U.S. Marines in the Persian Gulf, 1990-1991
COMBAT SERVICE SUPPORT IN DESERT SHIELD AND DESERT STORM

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

COVER: "The Terminator" LVS pulling an 870 trailer with a D7 Bulldozer. A Saudi male with his camels are in the foreground. Two helos with external loads fly above the whole scene.(Painting by CWO-2 Charles G. Grow, USMC)

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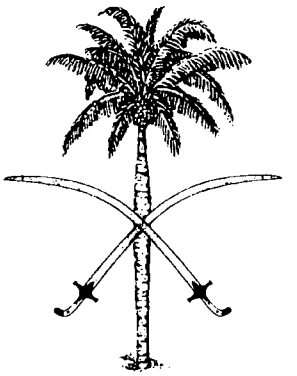

by
Major Steven M. Zimmeck
U.S. Marine Corps, Retired

HISTORY AND MUSEUMS DIVISION
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Foreword

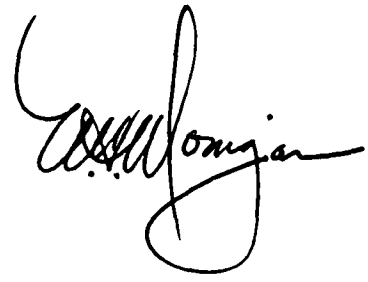
This monograph tells the story of the Marines and sailors of the 1st Force Service Support Group, the 2d Force Service Support Group, Marine Wing Support Group 37, and the 3d Naval Construction Regiment whose combined efforts gave the I Marine Expeditionary Force the ability to eject Iraqi forces from Kuwait during Operation Desert Storm. This document is part of a preliminary series of official Marine Corps histories that cover Marine Corps operations in the Gulf War.

During the Persian Gulf crisis, the History and Museums Division sent a team to Saudi Arabia to produce first-hand accounts of unit operations. In November 1990, five Reserve officers from the Mobilization Training Unit (MTU) (History)-DC-7 arrived in Saudi Arabia, deployed to different commands, accompanied their units throughout the battle, and produced powerful narratives on the operations of I Marine Expeditionary Force, the 1st Marine Division, the 2d Marine Division, and Marine Forces Afloat. Unforeseen circumstances prevented a logistics history from being included in the series, so the Secretary of the Navy recalled Major Steven M. Zimmeck, USMC (Ret), to active duty to complete this account of Marine Corps combat service support in Operations Desert Shield and Desert Storm.

Major Zimmeck is a career Marine Corps logistician who served tours of duty with the 3d Marine Aircraft Wing, the 3d Marine Division, the 1st Force Service Support Group, Headquarters United States Marine Corps, and the Royal Saudi Marines. He has accumulated more than seven years of desert logistics experience in the Middle East and the United States. During the Persian Gulf crisis, Major Zimmeck served as a logistics watch officer in the Headquarters Marine Corps Crisis Response Cell and, later, as the first logistics advisor to the Royal Saudi Marines. In the early 1980s he served at Headquarters Marine Corps as the force service support group table of organization sponsor and prior to retirement in 1994, served as the logistics officer's sponsor. After retirement and as a consultant, he co-authored the final phase of the Marine Corps Logistics Planning Factor Study. In 1995, Major Zimmeck was recalled to active duty for two years to complete this project. Major Zimmeck is a graduate of Amphibious Warfare School and Command and Staff College and holds a bachelor of arts degree in history from Wittenberg University, a master of arts degree in Arab studies from Georgetown University, and a master of business administration degree in finance from George Washington University.

This monograph is predominantly based upon documentation collected during and immediately after Desert Shield and Desert Storm. Unit command chronologies and interviews recorded by the Battlefield Assessment Team served as the basis of a comment edition which was sent out to key participants in the events depicted. These comments were then incorporated into the final narrative. This methodology produced a history that approaches the accuracy and vigor of the MTU's first-hand accounts.

As in most of the publications of the History and Museums division, the production of this monograph was a team effort. Dr. Jack Shulimson, Mr. Charles Smith, and Ms. Wanda Renfrow of the History Writing Unit together with Mr. Charles Melson, the Chief Historian, provided the final review of the manuscript. Mr. James E. Cypher, an intern from Loyola University in New Orleans, assisted with the appendices, especially "The Glossary and List of Abbreviations" and the "Chronology of Events."



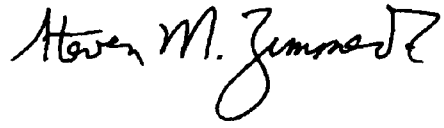
M. F. Monigan
Colonel, U.S. Marine Corps
Director of Marine Corps History and Museums

Preface

My goal for this volume was an accurate and readable narrative of I Marine Expeditionary Force's combat service support during Operations Desert Shield and Desert Storm. I concentrated on the 1st and 2d Force Service Support Groups, Marine Wing Service Support Group 37, and the 3d Naval Construction Regiment to relate how their plans, preparations, and activities meshed and supported the Marine force's scheme of maneuver and fire support plan. The deployment of the force and the reconstitution of Marine Corps capabilities after the crisis were also important stories that required telling. I researched and wrote drafts before contacting knowledgeable participants in the war. This produced a good basis for Desert Storm veterans to fill in gaps, correct mistakes, and provide additional information that improved the quality of the text.

This monograph would not have been published without the professional efforts of the staff of the Marine Corps Historical Center. In that regard, I would like to thank and acknowledge the contributions of Brigadier General Edwin H. Simmons (Ret); Colonel Michael F. Monigan; Mr. Benis M. Frank; Lieutenant Colonel Thomas A. Richards (Ret); Lieutenant Colonel Dave Beasley, Jr. (Ret); Lieutenant Colonel Leon Craig, Jr.; Dr. Jack Shulimson; Ms. Catherine A. Kerns; Mr. W. Stephen Hill; and Mr. Charles R. Smith. I would like to extend a special thanks to Mr. George C. MacGillivray. Also, I am grateful for the advice and counsel that I received from the members of the Desert Storm historical MTU. In particular, I would like to thank Colonel Dennis P. Mroczkowski, Lieutenant Colonel Charles H. Cureton and, especially, Lieutenant Colonel Ronald J. Brown (Ret).

Outside of the Marine Corps History and Museums Division, I would like to express my thanks to Lieutenant General James A. Brabham, Jr. (Ret); Colonel William D. Bushnell (Ret); Lieutenant Colonel Daniel K. Franklin; Colonel Thomas S. Woodson; Colonel Robert L. Songer; Lieutenant Colonel Charles C. Cvrk; Mr. Nicholas M. Linkowitz; Lieutenant Commander David W. Tomlinson; Major Jeffery D. Lee; Mr. Joseph H. Jeu; Ms. Susan A. Meeker; Major Gregory R. Caldwell; Mr. Jan Healey; and Mr. Chuck Hamilton.



Steven M. Zimmeck
Major, U.S. Marine Corps, Retired

Table of Contents

Switching to the Offense
November and December 1990

Desert Shield Ends and Desert Storm Begins
1-31 January 1991

Flexibility and Forward to Attack Positions
1-23 February 1991

The Ground War
24-28 February 1991

Leaving the Gulf with Good Order and Discipline
1 March-10 October 1991

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

Combat Service Support in Desert Shield and Desert Storm

The First Shot in the War of Logistics: 2 August-2 September 1990

When historians, strategists, and tacticians study the Gulf War—what they will study most carefully will be logistics. This was a war of logistics.[1]

The Iraqi invasion and takeover of Kuwait on 2 August 1990 threatened the stability of Iraq's neighbors and the disruption of the world oil supply. Faced with this crisis, U.S. President George Bush drew a "line in the sand" in Saudi Arabia and formed a grand coalition of European and Arab nations to throw back the Iraqi Army and dampen the ambitions, if not bring down the regime, of Iraq's unpredictable dictator, Saddam Hussein. At the heart of the coalition were the U.S. Armed Forces with the U.S. Marine Corps deploying along the cutting edge. The first challenge of the crisis would be the rapid delivery of troops and materiel to the Persian Gulf.

On 2 August, the U.S. Joint Chiefs of Staff ordered two Navy carrier battle groups to the Persian Gulf. Five days later, the United States Central Command (USCentCom), the unified command responsible for the Persian Gulf, ordered to Saudi Arabia a brigade of the lightly armed U.S. Army 82d Airborne Division, U.S. Air Force fighters from the 1st Tactical Fighter Wing, and two squadrons of maritime prepositioning ships (MPS) carrying Marine Corps equipment and supplies. Rapidly following this action, USCentCom ordered a second brigade from the 82d Airborne Division, the Army's mobile 101st Airborne Division (Air Assault), additional air and naval forces, and the 7th Marine Expeditionary Brigade to the Persian Gulf. USCentCom intended to defend Saudi Arabia by bombing Iraqi forces by air and by establishing ground defensive positions around the two major Saudi ports at Dhahran and Jubayl.[2]

The first month after the Iraqi invasion was a hectic period for Marine units as American forces rapidly moved to the Gulf to defend Saudi Arabia. The 7th Marine Expeditionary Brigade (7th MEB) was the first U.S. combat organization to arrive in the Persian Gulf with the necessary blend of maneuver, fire power, and logistics capability required to defeat Iraqi forces in the open desert.

