmor teams (CAAT). As early as 25 January, General Boomer mentioned to his staff his uneasiness about attaining the necessary close working relationship among the CH-46 pilots, squadron commanders, and the 3d Marines if "they are going to be able to pull off a successful entry in the territory."<sup>233</sup> Aircrues and aircraft from nearly every squadron of both helicopter groups were assigned the day before the lift to arrive at LZ Sandy, just a spot in the desert, by the morning of G-1 to load up and brief for the X-Ray mission.

#### *Final MACCS Adjustments-Establishment of the HTACC-Airborne DASC*

3d MAW established the HTACC by a flash message sent on 19 February to the MEF and all 3d MAW units, which delineated the scope and mission of the HTACC:

The intent of the HTACC is to provide a rapid flexible system to command and coordinate 3d MAW helicopter operations in support of I MEF scheme of maneuver for Phase IV, ground assault phase, for Operation Desert Storm. The HTACC is not intended to replace the MTACC [main TACC] and is subordinate to it.<sup>234</sup>

The HTACC, call sign "Bullpen," published the helicopter ATO and distributed it over the local area network system, as well as by helicopter courier. All requests for helicopter support were to come directly to the HTACC located at Lonesome Dove Air Base near Al Khanjar.

MACG-38 units would have a command, control, and communications challenge unlike any other faced by a similar Marine unit. They were spread from Shaikh Isa in Bahrain through three countries with widely separated units of the

Table: MACG Units at the Beginning of the Ground War

Unit	Function	Location(s)
HHS-38	TACC	Jubayl
DET HHS-38	A-TACC	Jubayl Lonesome Dove
MACS-2	TAOC	Mishab
DET MACS-6	EW/ C	KAANB Lonesome Dove
MASS-1	DASC(A)	Jubayl
MASS-3	DASC	Safaniya Khanjar
DET MASS-6	DASC	Safaniya Khanjar
2D LAAM	4 HAWK fire platoons	Jubayl Mishab Lonesome Dove
3D LAAM	4 HAWK fire platoons	King Abdul Aziz Shaikh Isa Lonesome Dove
2D LAAD	65 Stinger teams	10 teams, 2d MarDiv 5 teams, 6th Marines 5 teams, 8th Marines 5 teams, 10th Marines 5 teams, Direct Support Group 5 teams, 2d LAI 30 teams, I MEF (General Support)
3D LAAD	51 Stinger teams	3 teams, TF Shepherd 8 teams, TF Papa Bear 8 teams, TF Ripper 3 teams, TF Taro 9 teams, 11th Marines 3 teams, TF Grizzly 8 teams, Jubayl NAF 6 teams, Jubayl Port 3 teams, King Abdul Aziz

MEF, and also continued to support a “super-sized” 3d MAW. Displacement of several of these units without losing support and communications during combat was a difficult feat. The helicopters would find it especially difficult to remain in contact with any portion of the control system.

#### *Planned Attack Helicopter Employment/AV-8B FARP*

An interesting experimental FLIR system would get the attack helicopter community into the action again. On 13 February a NITE/EAGLE FLIR (forward-looking infrared) laser designator installed on a MAG-16 UN-1N flew the first of several border reconnaissance missions. It was used as the designator for several Kuwaiti Gazelles firing missiles that destroyed some T-62 tanks. This designation package would be effective in working with Cobras to take on targets in smoke and bad weather conditions.

On 17 February, MAG-13 received a detailed brief by the MEF on the ground scheme of maneuver, which included the 3d MAW plan for close air support and battlefield air interdiction. Though often maligned, the ATO was stretched to provide the flexibility that Marine Corps aviation needed to deliver support to the MEF. The flexibility in the ATO was not only in the “over booking,” but the strip alerts, and the fact that if the mission required it, an aircraft could “hot turn around” and generate two or even three sorties on one ATO mission number.\* As was proved at Khafji, when Marines or coalition forces were directly in the enemy’s sights they could count on Marine aviation to set aside the pull-out altitude restrictions and deliver every last bit of ordnance as accurately on the enemy as possible.\*\* This included strafing runs on active artillery units where pull-out altitudes would break 500 feet.<sup>235</sup>

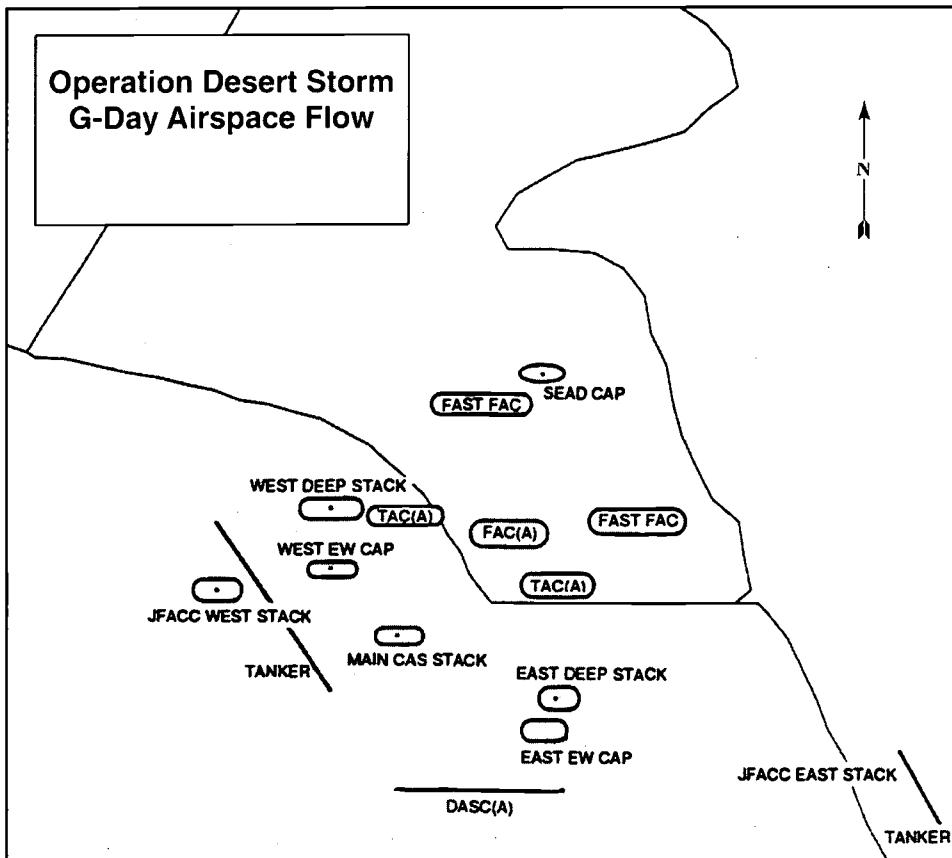
#### *3d MAW Gains Control of HIDACZ 8 and 9*

Control of air space over the heads of Marines was a constant and daily struggle for Colonel Dake, G-3 operations of 3d MAW. As much flexibility as could be wrung from the ATO. The concern was the request process (delays and or permission) to get into the kill boxes with the right amount of aircraft at a critical time when Marines may be heavily engaged as the ground war started. An additional concern was the use of JFACC aircraft in close proximity to Marines, as the MEF was far more comfortable with Marines delivering close air support. The ABCCC was already showing signs of saturation with the amount of aircraft reporting in. The volume would only increase with the ground campaign. High-

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\* The Harriers would take off from King Abdul Aziz, fly the mission, and, if required on a hot target, returned to the closer Tanajib Airfield where they would take on fuel and rearm. Hornets would do the same at Jubayl, while Cobras often used Mishab or Safaniya.

\*\* Lieutenant Colonel Richard M. Barry was the executive officer of 1st SRIG in Khafji and relates a story of Harriers suppressing artillery in direct fire on his position at 0930 on 17 January, the first day of the air campaign. LtCol Richard M. Barry, USMC, “In Praise of Close Air Support” (*Marine Corps Gazette*, May 92, p. 56).



density air control zones (HIDACZ) had already been approved in concept at the JFACC level, but the space was rarely activated and handed over for Marine control. Additionally it was withdrawn without notice during the few times when the HIDACZ had been tested. On 18 February, the Marines gained the control of HIDACZ 8 and 9. They would fight daily to keep this control through the close of the ground campaign.<sup>236</sup>

Prior to the ground campaign the typical flow for Marine aircraft required them to check into Marine Tactical Air Command Center (MTACC) for any changes to missions assigned on the ATO. The MTACC would then pass off the aircraft to the Tactical Air Operations Center (TAOC) for flight following and deconfliction information on both friendly and enemy aircraft within the area.\* The TAOC would then pass the aircraft to the Direct Air Support Center (DASC) or the DASC (A) airborne. The aircraft upon reporting into the DASC or DASC (A) would receive final mission information. The DASC would contact the

\* The TAOC was where the “eyes,” or radar picture was primarily generated and “fused” together from other radar to provide positive control of the aircraft. The fixed-wing squadrons almost unanimously criticized the radio hand-off to the TAOC as being a waste of time, because their situational awareness was so far behind. They believed there was no value added by the radio call to the TAOC (VMFA-314,-232,-231,-212, and VMFA(AW)-121 Battlefield Assessment Tapes).



Photo Courtesy of Sgt Charles G. Grow

*Gen Royal N. Moore, Jr., addresses ground commanders at a large sand-table exercise in Saudi Arabia shortly before commencement of the ground offensive.*

ABCCC to inform and get approval for the Marine aircraft to proceed to a kill box, which normally had its own frequency for deconfliction. At the kill box the aircraft would do one of three things: contact the Fast FAC if flying in that box; proceed to the target assigned; or hit targets of opportunity. Immediate close air support was always a possibility and the priority mission.

General Moore fully briefed all forces on the changes to the system, sometimes referred to as “push CAS” that would occur at the onset of the ground offensive. Marine aircraft would check into the MTACC and then the TAOC before being passed to the DASC. The close air support and battlefield interdiction stacks were established when the HIDACZs were active. The kill boxes were disestablished and five stacks were used when the HIDACZs were established shortly before the ground offensive: Main, East, West, JFACC East (USN), and JFACC West (USA). Marine aircraft after checking in with the DASC were placed in the Main stack to fill requests for CAS. Those aircraft not running a mission under DASC direction were handed off to the DASC (A) for either the East or West stack where they worked with a Fast FAC conducting battlefield interdiction beyond the Fire Support Coordination Line (FSCL). Joint or combined aircraft would check in with the TAOC and be forwarded to one of the JFACC stacks. The joint aircraft were primarily used beyond the FSCL. The intention of the procedures was to maintain control without stacking up aircraft awaiting deconfliction of missions.

There was one last ominous note before the ground campaign began. At 1945 on 23 February, the evening before the start of the ground offensive, an AV-8B from VMA-542 piloted by Captain James N. Wilbourn II was lost on a night bombing mission in central Kuwait. His was the lead aircraft in a section of AV-

8Bs, call sign "Pride 16." He was in a bombing run marked by a bomb from a departing Fast FAC's escort, and listed as killed in action. He was the first 3d MAW aviator to be killed in action.

## Air Support for the Ground Campaign

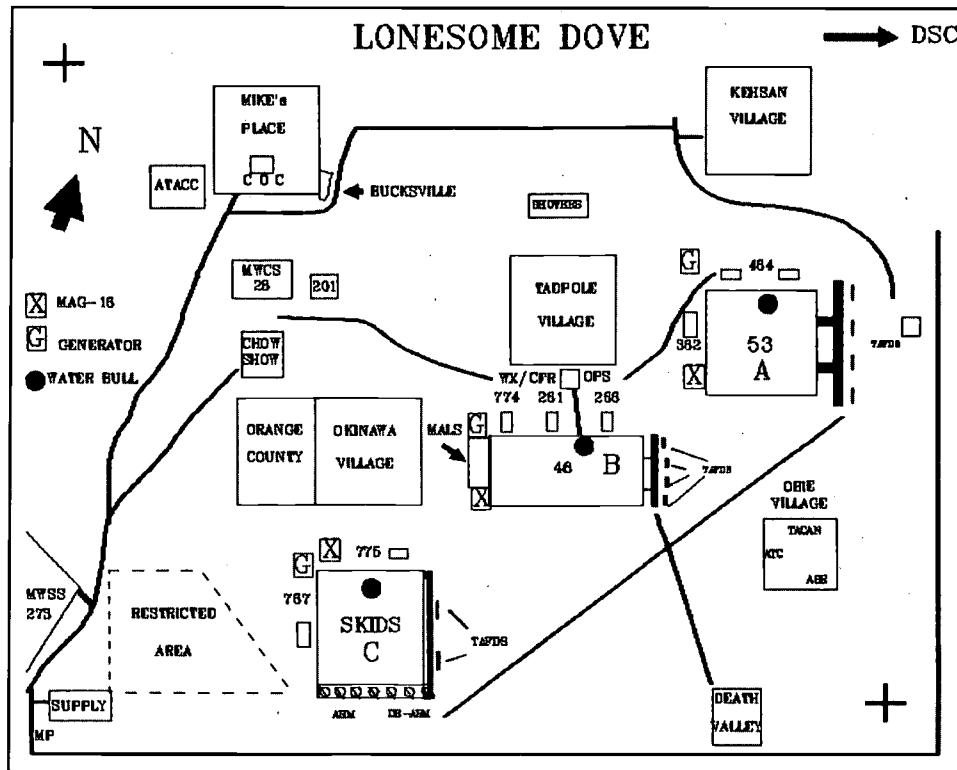
### *Last-Minute Aviation Issues*

MAG-26's movement to an area near Al Khanjar named Lonesome Dove proceeded with the squadrons arriving between 16 and 20 February. Lonesome Dove became a functioning air base built up from what was a bare stretch of desert. The helicopter tactical air command center (HTACC) was operational for communications purposes by the 19th. AM-2 matting (an aluminum material used in expeditionary airfield construction) went down quickly because very little soil preparation was required, but the transportation of the material was a MEF-wide project requiring all available motor transport assets. Matting was even pulled up at Jubayl to get enough matting out west to keep the helicopters "out of the dirt." Colonel Larry T. Garrett would later state that the MAG-26 building of and deployment to Lonesome Dove was "an absolutely splendid piece of expeditionary work . . . that built an airfield from absolutely nothing . . . in double quick time . . . and a substantial amount of assault support during the ground war was flown from it."<sup>237</sup> Moore made the decision to start moving helicopters to the site, but guarded closely their workload. The reasons were maintenance driven. It required the precious commodity of water to wash the engines to maintain aircraft availability for the ground war.\* On 20 February the first MAG-26 medical evacuation from Lonesome Dove started. At the same time near the new combat service center a simple graded airstrip about 6,000 feet long nicknamed "Al Khanjar International" was operational. Marine KC-130s and USAF C-130s shuttled last minute crucial gear for the upcoming ground assault.

On the fixed-wing side, General Moore directed his planners to draft a 72-hour G-Day ATO. There was a concerted effort to make the ATO for the ground campaign generic and to get it out several days before G-Day. In essence, the same ATO was published several days in a row so that if anything happened at any echelon of the command element, the squadrons would know what to expect. The ATO was primarily a "push CAS" ATO, where aircraft would show up on station at regular intervals. This plan was built to provide the most flexibility to the ground combat element and avoid confusion. Questions still existed as to whether the MEF or 3d MAW should be the focal point in adding additional non-3d MAW assets to fill in requests for support on the ATO of the ground offensive. The wing felt that they had more consistent and appropriate contact with the

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\*Even with these precautions and constant vigilance, after the war squadrons returning home found two-thirds or more of their aircraft engines required compressor blades blending or replacement due to the harsh desert environment (HMM-165 Command Chronology 1Feb-30Jun91).



JFACC to coordinate for additional assets to fill the preplanned needs.<sup>238</sup> The MEF continued to coordinate directly with CentCom for joint air assets.

On the ground-side of the wing, HAWK batteries were moved to cover Al Khanjar and the 2d Marine Division staging area, as well as Lonesome Dove. The MEF was busy painting the roofs of all their vehicles with orange paint to help in identification of friend and foe. They were especially concerned with painting non-military Toyotas and jeeps.

Ordnance was a concern to the end. Numerous requests for assistance went out, because the ordnance ships arrival dates were constantly changing. A February situation report stated: "The ordnance aboard these ships is not resupply. They have aboard part of 3d MAW's initial 60-day requirement."<sup>239</sup> The OV-10s particularly needed 5-inch Zuni rockets for adequate standoff range to avoid the threat. The lack of the 5-inch marking rockets was exacerbated because of the difficulty the OV-10s were having with their laser designators.<sup>240</sup> Even with the shortage of MK-80 series bombs, General Moore took 150 of the 1,000 recently delivered MK-82 bombs and gave them to Bahrain, saying: "I believe this transaction will perpetuate the good will established with the Bahrainis. They expend 15-20 bombs a day."<sup>241</sup>

As the ground offensive approached, the F/A-18Ds were also running out of the preferred 5-inch white phosphorous marking rockets. These rockets would be reserved strictly for night marking and a two-pod 2.75-inch rocket mark was being used in the day. The 2.75-inch rocket was not usable at night because it was

not a distinct enough mark. Two 2.75-inch rockets were being shot down range in the daytime to mark targets. This was initially done to overcome a high dud rate. The two plumes of 2.75-inch rocket smoke had the advantage of giving a distance reference on the ground that was used to talk the pilot's eyes onto the target.

Colonel Garrett, the commanding officer of MAG-16, lamented that the two largest problems he still faced were lack of communications and the failure of the direct air support center (DASC) to be able to control his helicopters. These two problems fed each other to create a disconcertingly large "fog of war" or unknown outcome as the ground campaign approached. As Colonel Garret remarked: "I never with any reliability using tactical communications, have any confidence that I could pick up the phone or radio and contact either my subordinate units . . . the guys that I work for . . . or the guys that I support. It was certainly not a problem with the communicators. . . the people in communications, they worked as hard or harder than any of the folks in theater."<sup>242</sup> Even before 17 January, when the helicopters were at static positions for several months, there would be many days when the only way to get a tasking order for the next day's flights was to launch a helicopter from Jubayl to Ras Al Ghar or Manifa. These two sites were only about 20 miles from the MAG-16 headquarters.

As the ground operations were about to start, MAG-16 was spread even further, with no additional communications assets. Communications, which had not worked that well up to this point, were going to have to be maintained or expanded. 3d MAW's command and control system was widely separated. The main tactical air command center (TACC) was at Jubayl, the helicopter tactical air command center (HTACC) at Lonesome Dove, and the direct air support center (DASC) with the MEF headquarters, moved from Safaniya to Al Qaraah West. MAG-16's main headquarters was at Tanajib, with its forward command post with MAG-26 at Lonesome Dove. There were helicopters with both divisions' command posts, with medical evacuation helicopters at the clearing companies, and attack helicopters at forward arming and refueling point (FARP) sites.