It was the leading element of the I Marine Expeditionary Force (I MEF), which served as the Marine Corps command component (MarCent) of USCentCom. Similar to all Marine air-ground task forces, I MEF consisted of headquarters, ground combat, aviation combat, and combat service support elements, able to task-organize into smaller units.* Lieutenant General Walter E. Boomer, who served as a company commander during the Vietnam War and later as an advisor to a South Vietnamese infantry battalion, commanded I MEF. Major General James M. Myatt, a native Californian who served two combat tours in Vietnam, led the 1st Marine Division. Major General Royal N. Moore, Jr., a Vietnam War veteran who flew both fixed-wing aircraft and helicopters, directed the 3d Marine Aircraft Wing. Brigadier General James A. Brabham, Jr., a native Pennsylvanian who served twice in Vietnam and as the Deputy J-4 for logistics at USCentCom, commanded I MEF's combat service support element—the 1st Force Service Support Group (1st FSSG).[3]

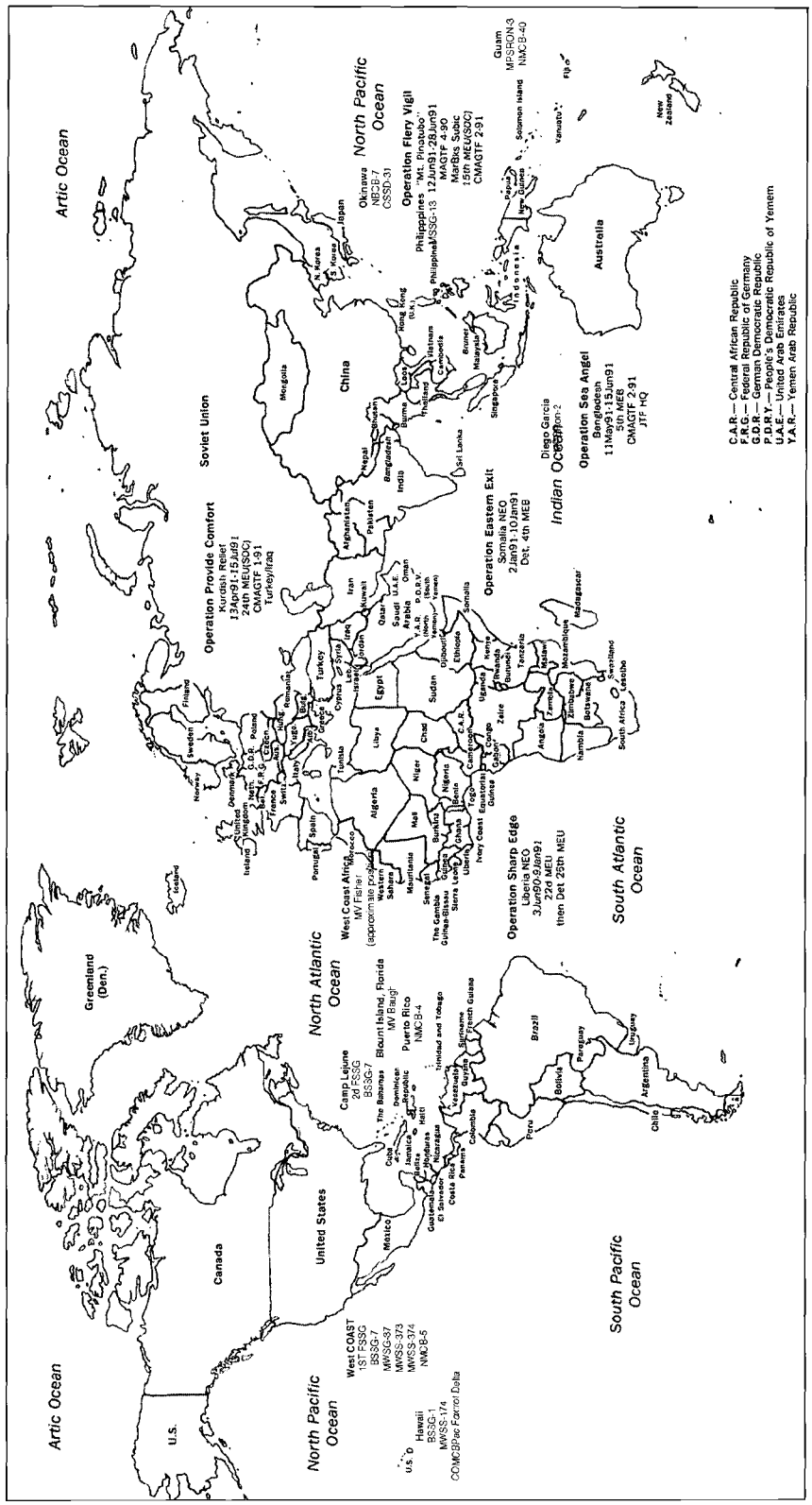
Gathering the Pieces

> *The Marine Corps' deployment to the Persian Gulf, constituting as it did the largest Marine Corps movement since World War II, was dependent on the sealift provided by the Navy and airlift provided by the Air Force. Both sealift and airlift were magnificent.*[4]

On 2 August 1990, the 1st FSSG, headquarted at Camp Pendleton, California, halfway around the world from the Persian Gulf, was organized into eight battalions that provided engineer, motor transportation, supply, maintenance, landing support, medical, dental, and other services, such as postal, disbursing, legal, exchange, and graves registration. Like most Marine Fleet Marine Force units, it had the ability to task organize and deploy into smaller organizations such as Marine expeditionary unit service support and brigade service support groups.

Colonel Alexander W. Powell, a former artilleryman who served two tours in Vietnam, commanded Brigade Service Support Group 7 (BSSG-7), 1st FSSG, which consisted of a small staff of 10 officers and 25 enlisted Marines, located in Building 1141 at Camp Pendleton.[5] While Iraqi *Republican Guard* divisions invaded Kuwait, Colonel Powell and his staff planned a deployment to Turkey to participate in Display Determination 90, a routine NATO exercise.[6] For this exercise, 1st FSSG transferred operational control of BSSG-7 to the 7th Marine Expeditionary Brigade (7th MEB), located 120 miles east of Camp Pendleton in the Mojave Desert at Marine Corps Combined Arms Combat Center, Twentynine Palms, California. The 7th MEB consisted of the brigade's command

*Marine Air-Ground Task Force (MAGTF) doctrine establishes three different-sized units each having command, ground combat, aviation combat, and combat service support elements. The biggest MAGTF is the MEF, followed in size by the Marine Expeditionary Brigade (MEB), with the Marine Expeditionary Unit (MEU) being the smallest.



Locations of Combat Service Support Organizations and MPSRONs 2 and 3 on 2 August, 1990

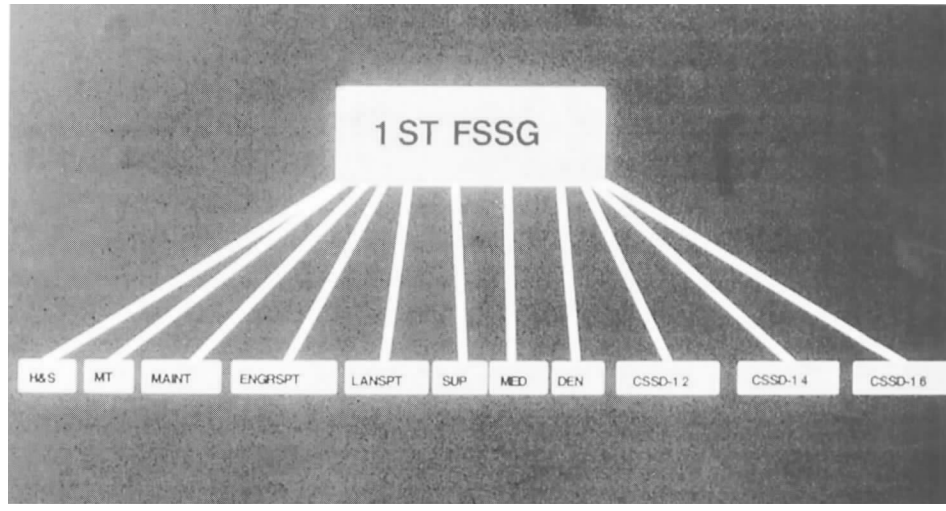


Photo courtesy of LtGen James A. Brabham, Jr.

The 1st FSSG, like all FSSGs, was organized into eight functional battalions. Its three combat service support detachments (CSSDs) were established to meet local requirements in California and Arizona.

element, Regimental Combat Team (RCT) 7, Marine Aircraft Group 70 (MAG-70), and BSSG-7.

The 7th MEB was a maritime prepositioning squadron brigade. Maritime prepositioning of equipment and supplies was a concept pioneered by the Marine Corps. According to this doctrine, a Marine brigade's set of equipment and 30 days of supplies were preloaded on ships prepositioned in friendly ports located near potential crises areas. To confront an international emergency, the brigade's personnel would fly to a safe location while the ships would sail to meet them. The brigade along with a Navy support element (NSE) would unload the ships, distribute the equipment, and rapidly create a potent and sustainable combat force in a troubled region.* The Marine Corps maintained three maritime prepositioning ships squadrons (MPSRons) tied to three dedicated Marine expeditionary brigades. MPSRons, the Marine brigades, and the NSEs regularly trained together. The 7th MEB was associated with MPSRon-2, consisting of five civilian-owned ships located 4,600 kilometers from the Port of Al Jubayl, at the British island of Diego Garcia.

Four days after Iraq invaded Kuwait, Major General John I. Hopkins, a veteran of two tours in Vietnam who once commanded the 2d Force Service Support Group and now the 7th MEB, ordered BSSG-7 to "stand-up" its wartime table of organization, to fly to Saudi Arabia, and to marry up with MPSRon-2 at

*A Maritime Prepositioning Force consists of the MPS squadron, the MEB, a Navy support element (NSE), and a command element. NSEs are task organizations which often consist of cargo handlers and amphibious Seabees from the U.S. Navy's two amphibious construction battalions. (Author's telephone intvws, dtd 21Feb91, with Mr. Nicholas M. Linkowitz, Col Alexander W. Powell USMC (Ret), Dr. Robert J. Schneller, and MSChief Alfred H. Jensen).

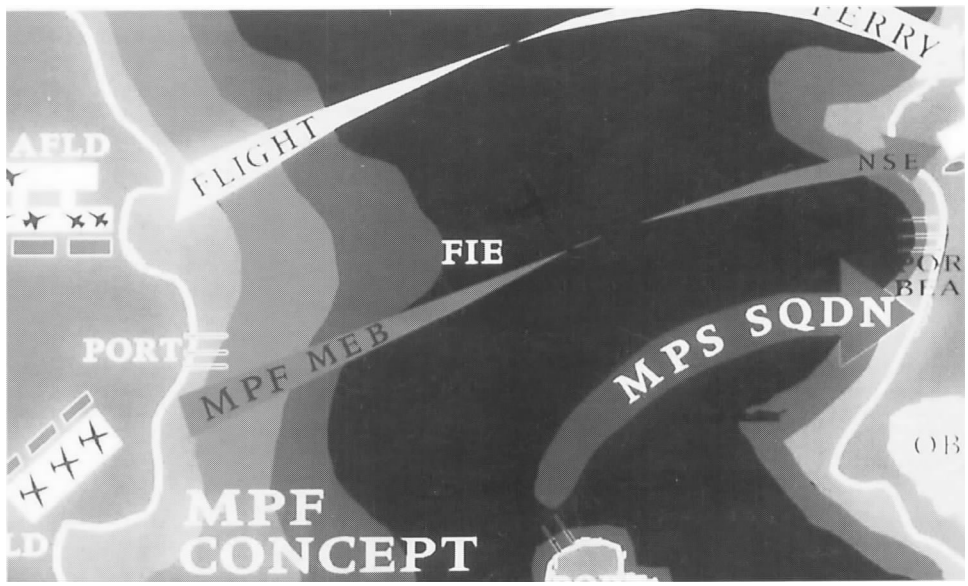


Photo courtesy of LtGen James A. Brabham, Jr.