As Colonel Garrett remarked: "We spent into the wee hours of the night, every night, just trying to figure out where our helicopters were . . . you could call the DASC . . . when you could talk to it . . . and ask where 'Hotel 101' was, and they would have no idea . . . Now there are two problems—one, communications, and number two is that I know from personal experience that 'Hotel 101' checked in with the DASC and told them where they were and what happened to them . . . at the DASC, I don't know what happened, but that thing did not work!"<sup>243</sup> This was a manifestation of having the direct air support center collocated with the MEF main headquarters, which was too far to the rear. It became a large conduit for information flow to the MEF headquarters rather than its primary mission of being in a place where it could communicate and control aircraft.<sup>244</sup>

Additionally, battle damage assessment (BDA) continued to be a problem. There was a tremendous amount of pressure put on BDA in the days prior to the ground campaign. Lieutenant Colonel Stephen F. Mugg, commanding officer of the F/A-18D squadron VMFA(AW)-121, would recall: "BDA was a particular-

ly difficult problem. We used in the end a very strict conservative evaluation. There was probably more destroyed than we reported because if we didn't see a secondary (explosion), we would give an unknown for the BDA. The reason we could not do a good BDA was because of the same old reasons of airspeed, altitude, and the threat environment . . . you can't simply go down there and park beside a bunker and say, yeah I see 15 of this or that. You had to make your estimates based on where you could get to and how low you could go based on the threat. The lower you went, the faster you went, so the less time you had to look . . . If you left it burning you know you hit it. And that was the pretty simple standard that we established after about the second week of the war.”<sup>245</sup>

The main thrust for intelligence assets at MEF was for target validation rather than pure battle damage assessment. The MEF G-2 appeared satisfied at least at this late date that the major subordinate command's targets were validated by the myriad of collection assets, both national and theater, being used.<sup>246</sup> This level of information was certainly not making it to the squadrons that had to carry out the attacks.

Some other procedural changes were made shortly before the ground offensive to simplify the attack of targets being controlled by the F/A-18D Fast FACs. It was an unnecessary procedural delay to require covered communications once over the target area. General Moore directed that while under the terminal control, communications would be “in the red” or uncovered. This included passing of target locations in the standard nine-line close air support brief. The second simplification was that all targets were passed in latitude/longitude. It became the aviation community standard and avoided many of the early problems with different grids from different map sources. Finally, a two-plane section of attack aircraft over the target area at any particular time proved the most expeditious means of getting ordnance on target. A four-aircraft division was too large. It lengthened and complicated the administrative requirements to keep separation of all the aircraft, and with a dose of weather or smoke, made midair collisions a greater threat than the enemy.

General Moore focused his fixed-wing assets on MEF targets and would later comment: “With General Schwarzkopf’s acknowledgement, about 15 days prior to the ground campaign, we were into battlefield preparation. At that time if a target didn’t do something for I MEF and battlefield preparation, we weren’t going . . . we weaned ourselves out of any deep strike support.” There was the “reasonable officer” factor that played into this withdrawal from deep bombing. There were trade-offs back and forth between 3d MAW and the AFCent even during this late battlefield preparation phase. General Moore described a trade-off conversation with General Horner: “General Horner would come to me and say ‘Hey, Royal, if you can hit these rail yards or this power line, I will give you 75 A-10 sorties as a trade off. If you can give me one more strike group late in the afternoon or in the morning, I will give you these F-16s or these F15Es.’<sup>247</sup> This give and take allowed 3d MAW to engage far more I MEF targets and priorities.

An example of what 3d MAW could accomplish when weather conditions were favorable occurred on 17 February. The wind had shifted from the north to

the south and the smoke from the oil well fires cleared some to reveal several concentrations of enemy forces. The most prominent was about nine miles southeast of Al Jaber airfield in Kuwait. The wing flew 222 sorties and reported a conservative BDA of 3 communication vans, 6 AAA sites, 10 buildings, 17 tanks, 46 artillery pieces, and 57 vehicles.<sup>248</sup> By the 19th, weather would again cancel many sorties.

HMLA-369's Cobras, as late as G-1, the day before the ground campaign commenced, in conjunction with their own forward looking infrared (FLIR) equipped Huey as a designation platform, found that the oil fires made their designation efforts difficult to impossible. Company C, 2d Light Armored Infantry attempted to use the Cobra/Huey package on tanks in the vicinity of the Minagish Oilfields with limited success. Their own ground laser designation capability proved ineffective on this night mission, and the Cobras had to fly within 1,500 meters to get effective tank kills.

### *MAG-50 Joins the Fight*

In accordance with earlier plans, on 15 February, Detachment B, VMA-513, under the command of Major Eddie L. Holcomb, flew off the *Tarawa* (LHA-1) to King Abdul Aziz to join up with MAG-13 (Forward). After a short orientation period with its new command, the detachment found itself in the combat sortie lineup on the 17th.

On the 16th, General Moore met with 5th MEB staff members to discuss the integration of the remainder of MAG-50 into the wing's air effort. All would not go as smoothly as planned.

Events out in the Gulf quickly served to alter the plan. On 17 February, the *Tripoli* (LPH-10) struck a mine only five days after being assigned to support mine countermeasure operations. Although still carrying Marines, the ship had been pressed into service as a mother ship for the Navy's antimine warfare helicopters. Unfortunately, NavCent did not realize that the Iraqis had sown their minefield much farther out to sea, and thus the *Tripoli* and half a dozen other ships were operating inside mine-infested waters rather than on the edge.

Taking on water but out of immediate danger, the *Tripoli* departed. NavCent decided to replace her with the *New Orleans* (LPH-11), which carried the headquarters of MAG-50 along with HMM(C)-268 and BLT 3/1.<sup>249</sup> Thus, short one LPH already due to mine damage and with elements of the 5th MEB slated to go ashore in support of I MEF after G-Day, NavCent and MarCent agreed that the Marines on board the *New Orleans* would be immediately offloaded. With much of MAG-26 already on the way to Lonesome Dove, the 3d MAW ordered MAG-50 to come ashore at Tanajib. They would be tasked like any other helicopter asset in the helicopter ATO being produced from the HTACC at Lonesome Dove.

At this point the several war game simulations from outside of theater anticipated about 10,000 friendly casualties during the ground attack into the teeth of Iraq's prepared defenses in Kuwait. The CH-46 would be primarily reserved for

medical evacuations. Even if the casualty rate was one tenth of the Washington predictions, the CH-46s would be busy, and MAG-50's assets would be welcomed.

On 21 February, a single light antiair defense vehicle (LAAD) HUMMWV with six Stinger missiles was destroyed by enemy mortar fire while in support of 2d Marine Division. No Marines were injured. 3d MAW aircraft would continue to defy the odds as damaged aircraft were making it back to base. Also on 21 February, at about 1545 local time, a F/A-18D was struck by a surface-to-air missile at about 10,000 to 12,000 feet, while pulling off a target. The aircraft had just previously pulled through a 6-G (six times the force of gravity) turn out of a cloud while deploying flares at around 6,000 to 7,000 feet. The aircraft returned to Shaikh Isa with damage to the right engine and stabilizer. At 2110 the same day, an A-6E call sign "Blaze 66" was hit once in the tail section with antiaircraft artillery fire. The pilot was not aware of the damage until after returning to base.

Helicopters did not fare so well during February. On 2 February, at about 1840, HMA-775 suffered a major accident (Class A Mishap), not involving direct enemy action. Major Eugene T. McCarthy and Captain Jonathan R. Edwards flying an AH-1J Cobra crashed in the Saudi Arabian desert during escort of a night emergency MedEvac. Both pilots were killed. On 3 February, HMLA-369 lost a UH-1N Huey with all four crew members in a flight not involving direct enemy action. Captains David R. Herr, Jr., and James K. Thorp, along with Corporals Kurt A. Benz and Albert G. Haddad, Jr., were killed in the mishap. And, on 20 February, HMM-165 lost a CH-46E returning from a priority night mission when it ran into a fog bank. While attempting to land at an unprepared dusty site the aircraft touched down with a sideward drift and rolled over. The internal fuel tank ruptured and caught fire destroying the aircraft. The crew escaped with minor injuries.

Napalm and fuel-air explosives (FAE) ordnance were dropped in the last few days before commencement of the ground campaign. Concentrations were dropped on the first and second obstacle belts where the MEF would have to fight its way through. The focus of these final preparations was on enemy trench lines and nearby artillery. Sortie rates increased daily to attain surge rates by G-1 and continued as required thereafter. A surge rate is easy to shut down, but considerably more difficult to start back up.

General Moore met personally with the helicopter group and squadron commanders on the 22d, to ensure they understood how helicopter assets would be positioned and what was available on the first three days of the ground campaign. However, Moore expressed his uneasiness with the medical evacuation system. He believed operational commanders needed to make the decision on MedEvacs rather than the medical people who made the decisions up to that point. His concern was that they would run out of MedEvac assets with the long flights by helicopters shuttling back to the naval hospital set up at Jubayl.<sup>250</sup>

The wing would also begin staging gear and planning for the take over of Al Jaber Airfield in Kuwait for forward basing. Detachment C, MATCS-38,

would begin pre-staging at Tanajib on 23 February. The Assistant Wing Commander, General Amos, reported helicopter preparations complete and Lonesome Dove ready. General Moore reported good battle damage was accomplished despite the smoke, with more than 450 sorties being flown for the final battlefield preparations supporting the MEF's breaching operations. And finally, on G-1, he sent: "To both divisions and the FSSG as you join the fight, I wish you Godspeed and good hunting."<sup>251</sup>

*G-Day, 24 February\**

Command and control configured Hueys flew support for nearly all the commanders in the war, to include General Boomer, down to all the task forces and some battalions. At 0610 on 24 February, the first day of the ground offensive, a HMLA-369 Huey took off from the 1st Marine Division's combat operations center with the 1st Marine Division's commanding general, General Myatt, the division's operations officer, and Task Force Ripper's fire support coordinator on board. The Huey proceeded to the first breach site and observed Task Force Ripper's progress until rain and low visibility forced the aircraft to return to the division's combat operations center. Several hours later, bad weather continued to preclude another launch, and General Myatt joined the ground forces to maintain situational awareness of the battle.<sup>252</sup>

General Myatt described the process and concern for air support during the breaching operations: "We knew that if we got hit by artillery between the obstacle belts, especially chemical rounds, they could really hurt us. We also knew that our artillery was going to be outranged because the first and second belts were 18 kilometers apart. So we had to create lanes in those obstacles to move the artillery through to support the breach of the second obstacle belt. Here's where General Moore instructed his F/A-18Ds on what to do on the 'quickfire' radio channel if we took incoming artillery rounds in the two belts. We had AN/TPQ-36 counter-battery radars, set to locate the Iraqi firing positions, linked directly with the FastFACs, who in turn directed attack aircraft onto the target. Of course our own artillery was also tied into this net . . . Between 0600 and 1400 on that first day, we had 42 instances of incoming artillery . . . the TPQ-36 picked up the source grid, and we were able to use our artillery to attack 24 of the 42 targets. The remainder were attacked by Marine AV-8B aircraft within a few minutes of the artillery fire being detected. I am very proud of that air-ground coordination."<sup>253</sup>

General Moore was also pleased with the control of aircraft. The system seemed to be handling the large number of fixed-wing aircraft surging into the small Kuwait Theater. Aircraft control and deconfliction requirements would remain the limiting factor in numbers of aircraft that could safely support the ground forces. The "push CAS" worked. Due to light Iraqi resistance the majori-

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\*G-day, the designation for the commencement of ground operations, was 24 February 1991.

ty of the aircraft would move on to the deep stacks for interdiction, and were usually further controlled by F/A-18Ds.

Every four hours the commanding generals came up on a command net for a conference call. General Moore found the command conference calls held between the MEF and his major subordinate commanders every few hours to be extremely effective. They added considerably to the operational picture. Moore found he had essential information to add to the MEF's overall battlefield picture. The outcome of this was to add an F/A-18D over flight of the battlefield for the sole purpose of gathering information on positions, weather, and enemy concentrations ahead of the ground forces. It was by no means a benign environment.

1st Marine Division would count the breaching operations as going much easier than planned. Task Force Grizzly and Task Force Ripper were both through the first obstacle belt in the morning and rapidly moving toward the second obstacle belt through sporadic direct and indirect fires. They overcame unexpected minefields and a brief period of being engaged by fellow Marines in poor visibility of the early morning. Medical evacuation helicopters moved casualties from as far forward as the weather and visibility allowed. HMM-165 would also carry medical evacuations of four Saudis to the fleet hospital back in Jubayl on this first day. These medical evacuations were nothing new. They flew on nearly a daily basis for the entire period of Desert Shield carrying the injured, and vehicle accident victims. The difference now was that business had picked up and they were more often ordnance-related victims, which included Iraqi prisoners of war.

At about 1010 on the morning of G-Day, infrared guided surface-to-air missiles hit two F/A-18As from VMFA-314 flying together against targets west of Kuwait City. Both aircraft were heading north on egress from a target and putting out flares. One aircraft was hit at 6,000 feet and his wingman hit at 8,000 feet, each sustained damage to the engine or engine bay. The target was overcast with a solid layer of clouds at 10,000 and 25,000 feet. Major Robert M. Knutzen and First Lieutenant Scott M. Quinlan piloted their now single-engined aircraft safely to Shaikh Isa. Both aircraft were repaired and returned to the flight schedule within 36 hours.

#### *Task Force X-Ray*

MAG-16 and MAG-26 were given the Task Force X-Ray mission to insert a blocking force to protect the left flank of Task Force Papa Bear after it breached the second obstacle belt. The operation was to be an on-call, emissions controlled (EMCON), day mission starting at sunrise on 24 February.\* It could not be executed after 1645 or it would become a night-vision goggle evolution, for which the aircrews were not briefed or in some cases not qualified to carry out. The commanding officer of the "White Knights" of HMM-165, Lieutenant

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\*EMCON is a condition where the radio emissions of the aircraft involved in a mission are controlled. In the most severe of EMCON conditions to be set at brief time, no radio calls, radar, or radar altimeters can be used. This is done to avoid having the enemy detect the flight prior to or during the mission.

Colonel Marvin D. "Sam" Hall, was assigned the mission commander role for helicopter lift of Task Force X-Ray. Major Raymond E. Schwartz III, the operations officer of the White Knights, was assigned as the airborne helicopter coordinator and would conduct the mission from the back of a command and control configured UH-1N Huey. On board the Huey would be Captain Christopher C. Conlin, the operations officer for the ground element, and Lieutenant Colonel Michael V. Maloney, the commanding officer of 1st Battalion, 3d Marines.

During the initial planning, Lieutenant Colonel Hall had to travel between MAG-16 and 1st Marine Division because of the lack of covered communications between the two sites. Communications difficulties among the Marine air groups necessitated that the helicopters from MAG-26 were not briefed until 1630 on 23 February at Landing Zone Sandy.\* A one-wave assault was decided only two days before G-day, and required the 52 helicopters that were now arrayed in Landing Zone "Sandy" to lift the 132 troops and 40 vehicles.\*\* This would be the largest Marine combat heliborne operation since Vietnam. It would consist of about four aircraft from every squadron in MAG-26 and MAG-16.

The plan called for five flights of helicopters separated by two minutes each. The lead flight consisted of AH-1W and AH-1J Cobras to escort the helicopters to the insert zone in addition to the command and control Huey. The following four flights consisted of 10 to 12 transport helicopters of either CH-53s or CH-46s. The mission commander, Lieutenant Colonel Hall, was in the lead CH-46 of the first flight. The brief was thorough and included sand tables and an expected update on the route by an unmanned aerial vehicle (UAV) the following day. The UAV, however, did not update the route as expected. The briefed "go/no-go" criteria included: a mission launch before 1645; 60 minutes prior notice to coordinate priority fires from all fire support agencies; insert Task Force on the friendly side of the second breach if the primary landing zone was untenable; and minimum enroute adjustments or delays could be accepted because the CH-46s were at the limit (50 miles) of their combat radius. Additionally, on the evening before the lift, at Landing Zone Sandy there were numerous loading problems requiring ingenious "work-arounds" by the crew chiefs and the X-Ray insert force. What sleep was available was grabbed in, around, and under the aircraft.

Task Force X-Ray was ready and on-call at sunrise on 24 February, though it realistically expected to launch anytime after 1200. The crews and troops were patiently waiting with their chemical suits on, and ready to fly into a chemically contaminated environment.\*\*\* Word that there were enemy tanks in

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\*Lieutenant Colonel John F. Pettine, commanding officer of HMM-266, found out on 23 February that he was to supply four aircraft and crews to Landing Zone Sandy at 1400 for a large trooplift: "Four aircraft from each squadron... with no rehearsal is not the way to go" (Lieutenant Colonel John F. Pettine intvw, 21May96).

\*\*HMM-165 February 1991 Command Chronology states 52 aircraft. Several other sources note 51 aircraft.

\*\*\*MOPP 4 was a condition of nuclear, biological, and chemical readiness requiring the wearing of a charcoal-impregnated top and pants, rubber gloves, rubber overboots, and gas mask.

the insert-landing zone reached the mission commander by courier in the morning. The mission commander had no radio contact with the helicopter tactical control center at Lonesome Dove Air Base, only 10 miles away. The 1st Battalion, 3d Marines, combat operations center was the focal point for radio contact from Landing Zone Sandy. They had good contact with the 1st Marine Division as the lead element, as Task Force Papa Bear, began breaching the second obstacle belt. At 1400, the 60-minute prior to launch signal was given to the crews by a white star cluster rocket. Marines buckled in and flight crews made their final preparations. Approaching 1500, several pilots started their auxiliary power units, which is the only way to have radio communications with the aircraft without the engines and blades turning. The act of communicating with the aircrew was impossible without meeting face to face. The aircraft were spread over more than a mile in Landing Zone Sandy. Aircraft were aligned in the wind direction from their landing of the afternoon before, and mostly in the order they would take off.

The waiting went on. It was now 1600 and some of the pilots walked toward the lead aircraft and briefing area. Those pilots received the change that the mission was to be with night vision goggles and without gas masks. All aircraft were not represented in the new brief. Mixing of a night vision goggled crew within a flight of non-night vision goggled crew and aircraft was prohibited for safety concerns. Lieutenant Colonel Hall initially declined the new 1730 mission, but was directed by division that it was a go. He then tried to delay the night orders to rebrief the aircrews. He contacted the 3d MAW tactical air command center on relayed radios. A garbled response from 3d MAW command center 10 minutes later indicated the mission was to go. The Marines had a job and they were going to do everything they could to make it work.