A MPF squadron deployed from a strategically located harbor reaches port in a troubled area. A Marine Expeditionary Brigade (MEB) would fly in echelon (FIE) to the crisis location, unload the MPS, and rapidly create a logistically sustainable combat force. Marine fixed-wing aircraft would fly to a nearby air facility to provide the MEB its air component.

the Port of Al Jubayl.[7] This port was located on the Persian Gulf, in the heart of the Saudi oil region, and only 210 kilometers south of Iraqi forces massing on the Saudi-Kuwait border. General Brabham immediately sent personnel and equipment to expand BSSG-7 to its wartime strength. The 1st FSSG administratively and medically screened every deploying Marine and sailor. It issued orders; gave shots; conducted training on the subjects of nuclear, biological, and chemical warfare, heat injury, and Arab customs; and ensured that all departing Marines fired their individual weapons before deployment.

The 1st FSSG sent departure airfield control groups and logistic movement control center teams to Norton Air Force Base, California, and Marine Corps Air Station El Toro, California, to assist 7th MEB's move to the Gulf.[8] The logistics movement control center coordinated the arrival and departure of aircraft, ground transportation, and transient units. The departure airfield control group helped departing units unload ground transportation and load aircraft.

BSSG-7 began moving by air to the Gulf as part of the 7th MEB's 148-man Surveillance, Liaison, and Reconnaissance Party, tasked with preparing the Port of Al Jubayl for unloading MPSRon-2 ships. This team reached Saudi Arabia on 11 August.[9] BSSG-7's advance party landed two days later and Colonel Powell arrived on the 16th. On 21 August, the main body reached Saudi Arabia, increasing the size of BSSG-7 to nearly 3,000 Marines and sailors in-country. In just 15 days, BSSG-7 grew in size from 35 Marines to 2,841 logisticians, moved to the other side of the globe, prepared for combat operations, and laid the ground-

Photo courtesy of LtGen James A. Brabham, Jr.

In August 1990, MPSRon-2 docked at Jubayl, 210 kilometers south of the Kuwaiti border, while the 7th MEB landed initially at Dhahran and later at Jubayl Naval Air Facility. Marine fixed-wing squadrons operated from the nearby island nation of Bahrain.

work for a larger logistical system.[10]

Thirty miles north of Camp Pendleton at Marine Corps Air Station El Toro, Marine Wing Support Group (MWSG) 37 provided direct logistics support as well as meteorological and crash and fire rescue services to the 3d Marine Aircraft Wing (3d MAW). MWSG-37, commanded by Colonel Robert W. Coop, deployed two squadrons to the Persian Gulf as part of the 7th MEB: Marine Wing Support Squadron (MWSS) 373, commanded by Lieutenant Colonel Stephen D. Hanson, located at El Toro, and MWSS-374, commanded by Lieutenant Colonel Stephen G. Hornberger, at the neighboring Marine Corps Air Station Tustin.[11]

On 2 August, MWSS-373 was preparing to deploy to Turkey to participate in the exercise Display Determination in support of MAG-70. MWSS-373 rapidly added 20 personnel to the 7th MEB's Surveillance, Liaison, and Reconnaissance Party, which was swiftly followed by the squadron's advance party, which accounted for another 95 persons. The destination of MWSS-373 was Shaikh Isa Air Base on the Gulf island of Bahrain, and not Al Jubayl, Saudi Arabia. MWSG-37 sent additional people to flesh out MWSS-373, whose main body of 389 Marines and sailors departed California later that month.[12]

Earlier, on 10 August, MWSS-374, which had one detachment nearing completion of a 1,400,000-square-foot grading project at the expeditionary air field, Marine Air Ground Combat Center, Twentynine Palms, California, received orders from MWSG-37 to deploy to the Gulf in support of MAG-70. The group reassigned personnel to bring the squadron up to strength, and on 15 August the advance party departed. Twelve days later, all 21 officers and 426 enlisted

Marines and sailors of the squadron were in Saudi Arabia.[13]

As dictated by existing Marine and Navy contingency plans, MPSRon-2 immediately sailed from Diego Garcia Island to join the 7th MEB, already en route, in response to the crisis. The MV *Hauge*, MV *Bonnyman*, and MV *Anderson* reached the Port of Al Jubayl on 15 August.* Two of MPSRon-2's five ships were absent from Diego Garcia when the squadron steamed for Saudi Arabia. The MV *Fisher* was located off the west coast of Africa, enroute to Blount Island, Florida, to undergo scheduled maintenance. The MV *Fisher* turned around and sailed for the Persian Gulf, arriving at Al Jubayl on 24 August. The fifth ship of the squadron, the MV *Baugh*, was docked at Blount Island, Florida, undergoing scheduled maintenance. MV *Baugh* quickly departed the United States, docking at Jubayl on 5 September.[14] In accordance with doctrine, Navy Captain Carl A. Weegar's NSE of 523 sailors arrived at the Port of Al Jubayl to assist BSSG-7 in unloading the MPS ships.[15]**

BSSG-1

Rapidly responding to the emergency in the Gulf region, on 8 August, the four ships of MPSRon-3, located on Guam, also set sail for the Gulf to marry-up with units from the 1st Marine Expeditionary Brigade located at Marine Corps Air Station Kanehoe Bay, Hawaii.[16] Brigade Service Support Group 1 (BSSG-1) provided general logistics support to the units of the 1st Brigade composed of the command element, Regimental Combat Team (RCT) 3, and Marine Aircraft Group 24, as well as the BSSG.

Lieutenant Colonel Ernest G. Beinhart III, a former enlisted Marine who served two tours in Vietnam, commanded BSSG-1. Unlike BSSG-7, BSSG-1 was a permanent organization consisting of 1,200 Marines and sailors and not a planning staff to be expanded, when required. The support group was dedicated to maritime prepositioning ship operations, completing Exercise Freedom Banner-90, just prior to Iraq's invasion of Kuwait. During this exercise, ships from MPSRon-3 were unloaded at Indian Head, Washington.[17] On 26 August, BSSG-1's 51-member advance party reached the Port of Al Jubayl. On the same day, three ships from MPSRon-3, the MV *Lummus*, MV *Williams*, and MV *Lopez* dropped anchor at the Port, followed the next day by the arrival of Lieutenant Colonel Beinhart. Four days later, the last MPSRon-3 ship, the MV *Button* docked at Jubayl.[18]

On the east coast of the United States at Camp Lejuene, North Carolina, the 2d Force Service Support Group (2d FSSG) provided general logistics support to units of the II Marine Expeditionary Force which included the 2d Marine

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*MPS ships are named after Marine Corps recipients of the Medal of Honor.

**Capt Weegar formed the NSE around the Naval Beach Group which he commanded at the Naval Amphibious Base Coronado, California, and sailors from the Navy Cargo Handling and Port Group, Williamsburg, Virginia. (Powell comments)

Table: MPSRon-2 and 3 ships and arrival dates at port of Al Jubayl.[19]

MPSRon-2 Ships (Diego Garcia)	Date Arrived Jubayl	MPSRon-3 Ships (Guam)	Date Arrived Jubayl
MV *Anderson*	15 August	MV *Williams*	26 August
MV *Bonnyman*	15 August	MV *Lummus*	26 August
MV *Haque*	15 August	MV *Lopez*	26 August
MV *Fisher*	15 August	MV *Button*	30 August
MV *Baugh*	5 September		

Division and 2d Marine Aircraft Wing. Brigadier General Charles C. Krulak, a Naval Academy graduate who had completed two tours in Vietnam and also had served as the deputy director of the White House military office, commanded the 2d FSSG.[20]

Brigade Service Support Group (BSSG) 4, 2d FSSG, commanded by Colonel James J. Doyle, Jr., was also located at Camp Lejeune. BSSG-4 provided general logistics support to the units of the 4th Marine Expeditionary Brigade (4th MEB) consisting of the brigade command element, Regimental Landing Team 2, and Marine Aircraft Group 40.* The brigade support group actually consisted of a small planning staff that the 2d FSSG augmented with people and equipment for exercises and operations. It supported a Marine expeditionary brigade that deployed to a crisis on board U.S. Navy amphibious shipping rather than by air.

The 4th MEB staff demonstrated its flexibility during the first week of August 1990. In a period of eight days, the 4th MEB shifted its efforts from planning two exercises in Europe to a contingency operation off Liberia and, finally to its rapid deployment by ship to the Persian Gulf. On 10 August, the Commander-in-Chief, Atlantic Fleet, ordered the MEB to the Persian Gulf. The next day, the 2d FSSG transferred operational control of BSSG-4 to the 4th MEB.

Between 17 and 22 August, the 1,464 Marines and sailors of BSSG-4 quickly departed from Moorehead City, North Carolina, on 13 ships, divided into three transit groups belonging to Amphibious Group 2. Towards the end of August, embarkation teams from the 2d Force Service Support Group, II Marine Expeditionary Force, and Fleet Marine Force, Atlantic, moved to Sunny Point, South Carolina, to load five Military Sealift Command chartered ships with 30 days of supplies and equipment for the 4th MEB.[21]**

*Regimental Landing Team 2 consisted of two infantry battalions, an artillery battalion, and detachments of light armored vehicles, TOWs, engineers, and amphibious assault vehicles.

**Col Skipper, the commanding officer of the 8th Engineer Support Battalion, 2d FSSG, called the 4th MEB's embarkation on board amphibious ships "a mess, poorly coordinated, it became a stuffex." The 4th MEB loaded much of its equipment on the MSC char-

Table : 4th Marine Expeditionary Brigade shipping[22]

Transit Group 1	Transit Group 2	Transit Group 3	Assault Follow-on MSC Shipping
USS *Gunston Hall* (LSD-44)	USS *Nassau* (LHA-4)	USS *Guam* (LPH-9)	MV *Cape Domingo*
USS *Shreveport* (LPD-12)	USS *Raleigh* (LPD-1)	USS *Iwo Jima* (LPH-2)	MV *Strong Texan*
USS *Spartanburg County* (LST-1192)	USS *Pensacola* (LSD-38)	USS *Manitowoc* (LST-1180)	MV *Bassro Polar*
USS *Portland* (LSD-37)	USS *Saginaw* (LST-1188)	USS *Lamoure City* (LST-1194)	MV *Aurora T*
USS *Trenton* (LPD-14)			MV *Pheasant*

On patrol near the Philippine Islands in August, having departed California for its Western Pacific deployment only a few months before, the 13th Marine Expeditionary Unit (Special Operations Capable) (MEU[SOC]), transported by the five ships of Amphibious Ready Group "A," set a course for the Middle East.*** MEU Service Support Group 13 (MSSG-13), the smallest of the standard Marine air-ground task force combat service support organizations, provided logistic support to the MEU's command element, Battalion Landing Team (BLT) 1/4, and Marine Medium Helicopter Squadron (HMM) 164 (Composite). Lieutenant Colonel Bradley M. Lott commanded MSSG-13's 16 officers and 273 enlisted Marines and sailors arrayed into eight detachments replicating, in miniature, the eight battalions of the FSSG. [23]

As a result of the traditional warm relationship between the Marines and

---

tered ships because of the shortage in amphibious shipping. Col Skipper added, "as a result, my 450-man engineer detachment ended up with only two 5-ton trucks with ROWPUs on board amphibious shipping. All the rest of the equipment was on the MSC ships." (Col Charles O. Skipper, comments on draft, Feb97, Author's file, MCHC, hereafter Skipper comments. For a comprehensive narrative on 4th MEB's embarkation, see LtCol Ronald J. Brown, USMCR (Ret), *U.S. Marines in the Persian Gulf, 1990-1991: With Marine Forces Afloat in Desert Shield and Desert Storm* (Washington, D.C.: Hist&MusDiv, 1998).

***The USS *Okinawa* (LPH-3), USS *Ogden* (LPD-5), USS *Fort McHenry* (LSD-43), USS *Durham* (LKA-114), and USS *Cayuga* (LST-1186) were the ships of Amphibious Squadron 5.

the Navy's mobile construction battalions, better known as "Seabees," forged during the bloody island-hopping campaigns of World War II,[24] the Commander, Naval Construction Battalions Pacific Fleet (COMCBPAC), located in Pearl Harbor, Hawaii, ordered in August four naval mobile construction battalions spread over half of the world to join the Marines in the Persian Gulf.[25*] The U.S. Navy maintained eight active-duty naval mobile construction battalions that augmented Marines when construction requirements exceeded the capabilities of Marine engineer units. The Seabees performed similar construction tasks to the FSSG and MWSG engineers.[26]

Since there was no active regimental headquarters, a composite headquarters, dubbed COMCBPAC Foxtrot Delta (forward deployed), was formed from the staffs of COMCBPAC, the Commander Naval Construction Battalions Atlantic Fleet, and the 31st Construction Regiment (Training). Commander Michael R. Johnson, USN, a member of the Civil Engineer Corps, was quickly frocked to the rank of Captain in deference to his new responsibilities as the commanding officer of the regiment.[**]

As ordered by COMCBPAC, Naval Mobile Construction Battalion 40 (NMCB-40), stationed in Guam; NMCB-7 posted to Okinawa, NMCB-4 located at Roosevelt Roads, Puerto Rico; and NMCB-5, based at Port Hueneme, California, prepared to deploy in three echelons to the Gulf. Organized into light air detachments and heavier air echelons, the Seabee units air movements were due to arrive in the region before 22 August, with the bulk of each battalion's organizational equipment to follow by ship reaching Saudi Arabia a month later. Unfortunately, the lack of aircraft delayed the Seabee air deployment, forcing most of the equipment scheduled to be shipped by air to be moved by ship. The Seabees slightly enlarged their light air movement detachments to compensate for the loss of the heavier air echelon.

Needing to synchronize Seabee and Marine Corps efforts, on 10 August, Captain Johnson sent Lieutenant Kevin R. Slates, USN, as his liaison officer, and Commander William L. Rudich, the regimental operations officer, to Camp Pendleton. Both Navy officers then travelled to Saudi Arabia with Lieutenant Colonel Marshall B. Foore, the I MEF Engineer Officer.[27] This Navy-Marine Corps engineer team formulated a plan for the Seabees to reinforce the MWSS-374 engineers at Jubayl Naval Air Facility and King Abdul Aziz Naval Air Station and to assist the BSSG-7 engineers at the Port of Jubayl.[***] Another

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*The Seabees of the Naval Mobile Construction Battalions differ in training and mission from the Seabees of the Amphibious Construction Battalions that were assigned to Capt Weegar's NSE. (Author telephone intvw, 21Feb97, with MChief Alfred H. Jensen).

**Frocking allows those selected for the next higher grade to wear their new rank, without the benefits of increased pay and legal authority, prior to their official promotion date. Naval officers who command naval mobile construction organizations are members of the Civil Engineer Corps (CEC).

***Comdr Rudich, LtCol Foore, and Lt Slates played a critical role in the early planning and engineer execution, setting the stage for all follow-on engineer operations, according to Capt Johnson. (Johnson comments).

Seabee group, consisting of the supply officer, Lieutenant Commander Jon Miller, USN; Marine liaison officer Major Martin R. Nolan, USMC; and the operations chief, Master Chief Utilitiesman John Henderson, soon joined the first group.[28] This team began arranging logistics support and evaluating the threat and security situation.

On 28 August, 10 members of the command element of COMCBPAC Foxtrot Delta together with the advance party of NMCB-5 reached Saudi Arabia. Two days later, the remaining members of the COMCBPAC Foxtrot Delta command element landed, followed on the 31st by the last increment of NMCB-5's air detachment. Lieutenant Daniel T. Ray, USN, commanded the detachment consisting of 91 sailors and 23 pieces of equipment. This group began construction operations with the Marines of MWSS-374 at Jubayl Naval Air Facility. The first 31 members of NMCB-4's air detachment arrived from Puerto Rico on the last day of August, raising the number of deployed Seabees to 181.[29] NMCB-4 was assigned to King Abdul Aziz Naval Air Station four days after its arrival. On 2 September, the MV *Constellation* departed Guam carrying NMCB-40's organizational equipment.[30]

The senior Marine logistician in Saudi Arabia by this time was Brigadier General Brabham, who had arrived earlier in the month. Lieutenant General Boomer, the I MEF commander, had assigned Brabham as his personal representative and ordered him to Riyadh, the capital city of Saudi Arabia. Rather than commanding the 1st FSSG, Brabham's first task was to establish the MarCent headquarters in Saudi Arabia. His recent tour at USCentCom, the overwhelmingly logistical nature of the deployment, and the long-term benefits of positioning I MEF's ranking logistic officer in Saudi Arabia at the earliest opportunity made Brabham the obvious person to fill this position and at a later date to reassume control of the 1st FSSG.[31]

Following General Brabham to Saudi Arabia were four members of the Logistics Movement Control Center (Forward), 1st FSSG. This group coordinated the arrival of aircraft with locally available transportation and reported aircraft arrivals to 1st FSSG at Camp Pendleton.[32] On 29 August, the Advanced Party of 1st FSSG left Southern California. Their purpose was to establish a forward headquarters and to plan the amalgamation of BSSG-7 and BSSG-1 into the 1st FSSG. By 2 September, 83 personnel belonging to the 1st FSSG were in Saudi Arabia, ready to take control of both BSSGs.[33]

The Navy and the Air Force performed superbly in transporting Marines and Seabees to the Gulf. During the one month following the invasion of Kuwait, eight maritime prepositioning ships reached the Port of Jubayl with a ninth ship closing rapidly. Eighteen U.S. Navy amphibious ships carried the 4th MEB and 13th MEU (SOC) towards the Persian Gulf. Five chartered ships were being loaded to move 4th MEB's supplies and one ship transported Seabee equipment. Two hundred and fifty-nine Military Airlift Command flights moved the 16,469 passengers and 5,985 short tons of cargo belonging to the 7th MEB. Twenty-four flights moved the lead elements of the 1st Marine Brigade and 30 flights transported Seabees. Of the 20,524 Marines and sailors ashore in Saudi Arabia, 4,783

were the logisticians belonging to BSSG-7, BSSG-1, MWSS-373, MWSS-374, the Seabees, and 1st FSSG (Forward). Of the 13,515 personnel afloat with the 4th MEB and 13th MEU (SOC), 1,737 were the logisticians of BSSG-4 and MSSG-13.[34] After arriving in the middle east, the 7th MEB took advantage of the excellent facilities provided by the governments of Saudi Arabia and Bahrain, unloaded the MPS ships, and spread out in defense of Al Jubayl.

Table: Logistics units deployed to the Persian Gulf in September 1990[35]

I MEF Logistics Units	Number of Personnel	Logistics Units Afloat	Number of Personnel
BSSG-7	2,857	BSSG-4	1,464
BSSG-1	711	MSSG-13	272
MWSS-373	504		
MWSS-374	447		
Seabees	181		
1st FSSG (Forward)	83		

Drawing the Mameluke

> *We got three of them at once and did a "dump-ex" on them. We offloaded three ships in about three or four days.*[36]

The 7th MEB entered the oil-rich Persian Gulf area through the heart of its most developed infrastructure. This region contained major airfields and seaports interconnected by an extensive road network optimal for joining Marines, who arrived by air, with their surface-transported equipment. These facilities allowed 7th MEB to build an air-ground defense faster than envisioned by strategic planners.

Al Jubayl was the major port used by Marines during Desert Shield and Desert Storm. This port had 16 berths for unloading ships, heavy lift equipment, abundant warehousing, extensive outdoor hardstand, storage, and staging areas; a good surrounding road network; and an existing work force. The port was located near vacant labor camps and the Hulwaylatt Hospital used for the construction of the Industrial City of Jubayl.* The cantonment area at the port was named Camp Shepherd in honor of General Lemuel C. Shepherd Jr., the 20th Commandant of the Marine Corps.[37]

Located 27 kilometers due west of the port was Jubayl Naval Air Facility, which gave 7th MEB a local airfield to fly in people and equipment and a heli-

*The Industrial City contained the Saudi petrochemical industry in the Eastern Provinces.