From the ground perspective, Task Force X-Ray was needed to protect the 1st Divisions' flank so that Task Force Papa Bear could continue with its attack on Al Jaber Airfield on time. Papa Bear had been intermittently engaged with the enemy in the vicinity of the landing zone since they had breached the second obstacle belt. Night did not pose the ground commander of Task Force X-Ray many problems. However, as Captain Conlin flying in the command and control Huey remarked, from the air perspective having more than 50 helicopters flying unprepared, unrehearsed, low level at night, under clouds, and through a smoke-filled battlefield to a sand covered landing zone, "was a sobering thought."<sup>254</sup>

The wind was almost the reverse of when the aircraft had landed the afternoon before. This would blow the rising cloud of dust in front of the launching aircraft, restricting view for much longer. A tail wind also added to the amount of power required for these heavily laden aircraft to gain speed and altitude to escape the dust cloud. As the aircraft lifted, a CH-46 rolled over in the dust cloud, but all on board escaped with only minor injuries. The formation of aircraft moved on towards the border belying the difficulty individual crews were having with goggles on/goggles off while trying to maintain bearing and location as they progressed in and out of smoke.

Task Force X-Ray's Operations Officer, Captain Conlin, described what happened next: "I established contact with Papa Bear and received landing 'T' lit . . . I overheard one of the task forces report incoming artillery. Out the open

door of my helicopter I saw a series of flashes to our northwest . . . a call from Cobra escorts that they were over the zone and it looked hot. The Cobras were turning outboard for another pass . . . the LZ below us was invisible because of the glare from hundreds of flaming oil wells to the north. I could see intermittent incoming and outgoing fires on the ground.”<sup>255</sup>

To make matters worse the Cobras had turned into the path of the following transports and aircraft were now making avoidance calls, climbing or diving to avoid each other. The airspace around the landing zone became a jumbled “fur-ball.” Major Schwartz, also in the command and control Huey, turned in frustration, knowing that the flight could not be straightened out, and asked the ground mission commander, Lieutenant Colonel Maloney, to make the abort call, which he did.

The return to Lonesome Dove Air Base was not pretty. The CH-46s, which had run their auxiliary power units for long periods during the afternoon, were now critically low on gas. Some landed in the desert to avoid running out of fuel. Some landed at Kibrit. Others landed at Lonesome Dove for the first time. The CH-53s had more fuel and allowed the CH-46 to land at Lonesome Dove first. It was dark, and even this administrative landing claimed a CH-53 that landed hard enough to drive the nose landing gear though the cockpit.

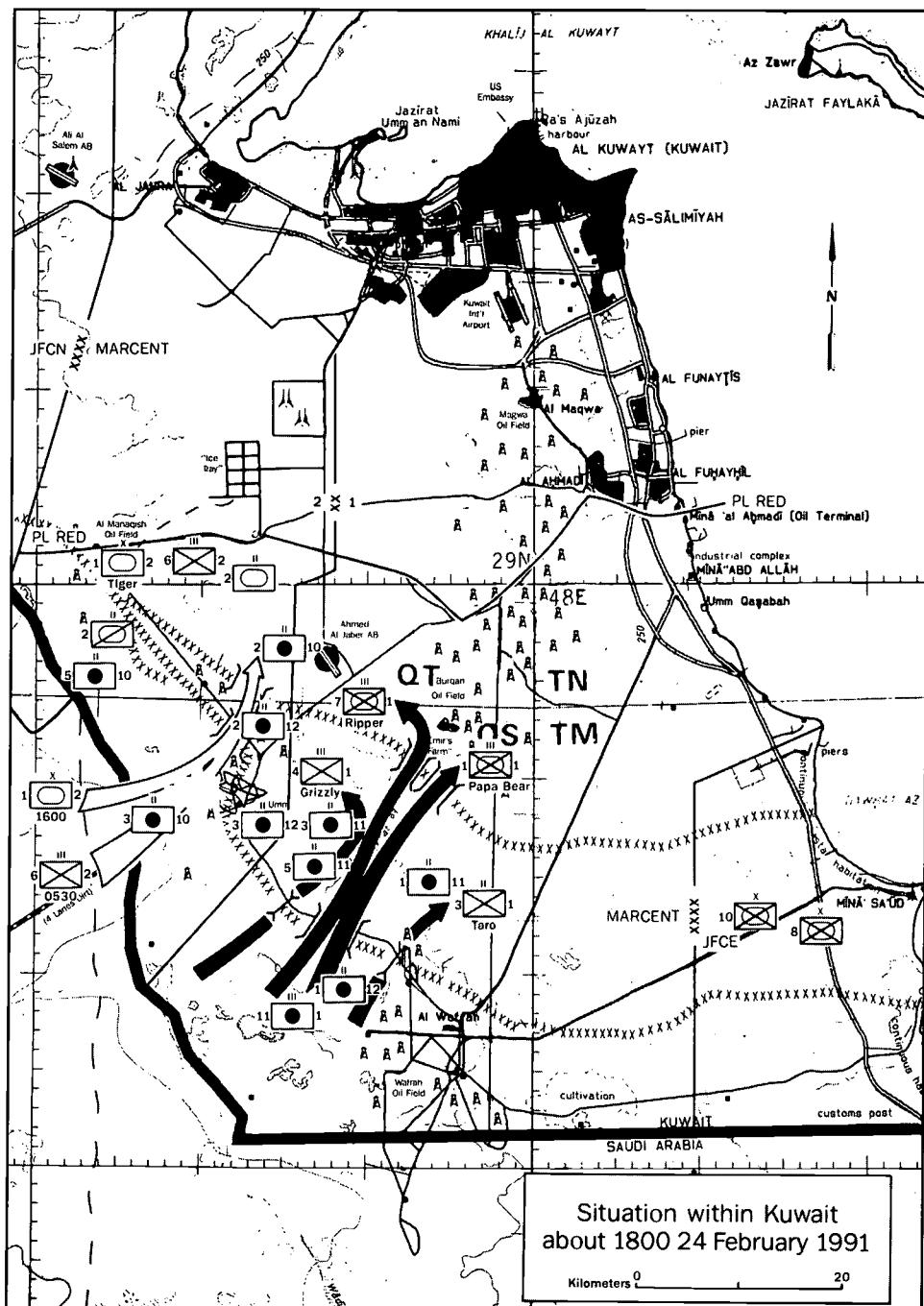
The Marine Corps was lucky on that night not to have lost a Marine. Lieutenant Colonel Aguilar, executive officer of MAG-16 would state: “It appears and I believe it to be true that the launch order came from the ground combat element. The mission was never planned to be run as a night NVG assault. The requirements to execute had not been met. In fact the aircrews were not qualified to do a night NVG assault. Only because of individual aviator skills did we avoid multiple mid-air collisions, and I am not exaggerating that at all. Oh, there were a lot of people that came back with religion [after that mission].”<sup>256</sup>

By the afternoon of the first day, the 2d Marine Division, with the Army’s Tiger Brigade attached, had cleared the second obstacle belt and were spread out north of Al Jaber Airfield in Kuwait. Shelling from Iraqi artillery was sporadic and ill directed due to constant pressure on any artillery tube that opened up and a concerted effort to keep observation posts under fire. This first night the divisions stopped just short of Phase Line Red.

The 1st Marine Division had Task Forces Ripper, Shepherd, and Papa Bear through the second obstacle belts. Captured Iraqis became a major problem in getting the forces through the cleared lanes of the obstacle belts. Engagements were generally brief with a confusion of Iraqis surrendering amid defenders stubbornly resisting. The Iraqi tanks seemed to be the preponderance of the resistance. The call to engage was an individual and sometime difficult decision. Reports from prisoners indicated that an attack was to come “out of the flames” of the burning Al Burqan Oilfield. Cobras and Harriers were used under the direction of

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\*Landing “T” is a set of lights set up by a landing zone control team with a radio to mark the landing zone and provide spacial orientation to the helicopters while landing. In this case with such a large formation in-bound, it would simply mark the landing zone and the wind direction.



OV-10s to reconnoiter and expand Task Force Papa Bear's breach site north of the second obstacle belt. By the end of this first day, nearly all of both Marine divisions would experience the surreal ominous atmosphere created by the rumbling burning well heads as they spewed clouds of dense, dark smoke across the battlefield. Ground crews, which had night vision devices, used them to see what they could before night fall.

Despite the weather and visibility, one or two divisions of four Cobra air-

craft flew the entire day in support of each attacking Marine division. They remained in constant demand, engaging tanks, armored personnel carriers, multiple rocket launchers, observation posts, and bunkers.

A division of Cobras, lead by Captain Randall W. "Spanky" Hammond flew a unique mission on night vision goggles at about midnight in support of the 1st Marine Division on this first night of the ground offensive. In what would become the standard over the next few days, when the command and control system could not get fixed-wing aircraft down through the cloud layers and smoke to address a threat, the Cobras were brought forward. What was unique on this mission was the distance beyond friendly lines that the Cobras would finally find and engage the threat. The 1st Division's air officer, call sign "Impala," directed Hammond's Cobras north to engage a reported column of T-72 tanks moving towards the division. The T-72's were north of the "Ice Tray" in the vicinity of Ali Al Salem Airfield, which was deep into "Indian Territory." The four Cobras with infrared chemical lights taped to their aircraft went into a close trail formation so that they could penetrate the thick smoke at about 1,500 feet. On night vision goggles the largest signature was the engines of the Cobra directly in front. They punched through and coordinated their position with a section of OV-10s from VMO-1 that had the tanks under observation on their forward-looking infrared. The OV-10s laser-designated the tanks and the four Cobras launched all eight of

*The air and ground assault into Kuwait took place under dramatic conditions caused by burning oil wells, turning day into night in some cases. In this instance a Marine Cobra overflies a motorized column.*





*Hits on target also produced spectacular results, as this Iraqi tank “cooks-off” after being hit by allied fire. For purposes of bomb damage assessment, secondary explosions were a prime indicator of target destruction throughout the conflict*

their Hellfire missiles with good secondary explosions on the tanks. The Cobras then divided into two sections with Hammond’s section throwing up flares and Captain Steve R. Rudder’s section firing TOW missiles, again with the tanks stopping and a couple of spectacular explosions. Captain Hammond realized that he was in a hover over some manned “bermed-in” T-62 enemy tanks and called the Cobras to quickly depart. Captain Rudder’s section raked the position with 2.75-inch rockets and 20mm guns as it departed.<sup>257</sup>

The next morning, there was an initial request for Task Force X-Ray to be inserted at first light. A different mix of aircraft was put together to insert Task Force X-Ray in the same landing zone, and free up Task Force Papa Bear. Lieutenant Colonel Hall remained mission commander, but the plan was changed to a two-wave insert with 30 helicopters. Aircraft were pulled out to support numerous other taskings as both divisions pressed on and the combat service support moved in trail. Therefore, a first light launch was impossible, but by 1100 the flight was ready. However, it was held while Task Force Papa Bear again engaged enemy in the landing zone.

A forward arming and refueling point for helicopters had been established on the friendly side of the 1st Marine Division breach site near the border Observation Post 4. This would increase the sortie rate of the Cobras dramatically. Captain “Spanky” Hammond’s four-aircraft Cobra division departed Lonesome Dove for work with Task Force Papa Bear at 0745. Again it was a foggy morning and smoke kept the ever-present OV-10 from bringing F/A-18s to

bear on a threat moving from the southeast towards Task Force Papa Bear. This turned out to be the Iraqi 22d *Mechanized Brigade* of armored vehicles emerging from the smoke.

The OV-10 talked the Cobras onto the armored targets while Task Force Papa Bear engaged with TOW missiles. "Spanky" Hammond's Cobras needed no encouragement to pick one target after another and fire their 16 TOW missiles in about three minutes. The Cobras were about 3,000 meters ahead of the friendly troops, with every missile leaving a burning vehicle. Within another seven minutes they had fired all 16 of their Hellfire missiles at new targets, and the battlefield was now full of burning, smoking armored vehicles and tanks. Enemy troops were now moving forward from among the vehicles without any sign of white flags. The Cobras then used their remaining 2.75-inch rockets and 20mm guns to delay the enemy's forward movement, and returned to the forward arming and refueling site with no ammunition left. The pilots jumped out of the aircraft to quickly assist reloading the missiles while the ground ordnance troops loaded the more difficult 20mm rounds. The Cobras then returned to the vicinity of Task Force Papa Bear's command post where they observed a T-59 Chinese variant tank roll up with a white flag.

At about 1000, the fog began lifting and a forward air control OV-10 spotted a build-up of enemy armor to the northeast of the two Iraqi brigades counterattacking General Myatt's 1st Marine Division out of the Al Burqan Oilfields. Marine fighter attack aircraft took advantage of the improving visibility to pound the gathering force, which fled into the smoke.

Meanwhile Task Force Shepherd was attacked by a brigade-sized force and countered it with TOW missiles and thermal sights. The 1st Division's command post, which was just outside of one of the only forested areas in Kuwait, referred to as the Emir's Farm, was under attack as well. By 1015, and the second attack on the division's command post, Cobras had been added to handily repel the counterattack.

Task Force Ripper was supported in a similar manner by four Cobras for the entire day as they attacked around the Al Jaber Airfield. The Cobras played a key part in suppressing observation posts, which directly impacted on the enemy's ability to control directed artillery and rocket fires. Laser guided Hellfire missiles would have intermittent success depending upon who was doing the designating, and the range of that designation.

Task Force X-Ray was launched about 1200, but because the intended landing zone was full of prisoners of war and burning equipment, an alternate landing zone between the two obstacle belts was used. X-Ray finally moved the remaining distance on the ground and linked up with Task Force Papa Bear by 1500.

By noon, both divisions had reached Phase Line Red and Iraqi counterattacks seemed to have played out. The 2d Marine Division, to the west, was to attack and seize MEF Objective B, a main supply route intersection near Al Jahra. The 1st Marine Division, on the east, was to attack and seize MEF Objective C, the Kuwait International Airport, located 15 miles south of Kuwait City, and on

the southern edge of the built-up area. What little sun and burn-off that occurred was now rapidly disappearing under cloud cover.

During the day, Task Force Grizzly had been moved up to take the bypassed Al Jaber Airfield, and its attack began at 1602. At 1722, the preparation fires struck Al Jaber. The Iraqi *449th Artillery Brigade* countered with fires that cost Task Force Grizzly 12 wounded and one killed. Most of the outer buildings of the airfield were taken by 2100. The remainder would wait for first light.

The 2d Division had fought its way to Phase Line Horse, and took advantage of pre-planned air attacks on trenches, bunkers, and dug-in tanks at two prominent terrain features noted as "Ice Cube" and "Ice Tray." Marine attack aircraft were now pressing the altitude restrictions even lower to more effectively attack their assigned targets. Attacks and re-attacks inside kill boxes were now pressed into a shrinking area as the fire support coordination line moved north and the ground forces occupied more of Kuwait.

Most of the scheduled fixed-wing close air support missions continued to be in the kill zones beyond the fire support coordination lines and working with the F/A-18D Fast FACs. The Cobras and Harriers often used the OV-10 as an airborne forward air controller to get them to targets. Actual close air support missions controlled by a ground forward air controller (FAC) were rare in comparison to the number of total missions flown. Commenting on the difficulties of a close air support mission, Colonel Rietsch noted:

I flew a close air support mission for the grunts and the biggest problem we had was—luckily the target they wanted us to hit was very, very definable and visually could be able to talk the guy on. They tried to mark the targets for us with artillery and they couldn't get a really deep phosphorous artillery round within a thousand meters of the target.<sup>258</sup>

The Cobras, in delivering their close in fire support, had nearly as much trouble working with the ground forward air controllers (FAC). As HMLA-369 would note in their command chronology, they had built up a close working relationship with the ground forward air controllers of the 1st Marine Division during the many exercises of Desert Shield. They were somewhat less comfortable with the forward air controllers of 2d Marine Division, especially with their laser designating capability.<sup>259</sup> The ground FAC would rarely be able locate and identify Iraqi targets, even when they were delivering fire on them.<sup>260</sup> Routinely the ground forward air controller would talk the lead Cobra aircraft into the general area of the Iraqi position, and then ask him to identify the target with his telescopic sighting unit (TSU). The Cobras, due to poor visibility caused by haze and smoke, were seldom able to identify the target at more than 1,500 meters, and at times aborted to avoid the possibility of fratricide. This type of engagement had crews actually hovering over enemy positions ahead of the forward line of friendly troops and engaging enemy vehicles at close ranges. These distances were well short of their weapons' more favorable stand-off ranges.

Intelligence down to the squadron level was a problem as well. The best

Table: Direct Enemy Action Losses

DATE	SQUADRON	PERSONNEL	STATUS
17 January 1991	VMO-2	LtCol Acree CWO4 Hunter	POW POW
28 January 1991	VMA-311	Capt Berryman	POW
9 February 1991	VMA-231	Capt Sonborn	POW
23 February 1991	VMA-542	Capt Wilboun	KIA
25 February 1991	VMA-542	Capt Walsh	Recovered by friendly forces.
25 February 1991	VMO-1	Maj Small Capt Spellacy	POW KIA

information pilots received was, first, from the returning aircraft; second, from the F/A-18Ds in the fast forward air controller role; third, from the airborne direct air support center (DASC[A]); and finally, in the case of OV-10s and helicopters, from the ground air officers. The squadron intelligence was always a day late in any threat brief. The only way to get a current indication of the forward line of troops was through the DASC(A) or ground FACs.

At 0935 on 25 February, VMA-542 lost its second AV-8B of the war. Captain John S. Walsh, call sign "Jump 42," was shot down under the cloud deck of 11,000 feet in the vicinity of Al Jaber Airfield by a probable hand-held surface-to-air missile. He ejected and was recovered minutes later in "no-man's-land" by Marines attacking Al Jaber. A Huey from HMLA-369 picked him up at 1400 and returned him to Lonesome Dove.