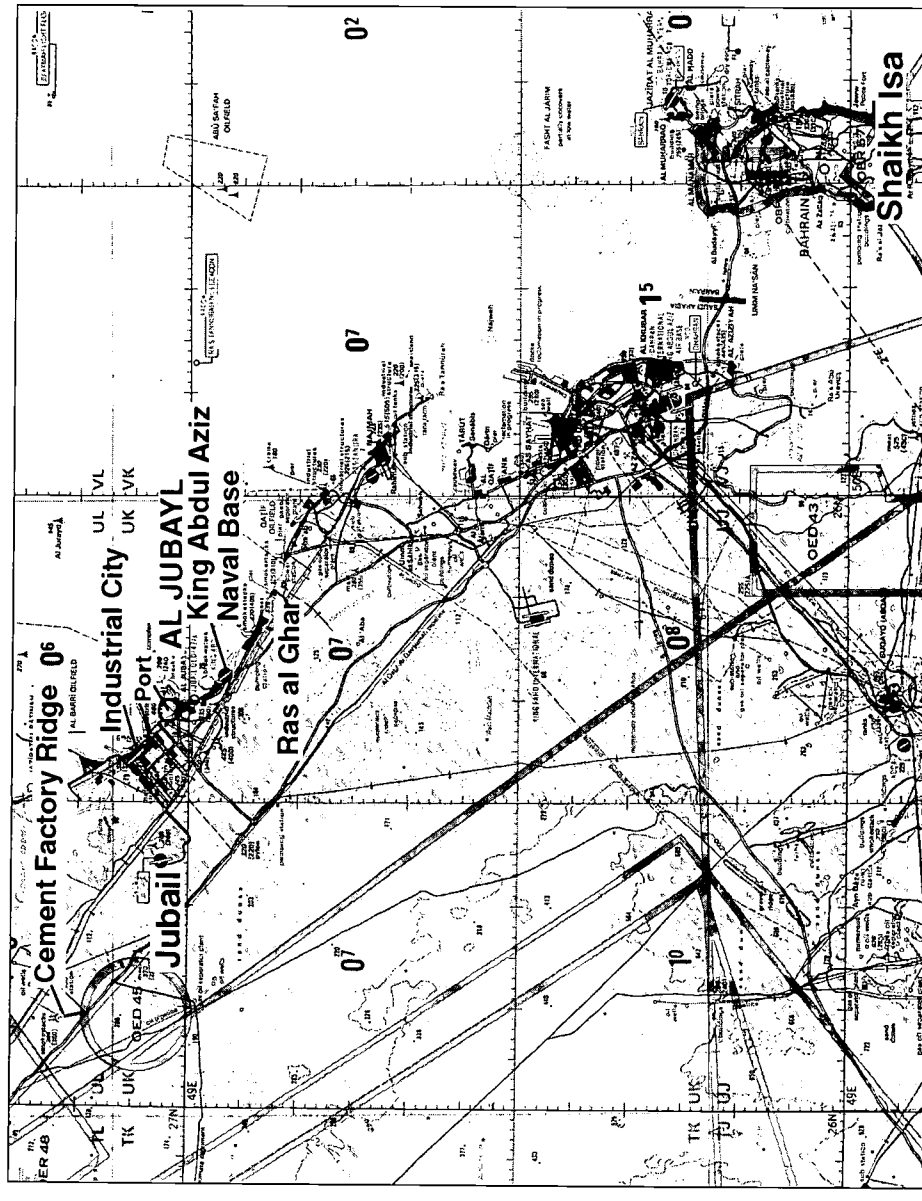
Photo courtesy of LtGen James A. Brabham, Jr.

The Port of Jubayl was an expansive modern facility that could unload 16 ships simultaneously.

copter base to support defensive operations. On 16 August, the Military Airlift Command, responding to 7th MEB's request to open an airhead closer to the Port of Jubayl than Dhahran, began flying missions to Jubayl Naval Air Facility.[38] The next day, Bell Textron Super Cobra attack helicopters from Marine Light Attack Helicopter Squadron (HMLA) 369 arrived at the air facility. Seven more helicopter squadrons joined them over the next 16 days.*

Already, on 15 August 1990, the 7th MEB's Surveillance, Liaison and Reconnaissance Party had arrived at the Port of Jubayl to unload the ships of MPSRon-2. Expecting a gunfight upon arrival, the locked-and-loaded Marines of the Surveillance, Reconnaissance, and Liaison Party brushed past the business-as-usual-attitude prevailing in Saudi Arabia, and rushed to unload the MV *Bonnyman*, MV *Hauge*, and MV *Anderson*.[39] Major items of equipment such as M60 tanks, light amphibious vehicles, amphibious assault vehicles, M198 howitzers, trucks, forklifts, and container handlers came off the ships first. By 17 August, all 1,156 major items of equipment were unloaded and by the 21st, 29,257 short tons of cargo and containers were on dry land.[40] Anxious to move to the field and establish the defense of Jubayl, 7th MEB units rushed to claim their equipment. This caused a distribution problem when some ground units grabbed more equipment than they rated, leaving others without. This gave the 1st Marine Division Logistics Officer, Colonel Jasper C. Lilly, a long-term headache

*7th MEB helicopters were transported by cargo air planes to Saudi Arabia and not by sea.



Facilities Infrastructure in Saudi Arabia and Bahrain

in sorting out ownership.* Despite this annoyance, the rapid unload of MPSRon-2 allowed the 7th MEB to announce its readiness to defend Jubayl on 25 August, a little more than three weeks after the start of hostilities and nearly a week before strategic planners believed Jubayl could be defended.[41]**

On 22 August, the MV *Bonnyman* was reloaded with ammunition and ground equipment to build up the 7th MEB's aviation capability in Bahrain. Located on a small Persian Gulf island, Bahrain was physically connected to Saudi Arabia by 27 kilometers of causeway and diplomatically by membership in the Gulf Cooperative Council.*** The island is 50 kilometers long and 18 kilometers wide. Shaikh Isa Air Base, on the island, is located in the sparsely populated southern part of Bahrain. The command elements of MAG-70 and its fixed wing squadrons set up shop at this airport. Shaikh Isa was located 150 kilometers southeast of the port of Al Jubayl, which was a two-hour journey by ground transportation. Located in the densely populated north of the island, Bahrain International Airport served as the bed-down site for six Lockheed KC-130 Hercules refuellers belonging to Marine Aerial Refueller Transport Squadron (VMGR) 352. MAG-70 used the nearby port of Mina Suliman to unload military prepositioning ships after their initial stop at Jubayl.[42]

Back in Saudi Arabia, the 7th MEB continued to unload MPSRon-2 ships and use them to support the aviation build-up. On 24 August, MV *Hauge* moved 10 kilometers southeast of the Port of Jubayl, to pump aviation fuel at King Abdul Aziz Naval Air Station. On the same day, 20 McDonald Douglas AV-8B Harrier jets of Marine Attack Squadron (VMA) 311 arrived at this facility, while the MV *Fisher*, the fourth ship of MPSRon-2, docked at the Port.[43] All 10,000 short tons of cargo from the *Fisher* were unloaded by 27 August, and similar to the MV *Bonnyman*, the *Fisher* was reloaded with aviation ammunition and ground support equipment bound for Bahrain.[44]

On 26 August three ships from MPSRon-3, the MV *Lummus*, MV *Williams*, and MV *Lopez* docked at the Port of Jubayl. Meeting the ships were the Marines of BSSG-1 who arrived with the 1st Marine Expeditionary Brigade's advance party. Four days later, the last ship belonging to MPSRon3, the MV *Button*, reached the Port. BSSG-1 spent its brief nine-day existence in Saudi

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*In addition, 7th MEB unevenly distributed fortification materials (sandbags, barbed wire, and engineer stakes). According to Col Powell, "It (fortification material) pretty much went out on a first come first serve basis because there was no distribution plan and no system to relate bundles of sandbags and rolls of wire with units and areas to be defended. Consequently, units at Jubayl were protected with sandbagged positions while some division units moved to the desert without any fortification materials." (Powell comments).

**7th MEB's efforts to establish a defense quickly were frustrated by a shortage of USAF aerial refuellers which postponed the arrival of MAG-70 fixed-wing aircraft and by a delay in obtaining Saudi permission to move RCT-7 out of the Port of Jubayl.

***The Gulf Cooperative Council was a defense pact established in 1981 by Saudi Arabia, Bahrain, Kuwait, Qatar, Oman, and the United Arab Emirates to counter both Iranian and Iraqi aggression in the Persian Gulf.

Photo courtesy of LtGen James A. Brabham, Jr.

The Jubayl Naval Air Facility, located 27 miles west of the Port of Jubayl, after 16 August 1990, became the Marines' main airhead for passengers and cargo entering Saudi Arabia and the primary Marine Corps helicopter facility.

Arabia unloading ships. With the 7th MEB consolidating defensive positions, BSSG-1 Marines had time to stage, organize, and account for equipment and materiel. The use of bar-coding scanning procedures greatly assisted identifying and sorting the masses of look-alike containers. By 2 September, all major equipment was unloaded from the MV *Lummus*, MV *Williams*, and MV *Lopez* and nearly all of the containers and cargo. BSSG-1 offloaded 83 percent of *Button's* equipment, a fifth of its containers, and 47 short tons of cargo. In total, BSSG-1 took off the ships 41,961 short tons of cargo in seven days and began the sorting, organizing, and issuing process.[45]

The 7th MEB laid claim to superior facilities in Saudi Arabia and Bahrain. Both countries provided modern seaports and airports within reach of the anticipated field of battle. These facilities served as the foundation for the 7th MEB's defense of Jubayl. I MEF would soon use the same facilities to extend its combat capabilities in the Gulf.

Tools of the Trade

The Logistics Vehicle System (LVS) especially proved a life saver.[46]
—Col Alexander W. Powell, CO, BSSG-7

While the Marines of BSSG-1 unloaded MPSRon-3, the BSSG-7 and MWSS Marines recovered their materials, handling bulk fuel storage, water pro-

Photo courtesy of LtGen James A. Brabham, Jr.

Two MPS ships laden with Marine supplies dock at the Port of Jubayl in August 1990.

duction, construction, and motor transportation equipment. The Logistical Vehicle System (LVS) was the premier method of tactical ground transportation belonging to the Marine Corps. LVSs, also known as "Dragon Wagons," provided logisticians a flexible system for moving cargo, containers, people, water, fuel, and recovered vehicles. The LVS family consisted of the MK48 12.5-ton power unit and four different types of trailers. The MK14 container hauler was a trailer used to move standard 8 by 8 by 20-foot containers, 900-gallon water and fuel modules called Sixcons, and fuel/water pumps. Special trailers carrying heavy equipment, such as tanks and bulldozers, were connected to the M48 power unit by the MK16 fifth-wheel semi-trailer configuration. The MK17 cargo hauler was modified and used to haul troops and evacuate wounded from the battlefield as well as to move cargo. The MK15 wrecker trailer gave the LVS a vehicle recovery capability.[47*]

In addition to the LVS, 5-ton trucks were used to carry cargo and people, while the M931 5-ton tractor was hitched to the M970 5,000-gallon tanker to transport fuel. Ancient, but operational, 1,000-gallon M49 fuel and M50 water trucks were also used to transport bulk liquids.

BSSG-7's Motor Transport Detachment deployed 65 MK48 power units, 46 MK14 container haulers, 17 MK17 cargo trailers, and 3 MK16 fifth-wheel semi-trailer adapters. Augmenting the Dragon Wagon fleet were 26 5-ton trucks and 12 M970 5,000-gallon tankers. MWSS-374 operated 10 Dragon Wagons, 18 5-ton trucks, and 8 M970 5,000-gallon fuel tankers. MWSS-373

*A fifth trailer, the MK18, transported ribbon bridges and was fielded after Desert Storm. (Woodson comments).

deployed 10 Dragon Wagons, 26 5-ton trucks, and 9 M970 5,000-gallon fuel tankers. All three units had a small number of M49A2 refuelers and M50A2 water trucks.[48]

Material-handling equipment, such as container handlers, cranes, and forklifts, was essential in picking, placing, and moving the numerous containers, pallets, and vans in which supplies and equipment were packed. The rough terrain container hauler (RTCH) was the largest piece of material-handling equipment deployed to the Gulf. It weighed 103,000 pounds and looked like a giant forklift. It could lift and move fully loaded 8-by-8 by 20-foot containers weighing up to 25 tons. Heavy- and medium- capacity cranes along with medium- and light-forklifts, such as the compact RT 4000 forklift, handy in the tight areas around ammunition bunkers and 5-ton trucks, gave the logisticians of the 7th MEB a variety of equipment to use for a multitude of tasks.[49] MPSRon-2 carried 10 container handlers, 16 cranes, and 28 forklifts for BSSG-7; 1 container handler, 8 cranes, and 26 forklifts for MWSS-373; and 1 container handler, 8 cranes, and 25 forklifts for MWSS-374.[50]

Bulk fuel was either stored in amphibious assault fuel systems operated by the BSSG\FSSGs or by tactical airfield fuel dispensing and helicopter expedient refuelling systems belonging to the MWSSs. An amphibious assault fuel system consisted of an interconnected array of pumps, hoses, and 20,000-gallon fuel tanks capable of storing up to 600,000 gallons. BSSG-7 rated eight amphibious assault fuel systems. The tactical airfield fuel dispensing systems stored 120,000 gallons in six 20,000-gallon tanks and dispensed fuel to aircraft from six refuelling points. MWSS-373 possessed eight tactical airfield fuel dispensing systems

Marines from BSSG-1 prepare to unload ships from MPSRon-3. The ship MV PFC Dwayne T. Williams *is seen in the foreground.*

Photo courtesy of LtGen James A. Brabham, Jr.

Photo courtesy of Col Thomas S. Woodson

A LVS MK48 12.5-ton power unit pulling an empty MK17 container hauler trailer.

and MWSS-374 owned seven. The helicopter expedient refueling system stored 9,000 gallons of fuel in an array of 18 500-gallon collapsible fuel drums interconnected by hoses to filter separators and pumps. This system was air transportable and designed to dispense fuel at forward locations. MWSS-373 owned five helicopter expedient refueling systems and MWSS-374 maintained eight.[51]

The 7th MEB water production capability was provided by reverse osmosis water purification units (ROWPUs). A ROWPU produced up to 600 gallons per hour of purified water from raw water sources such as sea water. In addition, ROWPUs could remove chemical, mineral, and biological contaminants from water. ROWPUs, combined with pumps, tanks, and bladders, were used to establish water points. BSSG-7 owned 13 ROWPUs, MWSS-373 had 8, and MWSS-374 possessed 7.[52]

Both BSSG and MWSS engineers used heavy equipment, such as bulldozers and graders, to improve and build roads, construct berms surrounding fuel storage and ammunition cells, and stabilize the ground for aircraft parking areas. For the latter purpose, aluminum sheets of AM2 matting were fixed to the ground giving aircraft a place to park and helicopters an area on which to land and from which to take off. BSSG-7's earth-moving capability was centered around 16 bulldozers and three road graders, while MWSS-373 had five bulldozers and a road grader and MWSS-374 operated five bulldozers and two road graders.[53]

BSSG-7, MWSS-373, and MWSS-374 claimed their equipment at the Port of Jubayl and began to support 7th MEB's ground and aviation combat units. MWSS-373 set up shop at Shaikh Isa Air Base to support fixed-wing operations, while MWSS-374, moved to King Abdul Aziz Naval Air Station to support the Harrier squadron and to Jubayl Naval Air Facility to sustain helicopter operations. BSSG-7 established itself at the Port of Al Jubayl and began building a general logistical support system.

Creating the General Logistics Support System

It was just a matter of shifting gears from a peacetime exercise to a deployment for an actual contingency.[54] *—Col Alexander W. Powell, CO, BSSG-7*

On 18 August 1990, the 7th MEB ordered BSSG-7 to unload MPSRon-2, support the relocation of ground and aviation combat elements, establish remote logistics sites, and sustain units in the field.[55] A week later, the MEB assigned BSSG-7 the responsibility for security at the Port of Al Jubayl and the nearby Huwaylatt Hospital.[56] Organized on functional lines, BSSG-7 along with help from its Arab hosts, sister Services, and Camp Pendleton, began sustaining the 7th MEB.

Captain Adrian W. Burke, Landing Support Detachment commander, BSSG-7, was responsible for unloading the ships of MPSRon-2. Captain Burke had arrived at Dhahran Air Base, Saudi Arabia, on 11 August, with the Survey, Liaison, and Reconnaissance Party.[57] He immediately ordered First Lieutenant Kenneth Olivo to establish a 12-man arrival air control group at Dhahran, responsible for unloading arriving aircraft and facilitating forward movements of people and equipment. Arriving at the Port of Jubayl, the landing support detachment together with the sailors from Captain Weegar's NSE rapidly offloaded the ships of MPSRon-2.* On 16 August, Captain Burke established a second arrival air control group, led by First Lieutenant Kevin M. McNerney, at Jubayl Naval Air Facility.[58]

Major David L. Jankowski commanded the six officers and 234 enlisted Marines of BSSG-7's motor transport detachment. From 19 August-2 September, the motor transport detachment moved 600 tons of aviation and ground ammunition from the Port of Jubayl to forward deployed units. Major Jankowski used Dragon Wagons hauling 900-gallon Sixcons and M50 1,000-gallon tankers to move water to forward units. Even with the motor transport detachment's efforts, 7th MEB's transportation demands exceeded supply. From the beginning of the deployment, the Marines used host nation trucks and creative substitutions for ground transportation. The Saudi government provided 45 8,000-gallon tankers to move fuel to King Abdul Aziz Naval Air Station and Jubayl Naval Air Facility. In anticipation of moving units north by water, the Marines borrowed five utility landing craft (LCUs) from the Saudi Navy and the U.S. Army.[59]

Major John L. Sweeney, Jr., commanded the engineer detachment of 20 officers and 700 enlisted Marines and sailors. This detachment furnished 7th MEB with bulk fuel storage, construction, and water production and storage capabilities.[60] The 26 Marines of the engineer detachment's water supply platoon produced water with ROWPUs. On 17 August, the water supply platoon established

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*According to Col Powell, "the NSE, especially the Navy Cargo Handling and Port Group, played a critical role . . . in unloading MPSRon-2." (Powell comments).

Photo courtesy of CWO5 Thomas M. Sturtevant

A giant Rough Terrain Cargo Handler (RTCH) lifts an 8 x 20-foot container onto a trailer.

a water point at the Port of Jubayl. Four ROWPUs produced water stored in three 50,000- and two 20,000-gallon tanks. A second water point, using one ROWPU with 50,000 gallons of storage, was established at the Royal Saudi Naval base at Ras Al Ghar, located 25 kilometers southeast of the Port of Jubayl.* The water point was established to support RCT-3 from Hawaii.[61] The cantonment area for RCT-3 was named Camp Dan Daly after the legendary Marine recipient of two Medals of Honor.[62]

During the first weeks of the deployment, the 7th MEB drank water either produced by BSSG-7 or bottled water procured by contracting officers. Water from the local municipal system was used for showers. On 29 August, the Medical Detachment, BSSG-7 began evaluating the potability of municipal water. Two days later, this team reported that the Saudi water supplies at the port, Jubayl Naval Air Facility, Camp 15 in the Industrial City, and King Abdul Aziz Naval Air Station were safe for drinking. The next day the team reported that water produced by the desalinization plant north of Jubayl was potable. The 7th MEB began to use the local water for consumption and considered ending the purchase of bottled water.[63]

The engineer detachment's bulk fuel personnel could operate up to eight 600,000-gallon assault amphibious fuel systems. On 16 August, BSSG-7 began dispensing some of the 77,183 gallons of fuel offloaded from MPSRon-2 at the Port of Al Jubayl. On 24 August, bulk fuel Marines from the engineer detachment, located at King Abdul Aziz Naval Air Facility, received aviation fuel during a ship-to-shore transfer through 18,000 feet of hose from the MV *Hauge*. In a three-day period, amphibious Seabees from the NSE pumped 504,000 gallons of fuel

*The Navy base at Ras Al Ghar should not be confused with the point of land having the same name north of Al Jubayl.

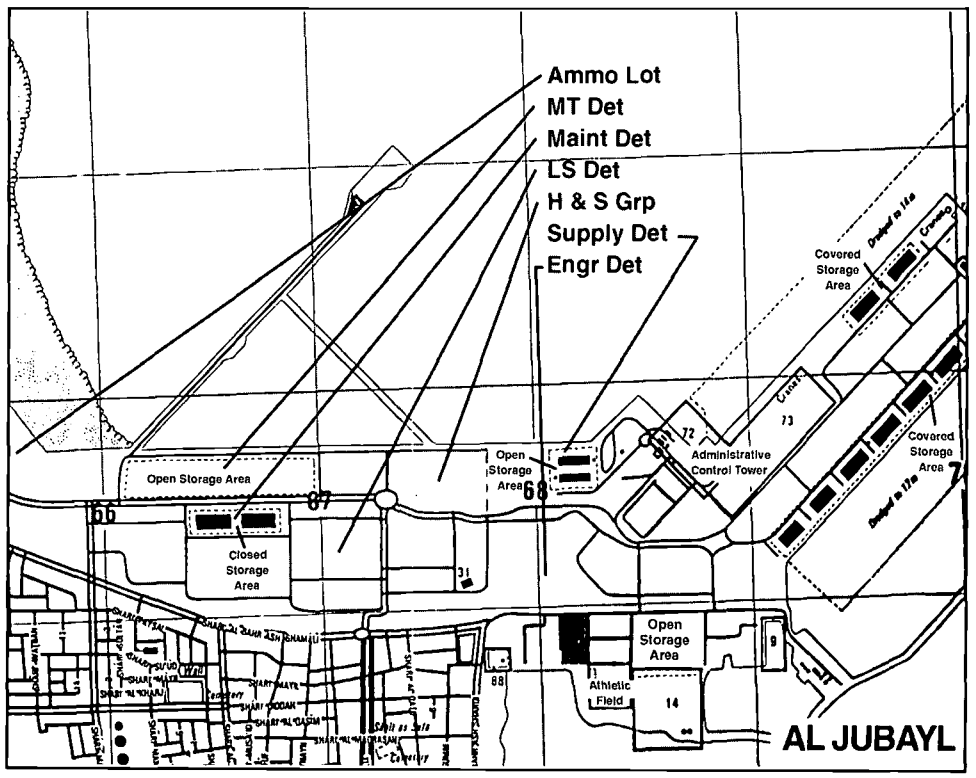

Diagram from 1st FSSG ComdC Nov 90

This diagram map of the Port of Jubayl locates the GSG-1 functional detachments which evolved from BSSG-7.

from the *Hauge* into one of BSSG-7's amphibious assault fuel systems.[64]* While the 7th MEB planned to build an amphibious assault fuel system at Jubayl Naval Air Facility, construction did not start until after 2 September. Helicopters at this facility as well as fixed-wing aircraft at Abdul Aziz Naval Air Station and Shaikh Isa Air Base, received fuel contracted from and transported by the host nations.[65]

Engineer detachment construction personnel concentrated on building berms around the assault amphibious fuel systems at King Abdul Aziz Naval Air Station, Shaikh Isa, and the aviation ammunition storage point at Jubayl Naval Air Facility while working on a variety of other projects. In case of an Iraqi assault, MAG-70 needed to store and protect sufficient fuel and ammunition to support three days of maximum flight operations by all of its aircraft. Elsewhere, BSSG-7 engineers assembled heads and shower facilities at Ras Al Ghar Navy Base for

*Col Powell attributed the success of the ship-to-shore fuel transfer at King Abdul Aziz Naval Air Station to "lessons learned" when BSSG-7 and the NSE had "failed miserably" the previous year to pipe fuel from ship-to-shore during Exercise Talay Thai in Thailand. (Powell comments).