About 1400, an OV-10 from VMO-1 piloted by Major Joseph J. Small III, the squadron's aircraft maintenance officer, with Captain David M. Spellacy as the aerial observer, was lost while on a forward air control airborne mission. An AV-8 pilot saw the OV-10 maneuvering from antiaircraft artillery fire. He next observed an explosion in the air in the vicinity of the OV-10 and later saw the wreckage. A report from the surviving pilot, Major Small, after spending 10 days as a prisoner of war, indicated the loss was from an infrared guided surface-to-air missile. Captain Spellacy was initially listed as missing in action and later declared dead from enemy actions.<sup>261</sup>

The radar warning receiver (RWR, most often pronounced 'raw gear') in the OV-10, as in most of the helicopters, was the ALR-39, which was nothing more than a "fuzz buster" that points with a strobe in the direction of the threat. The strength of the strobe is supposed to give an idea about the range of the threat. It did not indicate the two primary threats that shot down 3d MAW aircraft, which were undirected antiaircraft artillery and the shoulder-fired infrared surface-to-air missile (IR SAM). Nearly any type of radar could set off the ALR-39, as Captain Daniel P. Gannon of VMO-1 noted: "It's a terrible piece of equipment. All it did was manage to . . . scare the hell out of me more than anything. We were locked up by our own people . . . by everybody in the world . . . no discrimination . . . It just didn't help at all."<sup>262</sup>

During the war, 3d MAW aircraft conducted several psychological warfare operations. On occasion A-6s were tasked to drop leaflets. Hueys often were

tasked to fly with a 2,700-watt loud speaker system with pre-taped messages and an Arab linguist. A typical psychological operation mission was flown by a section of Hueys on the night of 25 February with night-vision goggles near Al Jaber Airfield. Iraqi troops came out to surrender to the voices, and their locations would be forwarded to the nearest friendly troops. Forty-four Iraqi troops surrendered to Task Force Ripper from this night's mission. Lieutenant Colonel William C. Grubb, Jr., from the MEF would make an important observation concerning the Iraqi prisoners: "The key factor was that to a man the Iraqi prisoners I talked to said it was stupid to be in Kuwait . . . They would tell us that fighting the Iranians was a fairly important thing to do . . . but fighting the United States over Kuwait was idiotic. We don't know how good these guys could have been, because they didn't want to be there; not because they were necessarily scared of us—although 40 days of pounding from the air and naval gunfire had its effect. They thought fighting us for Kuwait was the dumbest thing they had ever been exposed to and they were so happy to get a chance to survive."<sup>263</sup>

At about 0130, General Moore received indications from an F/A18D on night-vision goggles that a major Iraqi retreat from Kuwait City was taking place. General Boomer decided to close the door and ordered 3d MAW to launch as many night attack aircraft as possible onto the main road out of Kuwait City. Rainy weather again restricted the attack to A-6s and F/A-18s with night attack forward looking infrared radar capability. The first A-6 attacks bottled up the corridor with CBU-78 Gator air-delivered mines. This forced the retreating traffic off the highway and around the bottleneck into the desert.

#### *G + 2, 26 February*

Dawn on G + 2 was not characterized by fog as on previous days, however, with a wind shift the smoke was at times too thick for sunlight to penetrate. The road out of Kuwait City was far enough from the black, smoke-filled skies allowed for unrestricted bombing. It was bombed heavily at first light and throughout the day on the 26th, and later became known as the "highway of death."

At 0640, a section of Hueys was launched from 1st Division's command post on an emergency medical evacuation for a patient who had suffered a heart attack at Task Force Ripper's position about five miles north of Al Jaber. Captain David A. Sobyra was the section leader and directed his wingman to set down while he proceeded on slowly, just above the ground in smoke that reduced visibility to less than one-eighth a mile. Approaching the landing zone, based on the global positioning system, the visibility continued to decrease. The forward air controller helped guide Captain Sobyra by the sound from his rotor blades. The patient was picked up and transported to Lonesome Dove. In this case the crew had the global positioning system equipment, a good location, and good terminal communications.

This medical evacuation, though difficult, went as planned. Captain

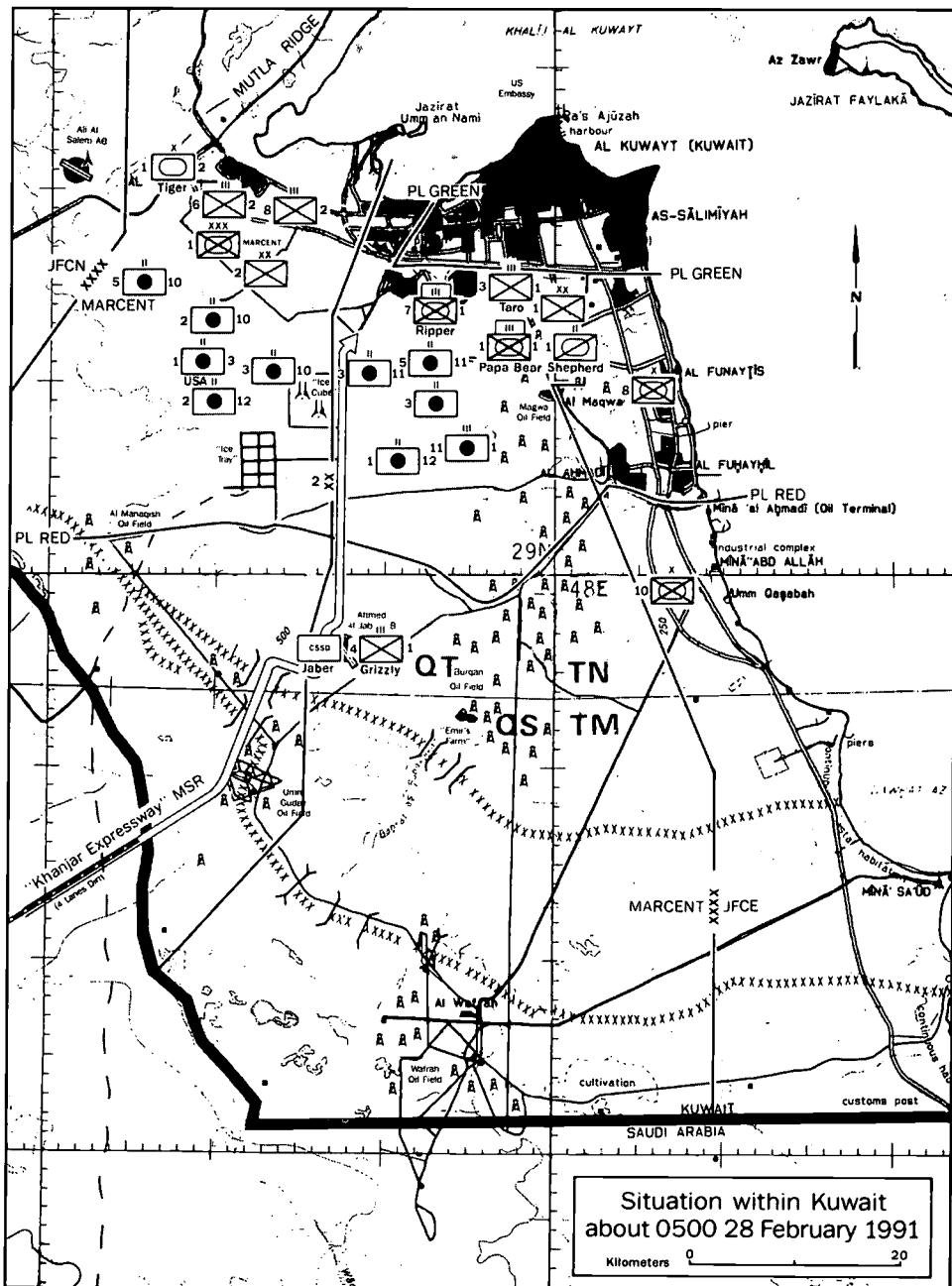


*A Marine Harrier flies over a portion of the "Highway of Death," the route taken as the Iraqi army pulled out of Kuwait. This provided a target-rich environment for air attack in the closing days of the war.*

William F. Davis, who worked as a helicopter "fragger" in the operations section during Desert Storm, later commented on the more normal medical evacuations as he saw them executed: "Airlift and maintenance limitations, limited navigation capabilities, limited communication capabilities, aircrew training, and accurate location reporting are just a few of the problems that I dealt with on a daily basis . . ."<sup>264</sup> Pilots made daily decisions on whether to attempt a mission during adverse weather conditions using antiquated equipment, knowing that word to launch, location, and how to contact the unit may well have been garbled.

Once Task Force Grizzly had reported Al Jaber secure, an echelon of the direct air support center (DASC) broke away from the MEF headquarters and was deployed forward to Al Jaber Airfield to prepare for the main DASC operations. The need for setting up another forward arming and refueling site at Al Jaber was evident from a simple time-distance analysis as the divisions moved north. The prior planning would make this evolution seem simple, though lack of communications plagued this forward site.

Cobras quickly took up Al Jaber as the nearest forward arming and refueling point to support the 1st Marine Division as it continued its attack north. Lieutenant Colonel Michael M. Kurth would earn the Navy Cross for actions in leading Cobras over a 10-hour period though the intense smoke of the burning Al Burqan Oilfields. He would return to the holding point and guide a division or section of Cobras at a time through the smoke and under power lines to the unit that most desperately needed them. Kurth's Huey had an experimental forward looking infrared radar and laser designator that he used with considerable success in directing fires on the most threatening targets facing Task Force Ripper. His



Huey was forward of the friendly lines where he was able to designate the targets. At one point Kurth and his entire crew were flying in full chemical protection gear including gas masks until the area was declared clear of chemicals. The chemical detection tape on their left skid indicated a possible chemical attack. This was later found to have been caused by the smoke of the oil fires.<sup>265</sup>

Three HAWK firing units operated near the border of Kuwait beginning on 23 February. By 26 February, one unit operated out of Al Jaber, another out of Al Jahra, and the third out of Kuwait International Airport.

During the afternoon of the 26th, Major General Richard D. Hearney, deputy I MEF commander at the main command post, ordered Regimental Landing Team 5 (RLT 5) up through the breaches to handle the large influx of prisoners of war. General Boomer had taken his mobile command post and moved into Kuwait near 2d Marine Division headquarters. MAG-50, now ashore at Tanajib, would be tasked by HTACC to fly Battalion Landing Team 3/1 directly to the "Ice Tray" region to handle prisoners of war and provide security for the supply routes.

The 1st Marine Division continued to attack to the northeast until reaching a phase line at a set of east/west high power lines about 10 miles south of Kuwait International Airport. Both Task Forces Papa Bear and Ripper fought a series of skirmishes with some enemy units surrendering and others fighting, until they reached a coordinating feature, a set of power lines south of Kuwait City. At 1530 Task Force Ripper kicked off its attack to surround the final objective. It would occupy the north and western portions of Kuwait International Airport and Task Force Shepherd would take the terrain to the east of the airport. By 1800, Task Force Papa Bear had moved through sandstorms and near-zero visibility toward the last Iraqi defensive position between it and the airport. Movement and coordination were difficult and the task force would hold up at the airport perimeter road at 2300.

The 2d Marine Division with the Tiger Brigade kicked off their final attack at 1200 to take the Al Jahar intersection. At about 1320, the Tiger Brigade engaged 20 tanks and captured 500 Iraqis, but pressed on encountering unexpected mine fields along the Mutla Ridge west of Kuwait City. About 1930, the Tiger Brigade seized and sealed off the two major highway intersections north of Al Jahar, overlooking the "highway of death." The rest of 2d Marine Division seized their objectives south and east of Al Jahar.

*Marine CH-46 helicopters from 3d Marine Air Wing sit parked at Kuwait International Airport, Kuwait City, after the ground war portion of Operation Desert Storm.*

Photo courtesy of Sgt Charles G. Grow



*G + 3, 27 February*

At first light, about 0615, Task Force Shepherd began its final attack on the Kuwait International Airport, and by 0645, Marines had hoisted the United States flag and the Marine Corps colors from the flagpoles in front of the airport's terminal. This would become the site of 1st Marine Division headquarters and marked the taking of the last of I MEF's original objectives. Considerable fighting was left for the Army in closing the escape route at the Iraqi border. The Marine ground offensive had come to an end.

During the entire ground drive toward Kuwait City, Marines encountered several units worth of undamaged gear and bunkers fully supplied with months' worth of food and munitions that the Iraqis had left behind. Well engineered underground complexes with interlocking fires and defenses in-depth were laid out and almost untouched by the weeks of bombing. The dug-in equipment was operational and nearly invisible from more than a few meters away. Existing intelligence capability was either not targeting specifically enough to engage these units, or they were intentionally left untargeted. Additionally, the Iraqi soldier was simply unprepared to fight and die over another country. He generally surrendered in mass after token resistance at each defensive point. Counter attacking units were the exception and were normally heavy mechanized or tank units.

At about 0650, an AV-8B from VMA-331 operating from amphibious shipping was reported down by a probable infrared surface-to-air missile (IR SAM). While it was not a 3d MAW aircraft, it was a fellow Marine aviator. Captain Reginald C. "Woody" Underwood was leading the second section of a four-plane launch from the *Nassau* (LHA-4) that was controlled by an F/A-18D on targets along the northern highway out of Kuwait City as it crossed the Iraq border near Safwan. Weather was reported as 10,000 feet overcast, but the division leader, Captain Ben D. Hancock, reported being just under the cloud deck at 8,000 feet when the tactical radio call was made: "Break, Break, Flares!"\* Hancock reported multiple missiles in the air with at least two heading toward "Woody" as he pulled up into the clouds. "Woody" reported, "I'm hit," followed by "I can't control it." His AV-8B crashed, and the F/A-18D assumed on scene commander as the remaining AV-8s reached "Bingo fuel."\*\*<sup>266</sup> Captain Reginald C. Underwood would be the third and final Marine aviator to die due to direct enemy action.

An Air Force F-16 was downed just a few miles from the downed AV-8B a short time later. Two F/A-18s from VMFA-314 provided antiaircraft artillery suppression as combat search and rescue helicopters attempted to recover a downed pilot, 10 miles west of Basra in Iraq. Of all coalition fixed-wing aircraft attrition due to enemy action, 71 percent were from infrared surface-to-air mis-

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\* "Break, Break, Flares!" is a tactical call made by any pilot in the flight that sees a missile launch. Every pilot in the flight is to make a hard turn and put out flares to decoy any inbound missile.

\*\* Bingo fuel is the minimum fuel required for a pilot to return to the briefed return field and shoot an approach to a landing.

siles and antiaircraft artillery, 13 percent are unknown and 16 percent were from radar, guided surface-to-air missiles.<sup>267</sup>

*G + 4 28, February*

Shortly after 0500 on the 28th, Marines heard President Bush on the World Service of the British Broadcasting Corporation ordering the cessation of hostilities effective at 0800 on 28 February 1991. I MEF transmited the following message with the CINC's concurrence:

Cease all offensive operations effective 280500Z 0800C. Remain in current positions and assume defensive posture. Wartime rules of engagement remain in effect. Be prepared to resume offensive operations. Forces are allowed to defend themselves.<sup>268</sup>

Al Jaber proved untenable due to the large amount of unexpended ordnance, clouds of oil well smoke, and the unhealthy conditions left by the Iraqi predecessors.<sup>269</sup> The forward echelon of the direct air support center (DASC) returned to the MEF forward command post. This would mark for the wing, the beginning of the realization that occupation of Kuwait would be as short lived as possible. The MEF command post was originally intended to forward deploy to Al Jaber also, but was directed to return to Jubayl.

From 28 February to 5 March, units of the 1st Marine Division remained at the Kuwait International Airport. After the signing of the peace at Safwan, like the sounding of "EndEx" (end of exercise), each unit clamored to be out of Kuwait and fought for its position in returning to the United States. The same tanker and aluminum bridges that brought them over would have to work in reverse. There would still be the combat air patrols to man, the medical evacuation duty to stand, and the supply support to fly. But units would be withdrawn as quickly as the logistics system could handle them. Focus was now on safety and not losing another Marine in this hazardous environment, as well as returning with all the equipment that represented the Marine Corps' future.

From G-Day until G + 4 all of 3d MAW's fixed-wing aviation communities flew at surge rates. A summary of the G-Day air tasking order is depicted in the table on page 168. This tasking provided that four AV-8 and four F/A-18 attack aircraft be launched every 30 minutes. This equated to a two-plane section of close air support aircraft over the Kuwaiti battlefield every six and a half minutes.

The rotary-wing aircraft were just as busy flying a variety of missions to supply the two divisions. Medical evacuations after G-Day increased considerably, shifting from the common vehicle accidents to injuries involving ordnance. Troop lifts would continue in support of all the units on the battlefield despite the relative ineffectiveness of the Task Force X-Ray mission. Close-in fire support by Cobras and OV-10s would continue through the last day of fighting and resemble the "push CAS" system used by the fixed-wing in the final days. Even so, the Cobra crews would lament that they felt they were underused on the battlefield and never fully met surge rates. The fact was that the average helicopter crew

Table: Summary of G-day period ATO<sup>270</sup>

Aircraft mission	Station time/ time on target	Total sorties
KC-130		
DASC(A)	24-hour coverage	8
Tanker	24-hour cover on Gooseberry	as required
Tanker	0230-1430 cover on Berryberry	as required
Senior		
Warrior		
OV-10		
West TAC(A)	24 hours	7
East TAC(A)	24 hours	7
FAC(A)	24 hours	10
F/A-18D		
East FAST FAC	0300-1500, continuous	12
West FAST FAC	0300-1500, continuous	12
Night FAST FAC	1500-0300, 30 minutes per hour	6
AV-8B		
CAS stack	0300-1500, section every 15 minutes 1500-0300, section every 30 minutes	144
DAS	0400-1500, section every 30 minutes	44
F/A-18		
CAS stack	0245-1445, section every 15 minutes 1445-0245, section every 30 minutes	144
SEAD/AAW CAP	24 hours	24
A-6E		
CAS/DAS	1530-1800, two singles per hour 1800-0000, four singles per hour 0000-0230, two singles per hour	35
EA-6B		
East ECM orbit	24-hour coverage	8
West ECM orbit	24-hour coverage	8

NOTE: Times are Zulu time.

member spent a far larger portion of each mission in the vicinity of the enemy in Kuwait. The table on page 169 shows a breakdown by aircraft of 3d MAW rotary-wing sorties flown in Desert Storm.

#### *Post Ceasefire and the Credit Scramble*

General Moore wanted 3d MAW's record in Desert Storm to be based upon its effect on the enemy and not upon the statistics of number of bombs dropped, or sorties flown. However, a sampling of these statistics needs to be used to display the magnitude of the effort.

3d MAW's effect on the enemy can be recounted in the artillery raids that

Table: Rotary Wing Sorties<sup>271</sup>

DATE	AH-1J/W	UH-1N	CH-46E	CH53D/E	TOTAL SORTIES	TOTAL HRS. FLOWN
17 Jan	28	37	27	40	132	NA
18 Jan	25	10	41	36	112	NA
19 Jan	14	22	28	39	103	NA
20 Jan	40	7	28	23	98	NA
21 Jan	24	2	26	32	84	NA
22 Jan	22	6	30	26	84	NA
23 Jan	22	4	28	27	81	NA
24 Jan	15	11	39	39	104	NA
25 Jan	24	13	31	42	110	NA
26 Jan	36	10	41	56	143	NA
27 Jan	31	19	32	48	130	NA
28 Jan	22	27	37	73	159	NA
29 Jan	22	28	46	73	169	NA
30 Jan	30	26	77	69	202	NA
31 Jan	NA	NA	NA	NA	NA	NA
01 Feb	NA	NA	NA	NA	NA	NA
02 Feb	53	37	25	53	168	NA
03 Feb	57	22	48	37	164	NA
04 Feb	30	31	29	44	134	NA
05 Feb	31	19	41	54	145	NA
06 Feb	39	17	51	53	160	NA
07 Feb	42	22	29	34	127	232
08 Feb	34	26	39	33	132	230
09 Feb	38	17	27	39	121	211
10 Feb	30	19	30	32	111	255
11 Feb	20	29	30	332	111	258
12 Feb	29	15	41	65	150	313
13 Feb	29	32	37	60	158	285
14 Feb	43	18	63	75	199	374
15 Feb	17	23	27	55	122	275
16 Feb	30	38	34	54	156	262
17 Feb	28	35	29	59	151	262
18 Feb	37	20	47	64	168	331
19 Feb	14	35	42	27	118	174
20 Feb	28	28	63	62	181	281
21 Feb	30	28	29	28	115	215
22 Feb	38	22	64	50	174	244
23 Feb	25	35	34	25	119	180
24 Feb	37	30	40	39	146	248
25 Feb	29	29	20	87	165	408
26 Feb	30	27	52	107	216	456
27 Feb	58	39	48	105	250	501
28 Feb	34	36	13	29	112	209

the wing participated in from the beginning of Desert Storm. As General Myatt later said, the objective of the artillery raids was not “to destroy artillery pieces,” but rather “we were trying to defeat the minds of the Iraqi soldiers.”<sup>272</sup> The goal was to make them too gun-shy to come out of their bunkers to man the artillery pieces already loaded and aimed at the breaches.