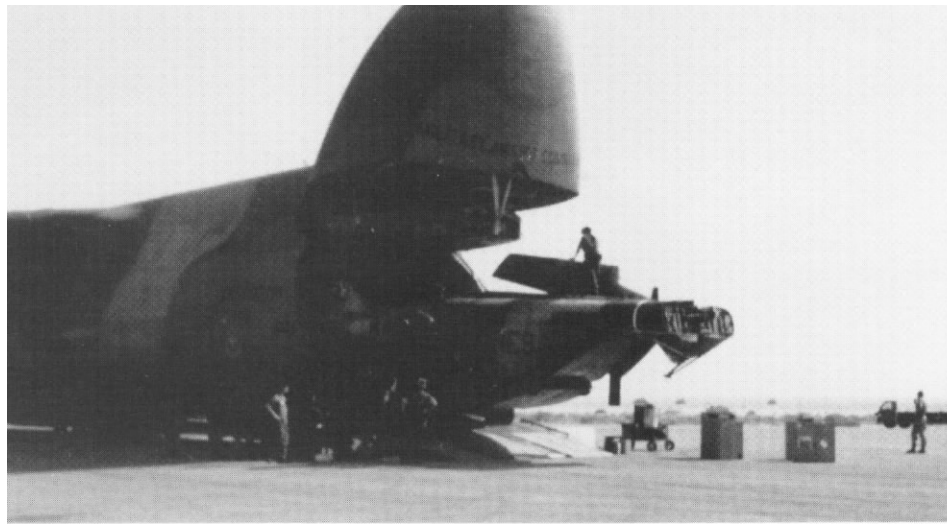

Photo courtesy of Maj Adrian W. Burke

At Jubayl Naval Air Facility, Marines of BSSG-7's Arrival Airfield Control Group help unload a CH-53 Sea Stallion helicopter from a giant USAF C5 transport.

RCT-3. The Saudis added to this camp by erecting 500 tents complete with carpeted floors. BSSG-7 engineers began fabricating wooden tent frames, called "strong backs," and laid concrete foundations to support the long-term use of tents at the Port of Jubayl.[66]*

Major William C. Cox led the 561 Marines of the BSSG-7 maintenance detachment which was organized into engineer, communications-electronics, motor transport, ordnance, and general support maintenance companies. Major Cox focused the engineer maintenance company's efforts on maintaining equipment needed to unload the MPF ships, such as generators and material handling equipment. As equipment came off the ships, the motor transport maintenance company was inundated with trucks requiring repair, while the ordnance maintenance company performed limited technical inspections on M198 155mm howitzers, crew-served weapons, antitank weapons, and optical equipment prior to the 7th Marines deploying to the field.[67]

Navy Lieutenant Commander Alan L. Nelson commanded the Medical Detachment, BSSG-7 of 52 Navy officers and 338 enlisted sailors and Marines. The medical detachment provided 7th MEB with force-level or second-echelon medical treatment. Second-echelon medicine consisted of resuscitative treatment, surgery, and blood transfusions designed to either cure or stabilize injured, wounded, and sick Marines and sailors. The medical detachment evacuated more serious cases after stabilization to third-echelon theater-level medical organiza-

*Concrete was used for tent foundations instead of wood, because of availability and cost. (Skipper comments). Because the Saudis refused to allow the Marines to drive tent stakes into the asphalt at the Port of Jubayl, the engineers constructed thousands of concrete blocks with metal loops sticking out the top to secure their tents. (Col Paul A. Pankey, comments on draft, 26 Feb 97, Author's files, MCHC, hereafter Pankey comments).

Photo courtesy of LtGen James A. Brabham, Jr.

The Marines took over this fully equipped, abandoned hospital at Al-Huwaylatt in the Jubayl Industrial City and renamed it the Marine Corps Hospital at Al-Huwaylatt. It became operational on 27 August 1990.

tions like naval fleet hospitals or hospital ships. First-echelon or unit-level medical treatment was administered by unit corpsmen and aid stations. First echelon treatment consisted of first aid, physician primary care, and fluid therapy.[68]

Initially, 7th MEB used the Saudi naval hospital at King Abdul Aziz Naval Base for treatment. On average, eight patients were treated per day. On 26 August, the 7th MEB discovered the fully equipped but abandoned Saudi hospital at Al-Huwaylatt located in the Jubayl Industrial City. This hospital, previously used to care for foreign workers and the local population, was abandoned in 1988. The Al Huwaylatt Hospital could simultaneously perform surgery on 10 patients. The 7th MEB renamed this facility the Marine Corps Hospital at Al-Huwaylatt. BSSG-7 doctors performed two operations on the 27th. Additionally, the top floor of the Marine Corps hospital was used as a women Marines' barracks.[69]

On 21 August, the USNS *Noble Star* docked at Al Jubayl and offloaded 360 containers carrying the equipment for Navy Fleet Hospital 5. This hospital was staffed by 1,000 Navy medical personnel and had a 500-bed capacity. It required 28 acres of land for installation and was set up near the 7th MEB\I MEF forward command post at the Port of Jubayl. Fleet hospitals were third- echelon theater-level medical organizations providing specialty and definitive care to the seriously sick and injured. Fleet hospitals belonged to the U.S. Navy, but their primary customers were Marines who took great interest in their deployment, installation, and operation. By 2 September, Fleet Hospital 5 had 200 available beds.[70]

Between 13 August and 2 September, 56 Marines and sailors of 7th MEB were hospitalized. Twenty-one of these cases were medevaced elsewhere from the Gulf for treatment. On 2 September, 26 Marines and sailors were in the hospital

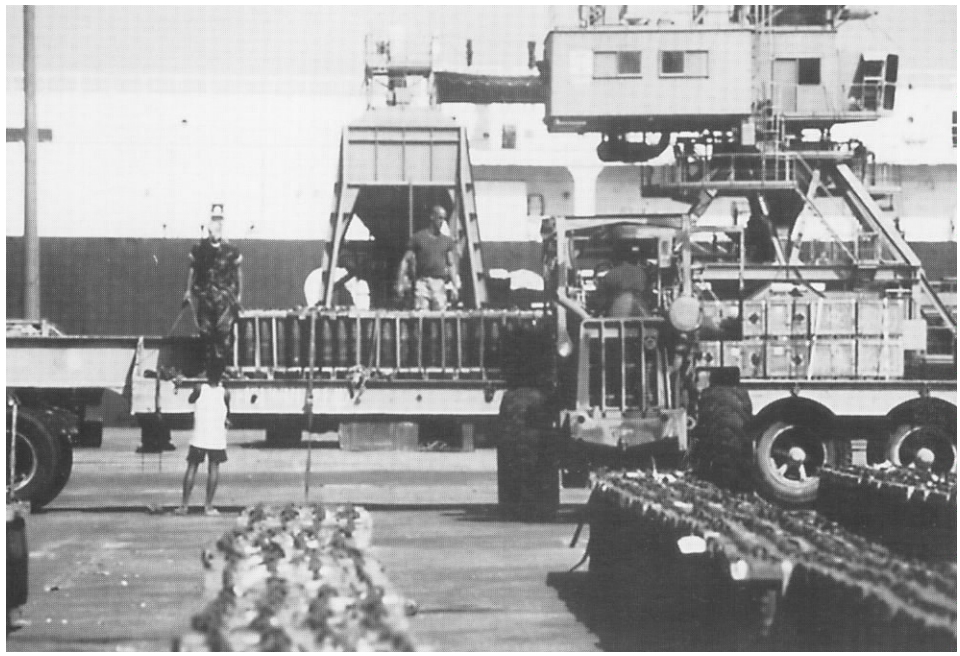

Photo courtesy of LtGen James A. Brabham, Jr.