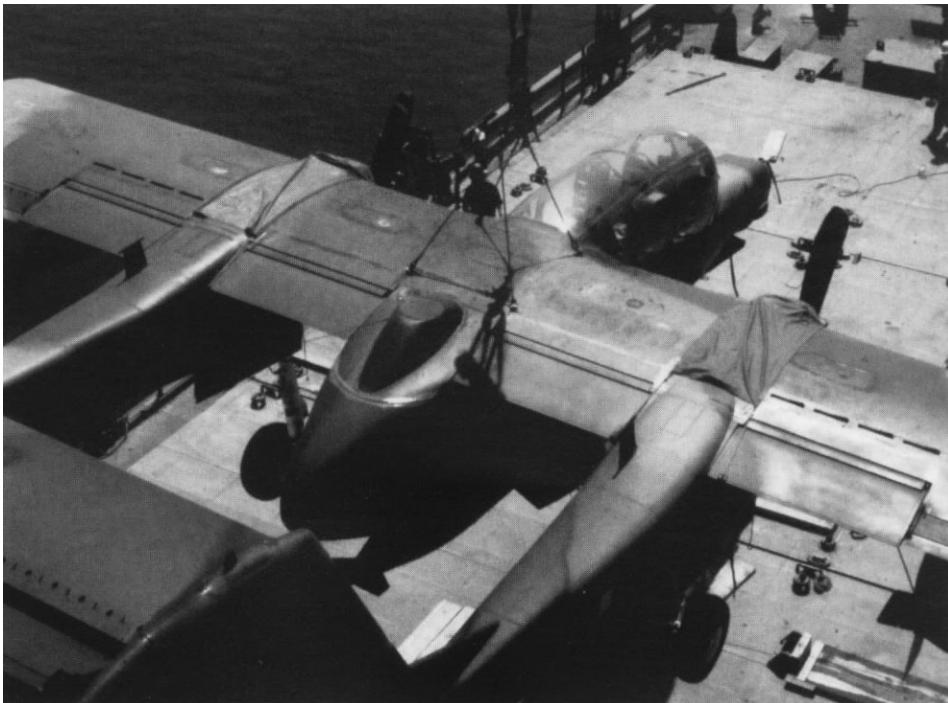
Total amount of ordnance dropped has little meaning unless it is tied to what the ordnance was dropped on, and what its effectiveness was. This is difficult to measure, except to note that most Marine ordnance, especially as the ground offensive approached, was delivered one or two bombs at a time on marked targets, making multiple passes for accuracy and corrected by aerial observation. The focus was on countering the forces that would hinder the

Table 273

<b>Munitions</b>	<b>Expended</b>			
	<b>Air Force</b>	<b>Navy</b>	<b>Marine Corps</b>	<b>Total</b>
<b>General-Purpose Bombs</b>				
Mk-82 (500 lb)	59,884	10,941	6,828	77,653
Mk-83 (1,000 lb)		10,125	8,893	19,081
Mk-84 (2,000 lb)	10,467	971	751	12,289
Mk-117 (B-52)	43,435			43,435
CBU-52 (fragmentation bomb)	17,831			17,831
CBU-87 (combined effects munition)	10,035			10,035
CBU-89/78 (Gator)	1,105	148	61	1,314
Mk-20 (Rockeye)	5,345	6,814	15,828	27,987
<b>Laser-Guided Bombs</b>				
GBU-12 (laser/Mk-82)	4,086	205	202	4,493
<b>Air-to-Surface Missiles</b>				
**AGM-114 Hellfire (AH-64 and AH-1W)	Army = 2,876	30	159	3,065
AGM-65 All Models (Maverick)	5,255		41	5,296
Notes:				
*The selected munitions were those most often employed in the Kuwait theater. Other types of laser-guided bombs and air-to-surface missiles were used in the war, but not, principally, in the Kuwait theater. Totals given are those employed on all targets, however, not just those in the Kuwait theater. See cited tables for a listing and totals of all weapons expended during the war.				
**The Navy and Marine Corps also fired a total of 283 BGM-71 TOW munitions from helicopters.				

Marines from accomplishing their mission of getting to, cutting off, and freeing Kuwait City.

On 28 February, the final day of the war, the 3d MAW had 406 aircraft and 15,655 personnel, excluding MAG-50. It flew 13 different types of aircraft in more than 18,000 sorties with a readiness level of more than 85 percent during Desert Storm. It operated from five major sites (Shaikh Isa, King Abdul Aziz, Jubayl, Tanajib, and Lonesome Dove) and three minor sites (Mishab, Kibrit, and Ras Al Ghar). It built up, supported, and operated these facilities with everything from billeting, food, and showers, to fuel, ordnance, and command and control.



*OV-10 from VMO-1 being loaded on 24 April 1991 on the Maritime Prepositioning Ship MV PFC Anderson for transportation to Morehead City, North Carolina, a 35-day trip.*

The wing built six base camps each housing more than 3,000 Marines, and six expeditionary airfields. In the process it helped lay more than 3.5 million square feet of AM-2 matting and one million square feet of asphalt. This did not include many remote forward arming and refueling sites and HAWK missile sites.

The enormity of the coordination of tying 3d MAW into the larger theater Joint Force Air Component Commander, along with coalition aircraft cannot be overstated. The process was one of airspace management to include positive and procedural airspace control, boundaries, and missile engagement zones, but the air tasking order was a primary tool.

General Moore would reiterate that the joint force air component commander process of having one single manager had its limitations in trying to fight a fluid battle. The air tasking order was cumbersome, but when viewed more as a coordination process it was needed. There were no blue-on-blue air engagements and no midair collisions. That is remarkable when in excess of 2,000 coalition sorties a day were being launched at the war's peak.<sup>274</sup>

MAG-13 Commanding Officer, Colonel Bioty, later stated: "Things worked better over there [Saudi Arabia] than we made them out to be back here. The real war was fought when we started to write the books about Desert Storm."<sup>275</sup>

Logistics and support issues were for the most part overcome by the will and determination of individual Marines. Lieutenant Colonel Michael J. Aguilar, a Cobra pilot and executive officer of MAG-16, would believe that one of the major headaches he had to deal with was the various support units brought in to



*None of the returning Marines were more relieved to be welcomed home than the five Marines held as prisoners of war.*

help the MAG. "It was very frustrating when the Rear Area Security came in and said, 'We're here to help you,' the postal service came in and said, 'We're here to help you,' disbursing came in and said, 'We're here to help you.' All those combat service support functions came in to help us, and the overhead for that assistance to the group was tremendous with respect to number of people required from the group. Additionally, we had to provide them with transportation . . . tents . . . they did not show up with the personnel or equipment to provide that service that consequently came out of hide. A Marine aircraft group is not structured to do that."<sup>276</sup>

Additionally, communication and motor transportation assets were in



*Iraqis working to by-pass a bridge blown to cut supply lines from Iraq.*

such short supply as to cause a constant struggle to accomplish the mission. For example, MAG-16 had no organic transportation. The group's commanding officer, a colonel, and nine lieutenant colonel squadron commanding officers did not have transportation, except for three Government of Japan-donated "jeeps," and a rented four-door Ford Crown Victoria that the group commander used the entire time in-country. Colonel Garrett later recalled one plan to augment transportation. While flying border reconnaissance in early January, "we spotted a really nice Mercedes sedan that had been abandoned just across the berm . . . no more than a couple of hundred meters. We developed a splendid variant of a TRAP (tactical recovery of aircraft and personnel) to liberate a potential staff car, but alas, could not secure approval to execute."<sup>277</sup> Transportation was always a factor in everything from getting aircrews to the aircraft to just drawing MREs to feed the squadrons. The Marine wing support squadrons had enough problems just trying to provide their own transportation to give the groups the support they needed. The frustration level was high when Marines observed other services show up with their vehicles, their tents, their cots, and all the support required by their fighters, as opposed to the "trigger pullers" that have to go scrounge for support.<sup>278</sup>

Aviation did a lot of things right. Adaptability and flexibility in leadership and the Marines "can do" spirit overcame not only the few things done wrong, but also the doctrine that did not apply to most of what faced the aviators of Desert Shield and Desert Storm. Of the things done wrong, none turned into "showstop-

pers." In the helicopter community especially, Vietnam-era equipment was adapted and flown with aircrew skills overcoming the difficulties of a new, riskier environment.

Time and again, commanders would praise their Marines as making the difference in this war. Lieutenant Colonel Richard L. Owens of MALS-14 would say: "When you talk about aviation logistics, whether it is maintenance, avionics, ordnance, or supply . . . it is very, very complicated . . . funding rules . . . crossing TyComs (type commanders for the aircraft, one on the East Coast and one on the West Coast) with different regulations on how to transfer material... we did all of those things . . . it was a real tribute to the caliber of Marines . . . we just improvised as we went along and the Marines were superb."<sup>279</sup>

Colonel Williams of MAG-26 had two major concerns coming into theater late. His first concern was the logistics and communications supporting the group in the harsh conditions in Saudi Arabia. He found they were able to scrounge support from other local commands to operate. "We had to improvise quickly." His second concern was how his group would perform together when some of the Reserve squadrons were not joining MAG-26 until they met in country. "It did not cause any problems. They did a wonderful job. They were enthusiastic and professional in everything they did." The group ended up spread over 200 miles. "That's like having the group headquarters at New River and the group at Washington D.C . . . They made it work . . . I was confident of my Marines' ability going into a combat situation." Lieutenant General Boomer would call the group the unsung heroes. "Both Lieutenant General Boomer and General Norman

*Cpl Jeff Jenkins of VMA (AW)-224 attaches the fins to a 1,000-pound air-to-ground missile on the wing of an A-6E.*



Schwarzkopf expressed how proud they were of the group, but they could never be as proud as I," concluded Williams.<sup>280</sup>

3d MAW was never convinced that the Air Force's strategic bombing would accomplish the theater goals of getting Iraq out of Kuwait. The Marines slowly pulled more and more sorties to the tactical arena and bombed forces in Kuwait. This does not mean that the Joint Force Air Component Commander and the Air Tasking Order were not supported in the destruction of strategic or integrated air defense targets. It was, but, all the while, Marine aviation husbanded some assets and remained focused on what it was convinced it would take to get the MEF job done.

The welcome home for the heroes of this war was far different from the reception of those that served in the Vietnam War. America would proudly open her arms to the returning warriors of Desert Storm. The five Marine prisoners of war—Lieutenant Colonel Clifford M. Acree, Chief Warrant Officer-4 Guy L. Hunter, Major Joseph J. Small III, Captain Russell A.C. Sanborn, and Captain Michael C. Berryman, all 3d MAW aircrew—would receive special recognition. They received two of this nation's most prestigious awards which no serviceman ever aspires to attain, the Purple Heart and the Prisoner of War Medals.

General Amos had some prophetic words and an admonition for those historical writers who would inevitably follow this war:

We are going to discuss it for years. Books are going to be written. The Marines . . . will self-flagellate and point fingers . . . . But, I think that we've got to be careful of, as we are writing things down, that we don't lose sight of what our mission was and the fact that we did it. We . . . did it! . . . . We had problems. We sat down at all levels and came up with solutions to the problems, not necessarily from the book. The only problem we never solved was to identify friend from foe on the ground . . . unfortunate . . . the final outcome is the same . . . we won. Look at how we did it as we are putting all this stuff together.<sup>281</sup>

The 3d Marine Aircraft Wing had 15,655 personnel that pulled together as a team to provide I Marine Expeditionary Force with Marine aviation when and where it was needed to accomplish the mission. General Schwartzkopf told General Boomer on the tactical radio shortly after Kuwait International Airport was reported secured, summing up the drive that the MEF had made to reach its objectives: "It was another glorious chapter in the history of the Marine Corps."

## Notes

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The primary sources for this monograph are unit command chronologies (ComdC) on file at the Marine Corps Historical Center (MCHC), Washington Navy Yard, Washington, D.C. The oral history interviews of participants cited are tape recordings on file at the Oral History Unit, MCHC. Participants correspondence with the author, in the form of letters and electronic mail messages, are on file with author's backup materials at MCHC.

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## Appendix A

### 3d MAW Chronology

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#### AUGUST

- 2 Aug 1990      - Iraq invades Kuwait.
- 6 Aug 1990      - Saudi Arabia requests U.S. assistance.
  - 3d MAW receives Warning Order.
- 8 Aug 1990      - LtGen Boomer assumes command of I MEF.
  - MAG-70 chops OPCON to CG 7th MEB.
- 12 Aug 1990     - Three ships of MPSRon-2 arrive Port of Jubayl, Saudi Arabia.
- 13 Aug 1990     - MAG 70 Advance Party departs MCAS El Toro, California.
  - MAC Airflow for MAG-70 main body begins.
  - USNS *Curtiss* (TAV-B) underway.
- 14 Aug 1990     - First helicopters (AH-1W) depart El Toro.
  - First fixed-wing aircraft depart El Toro.
- 15 Aug 1990     - CG 3d MAW arrives in theater to assist MAG-70.
  - MACS-1 TAOM departs El Toro.
  - CG 7th MEB arrives in theater.
  - HMLA-369 first MAG-70 aircraft arrive in theater.
- 16 Aug 1990     - H&HS-28 embarks on board USS *Spartenburg*.
- 17 Aug 1990     - MACS-1 TAOM arrives Dhahran, Saudi Arabia.
  - Civil Reserve Air Fleet activated.
- 20 Aug 1990     - VMA-311 (AV-8s) first fixed-wing arrive in theater.
- 24 Aug 1990     - MAG-70 declared combat ready.
  - H&HS-38 arrives Bahrain.
  - VMA(AW)-224 arrives Shaikh Isa, Bahrain.
  - MAG-70 begins CAP missions over the northern Persian Gulf.
- 25 Aug 1990     - MajGen Hopkins reports 7th MEB combat-ready.
  - MACS-1 TAOM operational at King Abdul Aziz.
  - TACC arrives at Shaikh Isa, Bahrain.
- 30 Aug 1990     - TACC established at Shaikh Isa, Bahrain.

#### SEPTEMBER

- 1 Sep 1990     - TACC operational.
- 3 Sep 1990     - MAG-70 dissolves and 3d MAW stands up under OPCON of I MEF.
  - FARP site Camp Foss is opened and utilized.
  - MAG-11 (Shaikh Isa) and MAG 16 (Jubayl) stand up.
- 4 Sep 1990     - CINCENT visits Shaikh Isa.
- 7 Sep 1990     - TAOC controls Eastern CAP zone for first time.

- 3d MAW surge operations demonstrated.
- VMA-311 began conducting four-plane CAS training missions in working area utilizing internal FACAs.
- 8 Sep 1990 - CG I MEF visits TACC.
- 13 Sep 1990 - CJCS Gen Powell visits 3d MAW.
- HMH-465 loses a CH-53E in a Class "A" mishap.
- 14 Sep 1990 - CJCS Powell visits TACC.
- First simulated strike on Shaikh Isa.
- 17 Sep 1990 - SS *Wright* (TAVB-3) arrives at Jubayl, Saudi Arabia.
- 21 Sep 1990 - UH-1N and CH-53D rotor blades reported to show signs of sand corrosion.
- 22 Sep 1990 - 3d MAW conducts night surge operations exercise.
- 23 Sep 1990 - 3d MAW begins combined training exercise with Bahrain AF.
- 24 Sep 1990 - CMC Gen Gray visits 3d MAW.
- 25 Sep 1990 - RSAF grants 3d MAW permission to use King Fahd live fire range
  - 3d MAW given control of air space over defensive positions of I MEF Ground Combat Element.
- 26 Sep 1990 - VMA-311 flew first CAS training missions ISO I MEF with I MEF ground FACs.
- 28 Sep 1990 - 3d MAW helicopters begin using NVG/Live Ordnance training range.

## OCTOBER

- 3 Oct 1990 - F/A-18s conducted first hot training mission using MK-76.
- VMA-311 began flying Kill Zone tactics in training area 19 using a four-plane Recce formation.
- 4 Oct 1990 - Conducted major calibration/offensive attack profile to exercise 3d MAW defensive air interdiction capability and air defense C2.
- 5 Oct 1990 - VMA-311 began working with "Hardrock" FACs using Laser CAS tactics.
  - COMUSMARCENT directs special team to begin planning for an offensive operation.
- 7 Oct 1990 - Col Bioty stands up MAG-13 (Fwd).
- VMA-311 chopped to MAG-13 (Fwd).
- 8 Oct 1990 - MAG-11 and MAG-16 receive first AM-2 matting (917 bundles) to expand ramp space.
- 10 Oct 1990 - First Tactical Air Exercise conducted.
- 11 Oct 1990 - CAS strip alert launch to test C3 and aircrew responsiveness.
- 13 Oct 1990 - All elements of Task Force Cunningham meet.
- 14 Oct 1990 - MALS-11 (Fwd) maintenance fully operational.
  - MAG-16 conducts reaction team drills.
  - BG Amos visits Jubayl Airport and is briefed on Task Force Cunningham.

- NVG LLL training suspended by CG 3d MAW.
- 16 Oct 1990 - Intelligence Flow exercise under supervision of USCENTAF.
- 18 Oct 1990 - 3D MAW hosts two-day visit of 35 AOs and TACP personnel to discuss CAS and C2 procedures.
  - TACEX exercising 3d MAW Battle Staff integration into TACC.
  - CG 3D MAW meets with senior Bahraini officer to discuss combined actions in event of attack.
- 19 Oct 1990 - Multi-plane mass night strike conducted to test 3d MAW's night-attack capability.
  - AWC BGen Amos hosts Task Force Cunningham meeting at Jubayl NAF.
- 20 Oct 1990 - MEF plans Battle Staff Planning Group.
- 23 Oct 1990 - MAG-16 begins support of TF Cunningham.
- 25 Oct 1990 - MAG-11 supported USCENTCOM exercise in Abu Dhabi.
- 29 Oct 1990 - HMH-465 completes a company-sized lift on NVGs.
- 30 Oct 1990 - TF Cunningham exercises in support of 4th MEB.
  - 3d MAW and USAF units conduct joint simulated strike mission against Shaikh Isa AB. The mission exercised all phases of an offensive tactical mission necessary to conduct a deep air strike.
- 31 Oct 1990 - MAG-11 conducted a long range CAS mission ISO 4th MEB PhibEx in Oman.

## NOVEMBER

- 1 Nov 1990 - MAG-16 safety standdown.
- CINCENT directs initial offensive planning.
- 2 Nov 1990 - MAG-16 trooplift for 1/6. 300 PAX and 12 HMMWVs with 8 CH-53s and 4 AH-1Ws.
  - Three Iraqi aircraft penetrate Saudi airspace.
- 4-5 Nov 1990 - VMA-542 departs Shaikh Isa for KAANB and chopped to MAG-13 (Fwd).
  - VMA-311 first sortie flown to test DECM Pod against HAWK sites.
- 5 Nov 1990 - 7th Armor Bde flow complete at 10,000+ personnel.
- 6 Nov 1990 - SecNav visits 3d MAW.
- 7 Nov 1990 - 3d MAW helicopters participate with LAAD teams in Stinger pro-file exercises.
- 8 Nov 1990 - Conducted Devil Dog One rehearsal with CAS, CAP, SEAD, EW assets.
  - Flew tactical NVG troop insert.
  - I MEF T/O = 1st Mar Div + 7th Armor Bde + 3d MAW + 1st FSSG.
- 10 Nov 1990 - Largest armored, mechanized MEF in Marine Corps history celebrates the 215th Marine Corps birthday in the AOR.

- 12 Nov 1990 - Capt USN Hunt, CO of USS *Worden* (CG-18) visits 3d MAW to refine air defense and C2 coordination.
- 13 Nov 1990 - Special recognition for H&HS-38 role in SAR effort for downed UK Jaguar.  
- 1st MarDiv and 7th Armor Bde conduct three day force-on-force exercise.
- 14 Nov 1990 - VMA-311 conducted ELINT mission and SIM DAS strike for operation Desert Triangle to probe within 15 km of southern Kuwait border and observe enemy reaction.  
- Reinforcements added to planning.  
- 1 MEF T/O = 1st and 2d MarDiv + 1st Armored Div (UK).
- 15 Nov 1990 - Imminent Thunder exercise commences at 0100.
- 16 Nov 1990 - ROE for defense of Bahrain signed by 3d MAW, RAF, BDF, and 35th TFW.  
- Initial courses of action brief to CINC CENT.
- 15-16 Nov 90 - MAG-11, and VMFA-333 attend the Fighter Tactics Development Meeting held at NAS Oceana to discuss the current situation in the Gulf.
- 18 Nov 1990 - CG 3d MAW meets with Crown Prince of Bahrain to discuss basing of aircraft at Shaikh Isa.  
- VMA-311 conducted SIM CAS ISO 4th MEB for Operation Devil Dog One.
- 19 Nov 1990 - Devil Dog One commences as part of Imminent Thunder.  
VMA-311 launches 50 sorties ISO Imminent Thunder.
- 21 Nov 1990 - 3d MAW participation in Imminent Thunder ends at 1100. Flew 904 fixed-wing sorties, and obtained OPRDY of 83%.
- 22 Nov 1990 - Supported Presidential visit with six CH-53E and two UH-1N.  
- President and Mrs. Bush have Thanksgiving dinner with MEF.
- 24 Nov 1990 - MAG-11 conducts counter-terrorist drill.  
- HMH-465 Loses a CH-53E due to engine fire.
- 27 Nov 1990 - VMGR-352 conducts first helicopter air refueling in SWA.

## DECEMBER

- 1 Dec 1990 - Two HMLA-369 Hueys on NVGs provide a pre-dawn insertion and extraction for Force Recon.
- 2 Dec 1990 - VMAQ-2 reported end tray radar activity that indicated potential SCUD launch. Three SCUDs launched at targets inside Iraq.  
- MEF south, west, and north option developed.
- 5 Dec - Flow of II MEF reinforcements begins.
- 10 Dec 1990 - Control passed to Alternate TACC (ATACC) at KAANB.
- 11 Dec 1990 - II MEF reinforcements begin to arrive.  
- 1st MarDiv support base moves north to Manifah Bay.
- 12 Dec 1990 - LtGen Trainor briefed 3d MAW personnel on Iraqi ground troops  
H&HS-28 participates in Sea Soldier III

- 15 Dec 1990     - MEF decision brief's south option selected.  
- Full Oplan developed.
- 16 Dec 1990     - VMGR-252 (Det) arrives in theater.
- 17 Dec 1990     - Arrival of VMFA-212 and VMFA-232.
- 18 Dec 1990     - 18 AV-8s of VMA-231 arrive in theater from Japan.  
- Col Robert W. Coop stands up MWSG-37.
- 19 Dec 1990     - TAOM operational at Jubayl NAF.  
- MEF tops 40,000 Marines in-country.
- 20 Dec 1990     - VMA(AW)-533 arrives in theater.
- 22 Dec 1990     - SecDef visits 3d MAW.  
- MPS offload complete.
- 24 Dec 1990     - Control passed from ATACC Bahrain to TACC al Jubail  
- Oplan briefed to CMC.  
- 1st Armored Div (UK) transferred to operational command of ARCENT/; Tiger Bde transferred to MEF.
- 25 Dec 1990     - Christmas show of force at Kuwaiti border by VMA-235.
- 27 Dec 1990     - Bob Hope performs at Shaikh Isa with USO team.  
- VADM Arthur COMUSNAVCENT visits 3d MAW.
- 31 Dec 1990     - VP Quayle visits KAANB.  
- MEF tops 50,000 Marines in country.

## JANUARY 1991

- Early Jan 1991 - Southwest option refined and reintroduced.
- 1 Jan 1991     - Decision made to base KC-130s that will carry Senior Scout SIGINT package at Shaikh Isa.  
- HMLA-369 CO, XO, combat division, and section leaders meet with TF Ripper.  
- ACE tops 300 aircraft in-theater.  
- VP Quale visits MARCENT.  
- CG approves MARCENT Oplan.
- 1-9 Jan 1990     - MWSS-174 installs 19,800 sq ft of AM-2 matting to extend TAFDS refueling site at KAANB.
- 2 Jan 1991     - Briefing for Division and FSSG commanders on all four phases of offensive air campaign  
- MACS-2 radar site established north of Al Mishab by elements of MWSS-174.
- 3 Jan 1991     - Mirror Strike/combat profiles flown to test plans.  
- 3D MAW participated in CENTAF exercise Fish Barrel.  
- MAG-11 establishes combat ops center.  
- MV *Galveston Bay* offloaded by MWSG-37 at Port of Jubayl and equipment distributed to support squadron.
- 4 Jan 1991     - Procedures established to allow USN aircraft to enter MACCS.  
- MWSS-272 in country, personnel and equipment staged at KAANB\.

- 5 Jan 1991      - MWSS-273 displacement to Al Mishab completed.
- 6 Jan 1991      - DASC manning and structure issues brought to CG I MEF for resolution.  
                  - Moved I MEF CP forward to vicinity of Safaniya.
- 7 Jan 1991      - Wing HQ move to Jubayl NAF completed (7 days ahead of schedule).  
                  - Site survey conducted at Al Kibrit by MWSS-271 for future FARP site.
- 8 Jan 1991      - MEF reports six Iraqi helicopters cross border near OP 4. The helicopters were in contact with Saudi and Marine interpreters on ground. Helicopters request to land in Dhahran, were refused and advised to land 30 miles south of the border. Four landed at Al Kafji and two landed near OP 4.
- 9 Jan 1991      - Decision made to use roads or other hard surfaces for helicopter landing and refueling if necessary.
- 10 Jan 1991     - 3d MAW alert posture increased IRT threat of Iraqi preemption
- 11 Jan 1991     - Airborne F/A-18 CAP increased to four aircraft in response to increased Iraqi air.  
                  - Construction begins on FARP sites at Al Kabrit.  
                  - 7th Armored Bde transfer to operational control of 1st Armored Div (UK)
- 12 Jan 1991     - CG proposed to lift several peacetime restrictions on CH-46 and CH-53 aircraft in order to carry more Marines.  
                  - Construction begins on airfield at Al Mishab.
- 14 Jan 1991     - VMFA(AW)-121 arrives in theater.  
                  - Weather prevents air support for breaching exercise.  
                  - TAFDS at Al Kibrit operational with two refueling points.
- 15 Jan 1991     - UN deadline for Iraq withdrawal.  
                  - Phase I targets reevaluated and additional targets identified. CG decides to include AV-8B aircraft into Phase I planning.  
                  - CommEx tested links with airborne DASC. Two DASC(A)s now exist.
- 17 Jan 1991     - Desert Shield complete.  
                  - Desert Storm begins.  
                  - Phase I on Desert Storm air campaign commences.  
                  - Fixed-wing groups attack position in Iraq and Kuwait.  
                  - VMO-2 loses an OV-10, lieutenant colonel and chief warrant officer taken prisoner.
- 18 Jan 1991     - First F/A-18D missions as Fast FAC.
- 19 Jan 1991     - CG I MEF visits CG 3d MAW to discuss next 48-96 hours.  
                  MV *Atlantic Freighter* offloaded by MWSG-37 at Port of Jubayl and equipment distributed to MWSS-271 and MWSS-273.  
                  - Tiger Bde (USA) closed with 2d MarDiv.  
                  - First Iraqi soldiers surrender in AOR.
- 20 Jan 1991     - FATP sites and five VTOL pads operational at Al Kibrit.

- TAFDS with six refueling points and CFR support available for aircraft.
- VMA(AW)-224 leads start of BAI campaign in southern Kuwait.
- 21 Jan 1991
- Many JFACC sorties cancelled due to weather.
  - Efforts made to work around JFACC tasking to strike Phase II targets.
  - Iraqi *III Corps* HQs struck.
  - MWSS-271 begins displacement to Tanajib from KAANB.
- 22 Jan 1991
- Weather continues to hamper campaign.
  - Aircraft from every 20 minutes over South Kuwait controlled by F/A-18Ds.
  - ROWPUs operational at Al Mishab.
  - Southwest option selected in 1st Division breach.
- 23 Jan 1991
- ATO from JFACC is refined.
  - GCE moving north to assume offensive posture.
  - CG invited Div planners to wing meeting in response to breach and passage of lines.
  - MWSS-273 assists U.S. Navy SEALs with boat operations at Al Mishab.
- 24 Jan 1991
- Weather cleared and targets attacked throughout Kuwait.
  - Stocks of MK-83 ordnance were extremely low. CG I MEF requested to assist in ammo resupply.
  - MWSS-271 main body moves to Tanajib.
  - 1st MarDiv conducts initial artillery raid on enemy.
- 25 Jan 1991
- MAG-16 ordered to relocate from Jubayl to Tanajib by 3 Feb.
  - Ordnance problems at Shaikh Isa force MK-82s to be flown there via C-130.
  - Strikes on Basrah, and *Republican Guard* all aborted due to weather.
  - MV *Cumberland Express* offloaded by MWSG-37 at Port of Jubayl and equipment distributed to support squadrons.
  - SAAWC coordinates Kill Zone tactics with AWACS.
- 26 Jan 1991
- Iraq begins dumping oil from Mina Al Ahmadi oil terminal into Persian Gulf.
  - First combined arms raid against Iraqi positions.
  - MEF goes over 100 EPWs.
- 27 Jan 1991
- CG on board to start attacking Phase III targets. He is concerned that critically low ordnance stocks cannot support sustained effort.
  - JFACC apportionment continues. Therefore, Phase III targets cannot be fully implemented.
  - CG 3d MAW established target priorities.
  - MWSS-271 displacement to Tanajib completed.
  - VMFA(AW)-121 flies first sortie in a Marine night attack configured aircraft.

- 28 Jan 1991     - CG decides that only he or AWC can approve JFACC targets for 3d MAW.  
                   - VMFA-333 flies first sortie against Baghdad.  
                   - VMA-311 loses an AV-8, pilot taken prisoner.  
                   - TAFDS operational at Tanajib.
- 29 Jan 1991     - 3d MAW concept of operations for Phase III is released.  
                   - Iraqi attack on Khafji.  
                   - MAG-16 helicopters transport 33,400 lbs of ordnance to counter Iraqi incursion.  
                   - AH-1W helps to counter the attack.  
                   - MV *Ciudad De Manta* offloaded by MWSG-37.
- 30 Jan 1991     - Meeting with 1stMarDiv pinpoints requirements for Phase IV support.
- 31 Jan 1991     - Ordnance shortage continues to be hotly contested issue. CG requests expeditious handling of ordnance.  
                   - Khafji retaken from the Iraqi forces.  
                   - MAG-16 moved from Jubayl to Tanajib.  
                   - Refueling operations shut down at Manifah Bay.

## FEBRUARY

- 1 Feb 1991     - AM-2 matting arrives for ramps at Tanajib and Mishab.  
                   - First operational delivery of CBU-78 "Gator" by Marine air craft, VMA(AW)-533 on Kuwait Coastal Highway.  
                   - NAVCENT requests 3d MAW assume 24-hour CAP over amphibious forces and to provide tanker support for USN air craft.  
                   - MAG-16 closes to Tanajib.  
                   - Battle for Khafji ends with Saudis retaking the town .
- 2 Feb 1991     - At approximately 1840(L), HMA-775 suffered its first Class A mishap. An AH-1 crashed during an emergency MedEvac conducted on NVGs; both pilots were KIA.  
                   - I MEF targets throughout Kuwait hit continuously day and night.  
                   - TACC operations personnel attend a 3d MAW planning conference to develop joint airspace control procedures to support I MEF ground scheme maneuver.
- 3 Feb 1991     - HMM-261 conducts a SAR mission for a downed HMLA-775 Cobra.  
                   - HMLA-369 loses a UH-1N when it crashes into the ground; four fatalities result.  
                   - USS *Missouri* arrives on station to provide naval gunfire support for the MEF and JFC-E.
- 4 Feb 1991     - MajGen Hearney visits 3d MAW to discuss strategy of I MEF targeting.

- CG stresses importance of combat checklist.
  - MWSS-273 establishes a FARP site at Al Quaraah.
- 5 Feb 1991
- CG visits both divisions and discusses a wide range of topics.
  - 3d MAW flew steady stream of sorties into Kuwait. Best production day with BDA to date.
  - CG 3D MAW decides to employ H&HS-28's AN/TSQ-155 (IDASC) at Lonesome Dove to operate as HTACC.
- 6 Feb 1991
- Flak traps around Al Jaber AF were struck.
- 7 Feb 1991
- CG decides to place more emphasis on Route #6 in Kuwait.
  - MAG-26 will collocate with FSSG at Al Quarrah, Saudi Arabia.
  - Alternate TACC will locate at Al Quarrah along with light HAWK battery.
- 8 Feb 1990
- Ground offensive plan changes along with logistical support plan
  - Al Khanjar established.
- 9 Feb 1991
- CG continued to refine aviation support for Phase IV.
  - MWSS-174 establishes AV-8B facilities at Tanajib.
  - VMA-231 loses an AV-8; pilot and taken prisoner.
- 10 Feb 1991
- CG announces lack of MK-80 series bombs will prevent 3d MAW's maximum possible prosecution of air campaign.
  - CG announces that he only has enough stocks to support I MEF and cannot be tasked to support EPAC sector.
  - Detailed air control procedures submitted by TACC operations personnel to 3d MAW plans for inclusion into the Pilot Controller Handbook.
- 11 Feb 1991
- MALS-29 advance party moves from Mishab to Lonesome Dove
  - MWSS-271 and 1st FSSG completes AAFS site at Tanajib.
  - MWSS-374 establishes an F/A-18 "hot turnaround point" at Jubayl NAF.
  - HMM-261 flew a section with Gen Moore on board to recon Lonesome Dove for upcoming move.
- 12 Feb 1991
- CG 3d MAW met with other MSCs to present current plan for Phase IV air operations.
  - MWSS-273 stands up at Al Mishab.
  - HMM-165 provided MedEvac/Emergency extract for first cross border artillery raid.
- 13 Feb 1991
- Air control exercise used to test capabilities for Phase IV.
  - Night Eagle Laser Targeting System delivered to MAG-16.
  - First HARM (AGM-88) missile shot by Marine unit taken by VMAQ-2 EA-6B.
  - HMLA-369 flies Gen Schwarzkopf to 2d Mar Div's forward position for a planning meeting.
- 14 Feb 1991
- Decision made to have the DASC(A) fly two six hour sorties per day in order to give the crew experience/situational awareness.

- CG discussed airspace control measures with JFACC in Riyadh.
  - MEF displaces to Al Khanjar.
  - Southwest option modified in 2d Division breach.
- 15 Feb 1991
- Direction given for planners to draft 72-hour G-Day ATO.
  - Hawk batteries are in place to cover Al Khanjar and 2ndMarDiv staging area.
  - LtGen Boomer visits 2d LAAM Bn sites.
  - MAG-16 inserts reconnaissance element onto Maradin Island.
  - HML-767 launched two Hueys on first armed escort mission from LZ Falcon, Al Kibrit, Saudi Arabia.
  - HMLA-369 launches first Hellfire missile in combat using the Night Eagle Laser system.
- 16 Feb 1991
- CG 3D MAW met with 5th MEB staff member to discuss integration.
  - F/A-18 "hot turnaround point" operations begin at Jubayl NAF supported by MWSS-374.
  - MWSS-174 establishes HERS FARP site at Al Qarrah.
- 17 Feb 1991
- Some relief on ordnance shortage when MV *Danah* offloaded at Port of Bahrain.
  - NAVCENT agrees to release of up to 3500 MK-20 Rockeye bombs
  - MAG-26 main body departs for Lonesome Dove.
- 18 Feb 1991
- MAG-26 HQ moved to Lonesome Dove.
  - Ground and squadron commander briefed on ground scheme maneuver.
- 19 Feb 1991
- HTACC operational at Lonesome Dove.
  - GCE displacement to offensive zones complete.
  - DCS and ACE units moving forward.
- 20 Feb 1991
- CG met with wing planner to discuss pre-G-Day ATO for both FW and RW.
  - HMM-165 loses a CH-46 attempting to land on NVGs.
- 21 Feb 1991
- CG attends sand table exercise hosted by TF Ripper.
  - All helicopter ATO functions are transferred from the TACC, Al Jubayl NAF to HTACC Lonesome Dove.
- 22 Feb 1991
- Planners work out final details of 3d MAW/5th MEB integration.
  - Forward deployed aviation assets to Lonesome Dove.
- 23 Feb 1991
- MAG-50 deployed limited number of aircraft to Tanajib.
  - MWSG-37 sets up and operates two mobile FARPs in support of MAG-16 and MAG-26 operations at the Kuwaiti border.
  - CG meets with helicopter group and squadron commanders to clarify helicopter situation for first three days of ground war.
  - At 0600 surge operations begin and will continue until G+1 or beyond.
  - VMA-542 loses an AV-8; pilot is killed in action.

- 24 Feb 1991    - Ground offensive begins at 0300Z.  
                  - MAG-16 helicopters insert TF X-Ray into blocking position inside Kuwait divert to Lonesome Dove.  
                  - HMM-161 loses a CH-46 on an NVG takeoff during the lift for Task Force X-Ray.  
                  - HML-767 picked up a captured Iraqi general in Kuwait on Night Vision Goggles and transported the prisoner to MEF HQ.  
                  - All communities fly at surge rates.  
Oplan executed.
- 25 Feb 1991    - Poor weather created a bottleneck.  
                  - HMM-165 leads the second insertion attempt of Task Force X-Ray  
                  - CG participates in conference calls with other MSCs.  
                  - It was decided that future helicopter operations require a FARP site near Al Jaber.  
                  - VMA-542 loses an AV-8; pilot is recovered by friendly forces.  
                  - VMO-1 loses an OV-10, Major Small is taken prisoner, pilot is killed in action.  
                  - MAG-26 begins move for Kuwait, concurrently planning starts for retrograde move to CONUS.
- 26 Feb 1991    - MAG-16 inserted security, NBC, EOD, and FARP personnel into Ahmed Al Jaber AF, Kuwait.  
                  - Cobras from HMLA-269 join the battle, and put under OPCON to MAG-26 at Lonesome Dove.  
                  - MajGen Moore briefed on concept of echeloning the TACC forward to Kuwait City by H&HS-38 personnel.
- 27 Feb 1991    - CG increased sortie rate above surge level to take advantage of good weather.
- 28 Feb 1991    - MWSS-271 sets up FARP at Al Jaber, and provides fuel and ordnance to MAG-16 and MAG-26 helicopters.  
                  - Temporary ceasefire implemented at 0800(L).

## MARCH

- 3 Mar 1991    - Ceasefire accepted at Safwan Airfield.  
8 Mar 1991    - VMFA-212 loses two F/A-18s in a mid-air collision.

## Appendix B

### Glossary

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#### A

AAA — Antiaircraft Artillery  
AAFS — Amphibious Assault Fuel System  
AB — Airbase  
ABCCC — Airborne Battlefield Command and Control Center  
A-Box — Fire support box  
ACE — Aviation Combat Element  
AFCent — U.S. Air Force component of U.S. Central Command  
AI — Air interdiction  
ANGLICO — Air and Naval Gunfire Liaison Company  
AO — Air Officer  
AOR — Area of Responsibility  
APC — Armored Personnel Carrier  
APOD — Aerial Port of Debarkation  
APS — Afloat Prepositioned Ship  
ASE — Air Support Elements  
ASOC — Air Support Operations Center (USA/USAF)  
ASP — Ammunition Supply Point  
ATACC — Advanced Tactical Air Command Center  
ATC — Air Traffic Control  
ATDL — Army Tactical Data Link  
ATO — Air Tasking Order  
AWACS — Airborne Warning and Control System  
AWC — Assistant Wing Commander

#### B

BAI — Battlefield Air Interdiction  
BARCAP — Barrier Combat Air Patrol  
BDA — Battle Damage Assessment  
BCP — Battery Command Post  
BDF — Bahrain Defense Force  
BW — Biological Warfare

#### C

C2 — Command and Control  
C3I — Command, Control, Communications, and Intelligence  
CAAT — Combined Antiarmor Team

CAFMS — Computer-Assisted Force Management System  
CAP — Combat Air Patrol  
CAS — Close Air Support  
CATF — Commander Amphibious Task Force  
CE — Command Element  
CentCom — U.S. Central Command  
CFR — Crash Fly Rescue  
CG — Commanding General  
CIFS — Close-in Fire Support  
CinC — Commander-in-Chief  
CinCCent — CINC of Central Command, U.S. Central Command  
CJCS — Chairman of the Joint Chiefs of Staff  
CLF — Commander Landing Force  
CMC — Commandant of the Marine Corps  
CNO — Chief of Naval Operations  
CO — Commanding Officer  
COC — Combat Operations Center  
CommEx — Communications Exercise  
ComUSNavCent — Commander, U.S. Navy component of U.S. Central Command  
CONUS — Continental United States  
CP — Control Point  
CRAF — Civil Reserve Air Fleet  
CRC — Control and Reporting Center  
CSAR — Combat Search and Rescue  
CSP — Contingency Support Package  
CSS — Combat Service Support  
CSSD — Combat Service Support Detachment  
CSSE — Combat Service Support Element  
CV — Aircraft Carrier  
CVW — Carrier Air Wing  
CVWR — Reserve Carrier Air Wing  
CWAR — Continuous Wave Acquisition Radar

## D

DAS — Deep Air Strike  
DASC (A) — Direct Air Support Center (Airborne)  
DASC — Direct Air Support Center  
DOD — Department of Defense  
DOS — Days of supply

## E

EAF — Expeditionary Airfield  
ECM — Electronic Countermeasures  
EDM — Engineering Development Module

ELINT — Electronics Intelligence

EMCON — Emission control

EOD — Explosive Ordnance Disposal

EPAC — Eastern Province Area Command

EW — Electronic Warfare

EW/C — Early Warning and Control

F

FAC — Forward Air Controller

FAC(A) — Forward Air Controller (Airborne)

FAE — Fuel Air Explosive

FARP — Forward Arming and Refueling Point

Fast FAC (A) — Fast Forward Air Controller (Airborne), F/A- 18D

FAST — Fleet Anti-terrorism Security Team

FEBA — Forward Edge of Battle Area

FIE — Fly-in Echelon

FLIR — Forward Looking Infrared Radar

FMF — Fleet Marine Force

FMFLant — Fleet Marine Force Atlantic

FMFPac — Fleet Marine Force Pacific

FOD — Foreign Object Damage

FROG — Free Rocket Over Ground Missile

FSCL — Fire Support Coordination Line

FSSG — Force Service Support Group

G

GCE — Ground Combat Element

GPS — Global Positioning System

H

H&HS — Headquarters and Headquarters Squadron

HARM — High Speed Antiradiation Missile

HAWK — Home-All-the-Way Killer Missile

HC — Helicopter Combat Support Squadron

HCS — Helicopter Combat Search and Rescue/Special Warfare Support Squadron

HDC — Helicopter Direction Center

HEFS — Helicopter Expeditionary Fuel System

HIDACZ — High Density Air Control Zone

HM — Helicopter Mine Countermeasures Squadron

HMH — Marine Heavy Helicopter Squadron

HMLA — Marine Light Attack Helicopter Squadron

HMM — Marine Medium Helicopter Squadron

HMMWV — High Mobility, Multipurpose Wheeled Vehicle

HMX — Marine helicopter squadron

HPIR — High Power Illumination Radar  
HQMC — Headquarters, Marine Corps  
HS — Helicopter Antisubmarine Squadron  
HSL — Light Helicopter Antisubmarine Squadron  
HT — Helicopter Training Squadron  
HTACC — Helicopter Tactical Air Command Center  
HUD — Head-up display  
HUMINT — Human Intelligence  
HVA — High Value Asset  
HVU — High Value Unit

## I

IADS — Integrated Air Defense System  
ICM — Improved Conventional Munitions  
IDASC — Improved Direct Air Support Center  
IFF — Identification, Friend or Foe  
IMINT — Imagery Intelligence  
INTEL — Intelligence  
IOC — Initial Operational Capability  
IR — Infra-Red  
IRT — In response to  
ISO — In support of

## J

JCS — Joint Chiefs of Staff  
JFACC — Joint Force Air Component Commander  
JFC — Joint Force Commander  
JNAF — Jubayl Naval Air Facility  
JSTARS — Joint Surveillance Target System

## K

KAANB — King Abdul Aziz Naval Base  
KTO — Kuwait Theater of Operations

## L

LAAD — Low Altitude Air Defense  
LAAM — Light Antiaircraft Missile  
LAI — Light Armored Infantry  
LAN — Local Area Network  
LDT — Laser Detector Tracker  
LGB — Laser Guided Bomb  
LLL — Low Light Level

LNO — Liaison Officer

LRI — Long Range International [passenger aircraft].

LSB — Landing Support Battalion

## M

MAC — Military Airlift Command

MACCS — Marine Air Command and Control System

MACG — Marine Air Control Group

MACS — Marine Air Control Squadron

MAG — Marine Air Group

MAGTF — Marine Air-Ground Task Force

MALS — Marine Air Logistics Squadron

MANPADS — Man Portable Air Defense System

MARCENT — , U.S. Marine Corps component of U.S. Central Command

MarDiv — Marine Division

MASS — Marine Air Support Squadron

MATCS — Marine Air Traffic Control Squadron

MAW — Marine Air Wing

M-Box — Maneuver Box

MCAS — Marine Corps Air Station

MCCDC — Marine Corps Combat Development Command

MEB — Marine Expeditionary Brigade

MedEvac — Medical Evacuation

MEF — Marine Expeditionary Force

MEU — Marine Expeditionary Unit

MEU(SOC) — Marine Expeditionary Unit (Special Operations Capable)

MHE — Materials Handling Equipment

MPSron — Maritime Prepositioning Ship Squadron

MRE — Meal Ready-to-Eat

MRL — Multiple Rocket Launcher

MRR — Minimum Risk Route

MSC — Major Subordinate Command

MV — Merchant Vessel

MWCS — Marine Wing Control Squadron

MWHS — Marine Wing Headquarters Squadron

MWSG — Marine Wing Support Group

MWSS — Marine Wing Support Squadron

## N

NAF — Naval Airfield

NAS — Naval Air Station

NATOPS — Naval Air Training and Operating Procedures Standardization

NAVCENT — U.S. Navy component of U.S. Central Command

NBC — Nuclear, Biological, and Chemical

NM — Nautical Mile

NMCB — Naval Mobile Construction Battalion

NNOR — Non-nuclear Ordnance Requirements

NVG — Night Vision Goggles

## O

OAS — Offensive Air Support

OP — Observation Post

OpCon — Operational Control

OPP — Offload Preparation Party

OpRdy — Operational Readiness

## P

PacFlt — Pacific Fleet

PACOM — Pacific Command

Pax — Personnel

PMO — Provost Marshall Office; military police

POET — Primed Oscillator Expendable Transponder

PTO — Pilot Training Officer

PLRS — Position Location and Reporting System

## Q

## R

RAF — Royal Air Force (United Kingdom)

RCT — Regimental Combat Team

RGFC — Republican Guard Forces Command

ROE — Rules of Engagement

ROWPU — Reverse Osmosis Water Purification Unit

RPV — Remotely Piloted Vehicle

RSAF — Royal Saudi Air Force

RTB — Return to Base

RWR — Radar Warning Receiver

## S

SAAWC — Sector Antiair Warfare Coordinator

SAM — Surface-to-air Missile

SAR — Search and rescue

SCUD — Soviet surface-to-surface missile

SEAD — Suppression of Enemy Air Defense

SEAL — Sea, Air, and Land (Navy Special Operations Team)

SecDef — Secretary of Defense  
SecNav — Secretary of the Navy  
SIGINT — Signals Intelligence  
SIM — Simulated  
SIMCAS — Simulated Close Air Support  
SLEP — Service Life Extension Program  
SLRP — Surveillance, Liaison, and Reconnaissance Party  
SMCR — Selected Marine Corps Reserve  
SOC — Special Operations Capable  
SOP — Standard Operating Procedure  
SPCC — Ships Parts Control Center  
SRI — Surveillance, Reconnaissance, and Intelligence  
SRIG — Surveillance, Reconnaissance, and Intelligence Group  
SSM — Surface-to-surface Missiles  
STOVL — Short Take-Off Vertical Landing  
STT — Single Target Track  
SWA — South West Asia

## T

TAC (A) — Tactical Air-Coordinator (Airborne)  
TACAIR — Tactical Air  
TACAN — Tactical Air Navigation system  
TACC — Tactical Air Command Center  
TacEx — Tactical Exercise  
TACP — Tactical Air Control Party  
TADIL — Tactical Digital Information Link  
TAFDS — Tactical Airfield Fuel Dispensing System  
TALD — Tactical Air Launched Decoy  
TAMPS — Tactical Aircraft Mission Planning System  
TAOC — Tactical Air Operations Center  
TAOM — Tactical Air Operation Module  
TAOR — Tactical Area of Responsibility  
TAR — Tactical Air Response  
TAVB — Aviation Logistics Support Ship  
TERPES — Tactical Electronic Reconnaissance Processing and Evaluation System  
TF — Task Force  
TFW — Tactical Fighter Wing  
TO — Table of Organization  
TOO — Target of Opportunity  
TOS — Time on Station  
TOT — Time on Target  
TOW — Target-on-Wire Missile  
TPFDL — Timed-Phase Force Deployment List

## U

UAV — Unmanned Aerial Vehicle  
UDP — Unit Deployment Program  
USNS — United States Naval Ship, civilian manned  
UW — Urban Warfare

## V

VA — Attack Squadron  
VAW — Carrier Airborne Early Warning System  
VC — Fleet Composite Squadron  
VF — Fighter Squadron  
VFA — Strike Fighter Squadron  
VFC — Fighter Composite Squadron  
V/STOL — Vertical/Short Take-Off and Landing  
VMA — Marine Attack Squadron  
VMA(AW) — Marine All Weather Attack Squadron  
VMAQ — Marine Tactical Electronic Warfare Squadron  
VMFA — Marine Fighter Attack Squadron  
VMFA(AW) — Marine All-Weather Fighter Attack Squadron  
VMGR — Marine Aerial Refueler Transport Squadron  
VMO — Marine Observation Squadron  
VP — Patrol Squadron  
VPU — Patrol Squadron Special Projects Unit

## W

WTI — Weapons Tactics Instructor  
WP — White Phosphorus

## X

XO — Executive Officer

# Appendix C

## USMC Tactical Aviation Flying Units

### January 1900

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<b>1st Marine Aircraft Wing</b>		
<b>MCAS Kaneohe</b>	<b>MCAS Iwakuni</b>	<b>MCAS Futenma</b>
<u>MAG-24</u>	<u>MAG-12</u>	<u>MAG-36</u>
VMFA-212	VMA(AW)-332 (MAG-14)	HMH-462 (MAG-16)
VMFA-232	VMA-542 (MAG-32)	HMH-466 Det B (MAG-16)
VMFA-235	VMFA-115 (MAG-31)	HMM-164 (MAG-24)
HMM-262	VMFA-531 (MAG-11)	HMLA-169 (MAG-39)
HMM-265	VMFP-3 Det A (MAG-11)	VMO-1 Det B (MAG-29)
HMM-364	VMAQ-2 Det Z (MAG-14)	VMO-2 Det B (MAG-39)
HMH-463		VMGR-152

<b>2d Marine Aircraft Wing</b>		
<b>MCAS Cherry Point</b>	<b>MCAS Beaufort</b>	<b>MCAS New River</b>
<u>MAG-14</u>	<u>MAG-31</u>	<u>MAG-26</u>
VMGR-252	VMFA-122	HMM-261
VMAQ-2	VMFA-251	HMM-266
VMA(AW)-224	VMFA-312	HMH-362
VMA(AW)-533	VMFA-333	HMH-461
	VMFA-451	HMLA-167
<u>MAG-32</u>		<u>MAG-29</u>
VMA-223		HMM-162
VMA-231		HMM-263
VMA-331		HMM-264
		HMH-464
		HMLA-269
		VMO-1

<b>3d Marine Aircraft Wing</b>			
<b>MCAS El Toro</b>	<b>MCAS Yuma</b>	<b>MCAS Tustin</b>	<b>MCAS Camp Pendleton</b>
MAG-11	<u>MAG-13</u>	<u>MAG-16</u>	<u>MAG-39</u>
VMGR-352 (-)	VMA-211	HMM-161	HMLA-267
VMFP-3 (-)	VMA-214	HMM-164	HMLA-367
VMFA-314	VMA-311	HMM-166	HMLA-369
VMFA-323	VMA-513	HMM-261	VMO-2 (-)
VMFA(AW)-121		HMH-361	
VMFA(AW)-242		HMH-363	
		HMH-465	
		HMH-466 (-)	

NOTE: 11th MEU (SOC) and 24th MEU (SOC) were deployed at the beginning of the year with HMM-163 (REIN)(MAG-16) and HMM-365 (REIN) (MAG-29) respectively.

# Appendix D

## USMC Aviation Non-flying Units

### January 1990

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<b>1st Marine Aircraft Wing</b>		
MWHS-1 Camp Foster MWCS-18 Camp Foster MALS-12 Iwakuni MALS-36 Futenma	<b>MWSG-17</b>  HQSDN-17 Camp Foster MWSS-171 Iwakuni MWSS-172 Futenma	<b>MACG-18</b>  MWCS-18 Camp Foster MASS-2 Futenma MACS-4 Futenma H&HS-18 Futenma MATCS-18 Futenma 1st LAAD Bn Futenma 1st LAAM Bn Futenma

<b>2d Marine Aircraft Wing</b>		
MWHS-2 Cherry Point MWWU-2 Cherry Point MALS-14 Cherry Point MALS-26 New River MALS-29 New River MALS-31 Beaufort MALS-32 Cherry Point	<b>MWSG-27</b>  MWSS-271 Cherry Point MWSS-272 New River MWSS-273 Cherry Point MWSS-274 Cherry Point HQSQDN-27 Cherry Point	<b>MACG-28</b>  MWCS-28 Cherry Point MASS-1 Cherry Point MACS-5 Beaufort MACS-6 Cherry Point H&HS-28 Cherry Point MATCS-28 New River 2d LAAD Bn Cherry Point 2d LAAM Bn Cherry Point

<b>3d Marine Aircraft Wing</b>		
MWHS-3 El Toro MWWU-3 Yuma MALS-11 El Toro MALS-13 Yuma MALS-16 Tustin MALS-39 Camp Pendleton	<b>MWSG-37</b>  MWSS-371 Yuma MWSS-372 Camp Pendleton MWSS-373 Camp Pendleton MWSS-374 Camp Pendleton HQSQDN-37 El Toro MWSS-173 29 Palms	<b>MWCG-38</b>  MWCS-38 El Toro MASS-3 El Toro MACS-1 Camp Pendleton MACS-7 Yuma H&HS-38 El Toro MATCS-38 Tustin 3d LAAD BN Camp Pendleton 3d LAAM BN Yuma

NOTE: Data compiled from HQMC Command Center Operational Summary, January 1990.

# Appendix E

## 4th Marine Aircraft Wing (Reserve) Units

### January 1990

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<b>Tactical Flying Units</b>			
<b>MAG-41</b>	<b>MAG-42</b>	<b>MAG-46</b>	<b>MAG-49</b>
VMFA-112 NAS Dallas	VMAQ-4 Whidbey Island	HMM-764 El Toro	VMO-4 NAS Marietta GA
VMFA-134 El Toro	VMA-124 Memphis TN	HML-767 New Orleans	HML-771 S. Weymouth
VMGR-234 NAS Glenview	VMA-131 Willow Grove	VMGR-452 Newburgh NY	HMH-772 Willow Grove PA
VMFA-321 Andrews AFB	VMA-133 NAS Alameda	HMM-774 NAS Norfolk VA	HMA-773 NAS Marietta GA
	VMA-142 NAS Cecil Field	HMA-775 Camp Pendleton	HML-776 NAS Glenview
	VMA-322 S. Weymouth MA		

<b>Non Flying Units</b>			
<b>4TH FIU</b>	<b>MACG-48</b>	<b>MWSG-47</b>	
MALS-41 NAS Dallas	MWCS-48 NAS Glenview	MWSS-471 Minneapolis MN	
MALS-42 NAS Alameda CA	MASS-4 El Toro	HQSDN-47 Selfridge MI	
MALS-46 El Toro	MASS-6 S.Weymouth MA	MWSS-474 Philadelphia PA	
MALS-49 Willow Grove PA	H&HS-48 NAS Glenview	MWSS-473 S. Weymouth	
MWHS-4 New Orleans	4TH FAAD Pasadena CA	MWSS-472 El Toro	
	MACS-23 Buckley Anglico		
	MACS-24 Dam Neck VA		
	MATCS-48 NAS Memphis		
	4TH LAAM Fresno CA		

## Appendix F

### Command and Staff List

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Unit	CQ	Aircraft Type & #	Tailcode//Nickname	XO
3D MAW	MajGen Royal N. Moore Jr.	N/A	N/A	BGen Granville R. Amos
MWHS-3	LtCol David G. Keck	N/A	N/A	Col Donald A. Beaufait
MAG-11	Col Manfred A. Rietsch	N/A	N/A	Maj Robert B. Finney
MALS-11	LtCol John L. Moyer	N/A	N/A	Maj David H. Peeler
VMFA-212	LtCol James M. Collins II	F/A 18C (12)	WD Lancers	Maj Robert W. Eifflein
VMFA-232	LtCol Victor A. Simpson	F/A 18C (12)	WT Red Devils	Maj James E. Hunter Jr.
VMFA-235	Col William C. McMullen III	F/A 18C (12)	DB Death Angels	Maj Robert B. Clark
VMFA-314	LtCol George G. Stuart	F/A 18A (12)	VW Black Knights	Maj Robert E. Schmidle Jr.
VMFA-333	LtCol Thomas A. Benes	F/A 18A (12)	DN Shamrocks	Maj David F. Goold
VMFA-451	LtCol Andrew S. Dudley Jr.	F/A 18A (12)	VM Warlords	Maj Robert J. Kennedy
VMFA(AW)-121	LtCol Stephen F. Mugg	F/A 18D (12)	VK Green Knights	Maj Thomas J. McElrath
VMA(AW)-224	LtCol William J. Horne	A6-E (10)	WK Bengals	LtCol John Langdon II
VMA(AW)-533	LtCol Waldo B. Cummings Jr.	A6-E (10)	ED Hawks	Maj Rickey B. Johnson
VMAQ-2	LtCol Richard W. Bates	EA-6B (12)	CY Playboys	Maj Thomas P. Brehm
VMGR-252 Det A	Maj Gerald W. Sternal	KC-130F (3), KC-130R (3)	BH Otis	Maj Gerald W. Sternal
VMGR-352(-)	LtCol Arlen D. Rens	KC-130R (7)	QB Raiders	
Det VMGR-452	Maj L. M. Gillespie	KC-130T (7)	NY Yankees	

Unit	S1	S3	Maintenance	SgtMaj	Strength O/E
3D MAW	LtCol Rudolph Lowery	Col Terrence R. Dake	Col Timothy L. LaPlaunt	Frederick T. Pattee	1,829//13,826
MWHS-3	Maj John F. MacDonald Jr.	LtCol John P. Cushing Jr.	Maj Gilbert B. Diaz	Wayne E. Stimam	409//2,858
MAG-11	Capt Kent A. Carpenter	Maj William F. Guifoyle	Capt Keith C. Shultis	Thomas E. Chapman	16//860 (1 Civ)
MALS-11	Capt Thomas E. Glazer	Maj Aaron K. Chapman	Maj John D. Dewitt Jr.	Stephen H. Mellinger	24//158
VMFA-212	Maj Robert L. Knoy	Maj Michael R. Sobry	Maj Henry C. Dewey III	Carlos R. Ramirez	20//168
VMFA-232	Maj Thomas R. Shaw	Maj Robert M. Knutzen	Maj James L. Brinkman	Michael J. Patri	19//168
VMFA-235	CWO2 Calvin G. Colbert	Maj Charles F. Mitchell	Maj David H. Shutt	John H. Smith	25//156
VMFA-314	Capt William H. Buckley	Maj Charles R. Hull	Maj William G. Butler III	Robert D. Brown	22//155
VMFA-333	Maj Harmon A. Stockwell	Maj Jeffrey A. White	Maj John C. Rader	Otto Kokensparger	24//157
VMFA-451	Capt Mark J. Ruger	Maj John J. Guevremont	Maj Martin Post	MSgt Eugene Simpson	18//97
VMFA(AW)-121	Maj Gary F. Skinner	Maj Mark E. Condra	LtCol Leif R. Larsen	Kenneth D. Miller	32//185
VMA(AW)-224	Capt Robert S. Stater	Maj Edmund B. Mayer Jr.	Maj Richard C. Dunn	Robert L. Hampton	34//170
VMA(AW)-533	Capt Steven B. Dorman	Maj Willie A. Franchi	Maj Russell H. Bell	Haskell B. Jackson	67//204
VMAQ-2		Maj Michael L. Heath		Horace H. Thomas	115 (Combined) 44//12 21//7
VMGR-252 Det A					
VMGR-352(-)					
Det VMGR-452					

Unit	CQ	Aircraft Type & #	Tailcode//Nickname	XO
MAG-13 (Fwd)	Col John R. Bloty Jr.	N/A	N/A	LtCol Bazil Kostin
MALS-13 (Fwd)	Maj Christopher D. Platt	N/A	N/A	Maj Charles E. Ripley
MALS-14	LtCol Richard L. Owen Jr.	N/A	N/A	LtCol W. L. Wolf
VMA-231	LtCol William R. Jones	AV-8B (19)	CG Ace of Spades	Maj Donald E. Fleming Jr.
VMA-311	LtCol Dickie J. White	AV-8B (19)	WL Tomcats	Maj Richard C. Branch
VMA-542	LtCol Theodore N. Herman	AV-8B (18)	WH Tigers	LtCol Kevin E. Leffler
VMA-513 Det B	Maj Eddie L. Holcomb	AV-8B (6)	WF Nightmares	Maj Georges E. Leblanc III
VMO-1	LtCol Richard R. Laziksy	OV-10A& D+ (11)	ER Sweet	Maj Jerry G. Gelling
VMO-2	Maj Steven J. Antosh	OV-10A,& D+ (7)	UU Hostage	Maj Robert L. Wills

Unit	S1	S3	Maintenance	SgtMaj	Strength O/E
MAG-13 (Fwd.)	CWO Patrick J. Devoss	Maj John B. Paulger	Maj Charles E. Ripley	Jimmy C. Harris	140//1010
MALS-13 (Fwd.)	Capt Craig A. MacVeigh	Capt Craig A. MacVeigh	Maj Charles E. Ripley	MSgt Larry A. Lord	8//272
MALS-14	WO William H. Wilkinson II	Maj James L. Sasser	Maj Charles E. Ripley	William M. Russell	29//553
VMA-231	Capt Frederick J. Whittle	Maj Robert J. Borgatti	Capt John T. Rahm	Karl Brooks	34//190
VMA-311	Capt Dino Peros	Maj Kenneth G. Williams	Capt Edmund S. Flores	Pasquale Lamaestra	33//205
VMA-542	Capt Thomas S. Rutledge	Maj Wade C. Straw	Maj James M. Lee Jr.	1stSgt Michael W. Castleman	32//198
Det B VMA-513	Capt Thomas Carnes III	Maj Georges E. Leblanc III	Capt Francis P. Bottorff	MSgt Daniel V. Avino	13//120
VMO-1	Maj Wayne E. Breakfield	Maj Ronald B. Broschart	Maj Joseph J. Small	Johnny B. Young Jr.	39//143
VMO-2	Capt Daniel J. Aheam	Capt Roger D. Miller	Major Charles A. Chambliss	Morris Warner	25//104

Unit	CO	Aircraft Type & #	Tailcode//Nickname	XO
MAG-16	Col Larry T. Garrett	N/A	N/A	LtCol Michael J. Aguilar
MALS-16	LtCol Henry A. Commiskey Jr.	N/A	N/A	Maj Charles S. Young Jr.
HMM-161	LtCol Gary J. Price	CH-46E (12)	YR The First	LtCol Larry M. Underwood
HMM-165	LtCol Marvin D. Hall	CH-46E (11)	YW White Knights	Maj Philip R. Westcott II
HMLA-367	LtCol Terry J. Frerker	AH-1W (10) // UH-1N (12)	VT Scarface	Maj Tommy L. Bray
HMLA-369	LtCol Michael M. Kurth	AH-1W (17) // UH-1N (5)	SM Gunfighters	LtCol Kenneth J. Conatser
HMH-462	LtCol D. R. Ross	CH-53D (12)	YF Heavy Haulers	Maj George J. Whillcock
HMH-463	LtCol John R. Mills	CH-53D (8)	YH Pegasus	LtCol Mark J. Brousseau
HMH-465	LtCol Ronnies S. Johnston	CH-53E (8)	YJ Warhorses	Maj Richard D. Rogers
HMH-466(-)	LtCol Raymond L. Nymeyer	CH-53E (8)	YK Wolfpack	LtCol Robert V. Bush Jr.

Unit	S1	S3	Maintenance	SgtMaj	Strength Q/I/E
MAG 16	Maj Robert H. McCormick Jr.	LtCol Robert N. Leavitt	Maj B. J. Robinson	Hinton T. Tucker	292//1652
MALS 16	1stLt Randall K. Gibson	Maj Wesley Wieckowski	Maj Richard M. Rasmussen	C. L. Constance	24//464
HMM-161	Capt Robert F. Wheeler	Maj Mitchell A. Cook	Capt Glenn W. Rosenberger	A. S. Ignacio	31//124
HMM-165	Capt Cleatus K. McDonel	Maj Raymond E. Schwartz III	Maj Barry M. Ford	David E. Cummings	30//116
HMLA-367	Maj Eugene J. Cole	Maj Gary D. Shaw	Maj Michael W. Quinlan	James S. Misa	50//233
HMLA-369	Maj Michael L. Steele	Maj Sidney E. Mills	Maj Stephen L. Forand	E. W. Jones	57//220
HMH-462	Capt Joel A. Marquardt	Maj Philip B. Gleason	Maj David C. Johnson	Maj Philip K. Read	51//153
HMH-463	1stLt James J. Leneghan	Maj Francis M. McComb	Maj Francis M. McComb	Maj Mark D. Stoltz	24//134
HMH-465	Capt Timothy W. Fitzgerald	Maj Donovan J. Spurgeon	Maj Donovan J. Spurgeon	Capt Alan D. Schroeder	26//121
HMH-466(-)	Capt Alfred C. Solo			John M. Gallegos	25//150

Unit	CO	Aircraft Type & #	Tailcode//Nickname	XO
MAG-26	Col Michael J. Williams	N/A	N/A	LtCol Lewis J. Gebhard
MALS-29	LtCol John F. Phelps	N/A	N/A	LtCol John C. McCalla
HMM-261	LtCol Emerson N. Gardner Jr.	CH-46E (12)	TV Raging Bulls	LtCol Thomas L. Moore
HMM-266	LtCol John F. Pettine	CH-46E (12)	ES Griffins	Maj Robert S. Loftis
HMM-774	LtCol Steven K. Bowman	CH-46E (12)	MQ Wild Goose	LtCol James R. McIntosh
HMH-464 (-)	LtCol Ralph F. Tice	CH-53E (8)	EN Condors	Maj James E. Lenderman Jr.
HMH-362	LtCol Robert A. Forrester	CH-53D (6)	YL Ugly Angels	
Det A HMM-772	LtCol Thomas J. Miller	RH-53D (6)	MT Roadhogs	LtCol Richard D. Hamilton
HMA-775	LtCol Paul W. Martin	AH-1J (11)	WR Coyotes	LtCol Rick M. Husty
HML-767	Col Al C. Boudreaux	UH-1N (12)	MM Nomads	

Unit	S1	S3	Maintenance	SgtMaj	Strength Q/I/E
MAG-26	LtCol Richard J. Gallagher	LtCol John T. Hill	Maj Jerome F. Rolinger	Donald B. Stark	287//1508
MALS-29	CWO3 John R. Grezik	Capt David L. Abrams	Capt Michael P. Abraham	Kim W. Hubbard	29//531
HMM-261	Maj Philip D. Peterson Jr.	Maj Arthur M. Reynolds Jr.	Maj Richard D. Hafenbrack	Ernest R. Young	32//129
HMM-266	Capt Rex R. Bartles	Maj John W. James	LtCol Mark A. Peterson	David L. Ford	38//120
HMM-774	Maj Robert C. Santucci	LtCol Victor T. Cronauer	Maj John R. Suter	Jim H. Goolsby	30//146
HMH-464 (-)	Maj John E. Montemayor	Maj Stephen P. Taylor	Maj Hugh A. Henry	Sigifredo Duran	29//117
HMH-362			Maj Joseph P. Hansen	1stSgt Anthony J. Brilla	17//120
Det A HMM-772	Maj William R. Haines	Maj Mike L. Lovejoy		Donald L. Fox	31//147
HMA-775	Maj Dale D. Mossbarger	Maj Roy A. Arnold			
HML-767					

Unit	CO	Location	XO
MWSG-37	Col Robert W. Coop	King Abdul Aziz Naval Base, Saudi Arabia	LtCol David A. Stockwell
H&HS-37	Maj Clifford C. Holbrook	King Abdul Aziz Naval Base, Saudi Arabia	Capt Sheila A. Jones
MWSS-174	LtCol James P. Chessum	Al Jubayl, Saudi Arabia	Maj John G. Molter
MWSS-271	LtCol Richard H. Zegar	Tanajib, Saudi Arabia	Maj Roger E. Penrod
MWSS-273	LtCol William L. Riznychok	Ras Al Mishab, Saudi Arabia	Maj Robert S. Whitehead
MWSS-373	LtCol Stephen D. Hanson	Shaikh Isa AB, Bahrain	Maj Donald F. Beck
MWSS-374	LtCol Stephen C. Holbrook	RNAF Al Jubayl, North, Saudi Arabia	Maj Robert C. Nelson II

Unit	S1	S3	Sgt/MaI	Strength O/E
MWSG-37	Maj Beverly A. Short	LtCol Daniel C. Cassell	Ralph A. Buchanan 1stSgt Charles E. Tolliver	131//2927
H&HS-37			Robert A. Foss	15//65
MWSS-174	CWO2 Patrick J. DeVoss	Capt John D. Thomas Jr.	Bruce A. Hyland	24//590
MWSS-271	WO Joan M. Ceuvrels	Maj Douglas A. Evans	Thomas J. Crisp	25//544
MWSS-273	Capt. Bruce A. Murphine	Maj. James H. Neal Jr.	Robert Baldwin	750 (Combined)
MWSS-373	CWO4 Charles R. Jarrett	Maj Larry W. Berquist	Leonard R. Sweet	25//639
MWSS-374	CWO2 Ann M. Harber	Maj Martin J. Wasielewski		26//584

Unit	CO	Mission// Equipment	XO
MACG-38	Col Joseph Della-Corte	N/A	LtCol Harvey R. Norton
H&HS-38	Maj Eric D. Zobel	TACC	Maj Harry P. Parmar
Det H&HS-28	Maj Royce Gibson		
Det MASS-1	LtCol Robert D. Hughes	DASC	
Det MACS-1	1st Lt Paul Q. Le		
MWCS- 38	LtCol Timothy J. Himes	Communication Nets (TACC-TAOC Link)	Maj Carl E. Rogers
Det B MWCS-28	Capt Ronald W. Snyder	Communication Nets (TACC-TAOC Link)	
2d LAAM Bn	LtCol John E. Ryan	HAWK	Maj Marvin D. Dick
3d LAAD Bn	LtCol George S. Fick	Stinger	Maj William T. Stooksbury
MACS-2	LtCol John R. Garvin	TAOC	Maj John J. Kassay Jr.
MACS-6 (-)	LtCol Ronald J. Armstrong	TAOC	Maj Charles F. Triplett
MASS-3	LtCol Dennis C. Sorrell	DASC	Maj Maurice B. Hutchinson
Det MASS-6	Maj Kevin B. Davis		
MATCS-38	Maj Robert J. Bozelli	Air Traffic Control (TACAN, MRAALS)	Capt Gregory W. Grove
Det I MATCS-28	Capt Kurt V. Lorhman		
Det B MATCS-18	Capt Patricia F. Warren		Maj William S. Vandermeer Jr.
2d LAAD Bn	LtCol Richard K. Bartzer	Stinger	
3d LAAM Bn	LtCol Louis L. Boros	HAWK	Maj Thomas M. Adkins

Unit	S1	S3	Sgt/MaI	Strength O/E
MACG-38	Maj John K. Neel	Maj James T. Ronaghan Jr.	David A. Garrett	307//2665
H&HS-38	Maj John K. Neel	Maj Royce Gibson	1stSgt Alex P. Pacheco	33//102
Det H&HS-28				10//28
Det MASS-1		Maj Alan A. Turk	John L. Phinisey	31//374
Det MACS-1		Capt Gregory K. Wilkinson	Ronald F. Rajkovich	36//524
MWCS- 38	WO Carla M. Gonzales-Schwarz	Capt Scott B. Frosch	Alphonso C. Brooks	20//178
Det B MWCS-28	Capt Damien X. Lott	Capt James J. Dorner III	James A. Bamberger	32//214
2d LAAM Bn	Capt Philip G. Mena	Capt David F. Aumiller	MGySgt Kenneth A. Innis	35//148
3d LAAD Bn	1stLt John M. Neumann	Maj Clifton E. Washington	Kim Hagen	
MACS-2	MSgt P. J. Davis		David L. Tainsh	27//160
Det A MACS-6	2dLt Michael C. Berigan	1stLt William J. Nix		
MASS-3				
Det MASS-6		Capt Stephen P. Lynch	George L. Anger	23//257
MATCS-38	CWO3 Joseph G. Hendrickson	Capt William P. Cabrera II	David S. Nagorniak	31//474
Det I MATCS-28				
Det B MATCS-18	Capt Paul G. Gayan			
2d LAAD Bn	MSgt John W. Hamilton Jr.			
3d LAAM Bn				

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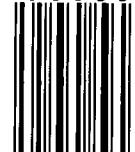
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