Marines from BSSG-7 load 155mm projectiles on trucks at the port of Jubayl.

for a wide variety of causes, such as strains, breaks, hernias, chest pain, back pain, asthma, heat casualty, gastroenteritis, and even a case of pneumonia. The 7th MEB reported one suicide attempt, a stabbing, and two shooting cases.[71]

Captain Gerardo Guerrero commanded BSSG-7's supply detachment of 13 officers and 293 enlisted Marines and sailors. This detachment stored and issued ammunition, rations, medical supplies, repair parts, and consumable items. In addition, the supply detachment had contracting authority, an important function giving 7th MEB and later I MEF, the ability to obtain critically needed resources from the local economy.[72]

The 22 sailors of the medical logistics (MedLog) section, stored and issued blocks of medical supplies called authorized medical allowance lists (AMALs) to all medical units within the MEB. This supply organization carried 36 aid station blocks for first-echelon treatment provided by unit aid stations and corpsmen throughout the MEB. Fifteen operating rooms and 33 shock surgical AMALs were stocked for more serious second-echelon medical treatment administered by the Medical Detachment, BSSG-7.[73]

The supply detachment's ammunition company, which consisted of three officers and 88 enlisted Marines, was responsible for accounting, storing, and issuing ground ammunition. By 2 September 1990, large amounts of ammunition were available for the 7th MEB. There were 15,000 rounds of tank ammunition, 21,000 artillery rounds, and 2,100 ground TOW missiles. By early September, BSSG-7 had distributed 600 short tons of ammunition to forward locations while the 7th MEB had formulated plans to load ground ammunition on two MPSRon-3 ships as floating dumps. The building of ammunition supply points was at the

top of the list of construction projects awaiting the arrival of the Seabees.[74]

On 15 August, the 27 enlisted Marines of the ration's section began issuing "meals ready to eat" (MREs). MREs are the modern version of C-rations, which were individual field rations. MREs consisted of 12 different entree choices, a snack, dessert, powdered beverage, and condiments, giving the diner 1,200 calories of energy per meal. MREs also had a moist towelette for after-meal hygiene. The first three ships of MPSRon-2 gave 7th MEB 689,000 MREs. By 2 September, MRE stocks were increased to 1,800,000 as a result of the influx of rations from MPSRon-3.*

B-Rations were bulk canned and dehydrated foods designed to be heated on messhall stoves and either served in a dining facility or transported to Marines in the field. Due to their perishability, B-rations were not stocked on maritime prepositioning shipping. Marine Corps Logistics Base Albany, Georgia held B-rations which required requisitioning before they were released. On 15 August, I MEF requested a 30-day supply of B-rations from Albany. Despite the lack of B-rations, on 24 August, the 7th MEB opened its first dining facility at the port of Jubayl, preparing a hot breakfast with food donated by the Saudis. As a result of I MEF's requisition, B-rations reached a level of 371,742 meals by 2 September, or enough to serve 7th MEB forces one hot meal for 18 days.[75]

The supply detachment faced shortages of 12-volt batteries, electrolyte for batteries, 30/50 weight oil, and repair parts during the first weeks of the deployment. The battery problem was solved by buying batteries in Saudi Arabia and also flying them in from Camp Pendleton, California. Electrolyte and oil were ordered from the 1st FSSG at Camp Pendleton. There was also a shortage in the stock of repair parts called secondary reparable items. These items were reparable components of a piece of equipment, such as engines and transmissions for tanks and trucks. Secondary reparable items were repaired by the FSSG's maintenance battalion and reused.** The 7th MEB's maintenance personnel reviewed BSSG-7's secondary reparable list and identified items not adequately stocked. The arrival of BSSG-1's parts block on MPSRon-3 increased the volume of needed secondary items, thereby somewhat reducing the concern over the weakness of 7th MEB's reparable block.[76]

On 15 August, five enlisted contracting officers arrived at the port of Al Jubayl. Working from their vehicles and limited to purchases of $250,000 or less, the contractors procured fuel, bottled water, lumber, 12-volt batteries, porto-potties, and transportation from the local economy.[77] BSSG-7's contractors took part in negotiations for the use of empty labor camps for billeting in the Industrial City

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*Normally, the amount of MREs and other supplies are quantified in terms of "days of supply." In simple terms, a day of supply is calculated by the amount of something divided by a daily consumption factor for an organization. In this instance, the number of days of supply would be meaningless, since the population changed with every aircraft arrival.

**Secondary reparable items requiring rebuild were shipped to Marine Corp Logistics Bases, in Georgia and California, and to the other Services for repair and return to the field.

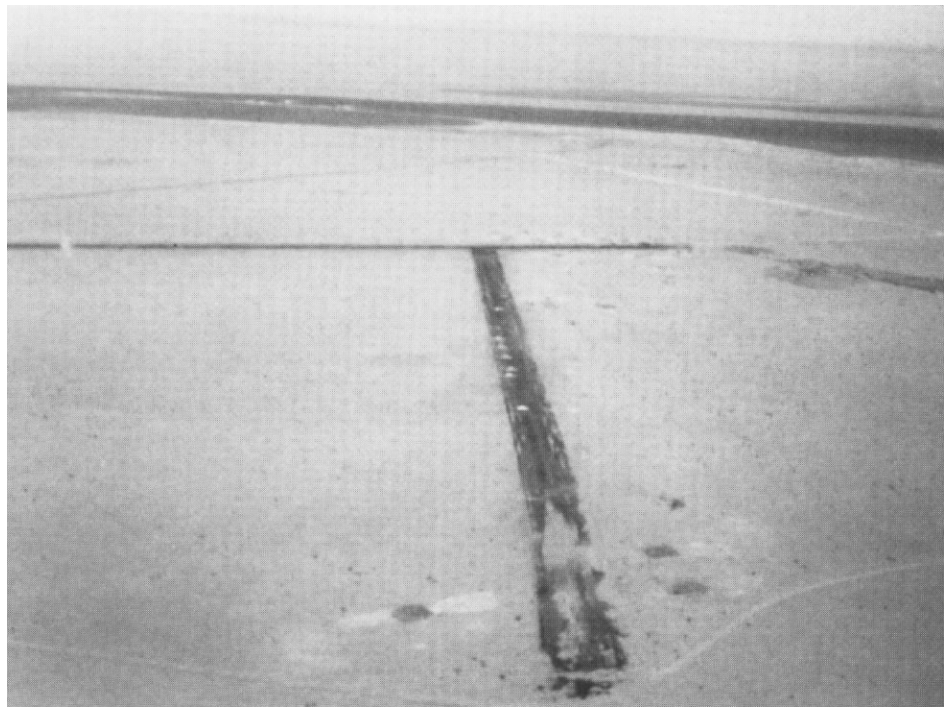

Photo courtesy of Maj Adrian W. Burke

The unimproved airstrip at Manifah Bay is where CSSD-73 set up its combat service support area to support the 7th MEB's forward elements.

of Jubayl, such as Camp 15 which the Saudis turned over, on 22 August, to the 7th MEB.[78]

Captain Thomas D. Carlson, USN, commanded the 12 officers and 24 enlisted sailors of BSSG-7's dental detachment. This amalgamation of sailors from the 1st, 13th, and 23d Dental Companies, 1st FSSG, opened its first dental clinic, on 22 August, in the east end of warehouse number 3 at the Port of Al Jubayl. The next day a second clinic was established at BSSG-7's aid station. A third dental clinic was set up at the Marine Corps hospital and a fourth opened at Shaikh Isa. Services were limited to emergencies.[79]

The Headquarters and Service Detachment, BSSG-7 provided a number of disparate functions such as postal and legal services. On 21 August, the Postal Section, BSSG-7, manned by one officer and 14 enlisted Marines, received 800 letters. This was the first U.S. mail to reach the area. Three days later, the Postal Section began selling stamps and issuing money orders. On 25 August, the five officers and three enlisted Marines of the Legal Services Section, BSSG-7 opened its doors for business, providing a full range of services to include the ability to hold courts martial. Much of the legal detachment's activities, however, were devoted to issuing wills and powers of attorney.[80]

While RCT-7 moved north into defensive positions, the 7th MEB transferred responsibility of coordinating and controlling security at the Port of Al-Jubayl and the Marine Corps Hospital at Huwaylatt to BSSG-7. This mission required BSSG-7 to coordinate a wide variety of units devoted to security. The

Saudi Navy conducted outer harbor patrols, a special warfare task group defended inner harbor security, a fleet anti-terrorism and security team handled security on the maritime prepositioning ships. Pier-side security consisted of a stinger team from MAG-70 with its antiair shoulder-fired, heat-seeking missiles; the BSSG-7's military police; and Company I, 3d Battalion, 3d Marines, which on 27 August, arrived from Hawaii.

On the last day of August, a defense team from Naval Inshore Underwater Warfare Group 1 conducted a survey of harbor security. The survey team recommended that a 300-man detachment consisting of boat and underwater sensor sections be flown from the United States to help defend Jubayl's harbor. This detachment would consist of Reserve Coast Guard and Navy personnel.[81]

At the Port of Jubayl, BSSG-7 had rapidly established the 7th MEB's general support capability using the conventional FSSG structure and help from the host nations, the U.S. Navy and Army, and the rear at Camp Pendleton, California. For 7th MEB forces in the field, especially RCT-7, Colonel Powell organized combat service support detachments to provide direct support.

Extending Direct Support to Regimental Combat Team 7

> *Combat Service Support Detachments continue to adjust to the high operational tempo of supported units.*[82] *—Commanding General, 7th MEB*

The Cement Factory, as seen from the coastal highway, lent its name to the ridge where the 7th MEB set up its defenses of Jubayl.

In response to the mission to support combat units in the field, BSSG-7 formed and deployed combat service support detachments to sustain RCT-7's defense in depth. Combat service support detachments were separate task organizations formed to rearm, refuel, resupply, and/or repair equipment for combat units.[83]

Combat Service Support Detachment (CSSD) 73 deployed on 21 August 1990. Colonel Powell, the BSSG-7 commanding officer, reassigned his Landing Support Detachment commander, Captain Adrian W. Burke, to command the newly arrived detachment. This organization was tasked with establishing a forward arming and refueling point (FARP) for helicopter operations and to support the 3d Light Armored Infantry Battalion. On 26 August, CSSD-73 became operational at Manifah Bay, Saudi Arabia, located 120 kilometers south of the Kuwaiti border and 100 kilometers north of Jubayl. The helicopter pilots of HMLA-367 named the new site FARP Foss. CSSD-73 set up at an unimproved air strip located 15 kilometers east of the two lane coastal highway connecting Jubayl to Kuwait and five kilometers from a jetty on the Persian Gulf.[84] A security platoon from Company G, 2d Battalion, 7th Marines, led by Second Lieutenant David P. Casey, joined CSSD-73 on the 29th, and two days later, the 3d Light Armored Infantry Battalion (-) with 25 light armored vehicles moved into the vicinity of the junction of the coastal highway and the road leading to Manifah Bay. The 3d Light Armored Infantry Battalion (-) was RCT-7's covering force. BSSG-7 pushed supplies by ground transportation and by helicopters carrying external loads to CSSD-73. A 5,000-gallon load of fuel initially stocked the CSSD's 12,000-gallon helicopter expedient refuelling system. Near the end of the month, CSSD-73 reached a strength of 90 Marines and sailors and was the northernmost deployed logistics unit in theater, making it the closest fixed target to the Kuwaiti border.[85]

CSSD-72 supported RCT-7, which occupied defensive positions 50 kilometers south of Manifah Bay in the area called the Cement Factory Ridge where a giant cement plant dominated the region's skyline. The CSSD formed at Al Jubayl on 24 August 1990, and was commanded by Captain Kerry K. Feldman.[86] The 7th MEB tasked CSSD-72 to provide fuel, water, subsistence, limited maintenance, disbursing, postal, and limited legal services to RCT-7. Five days later, CSSD-72 moved 50 kilometers from the port to the Cement Factory Ridge to carry out its assignment.

RCT-7 was in the process of moving to defensive positions, a move that would be completed on 31 August.[87] CSSD-72 supported four battalions of infantry, as well as tank, artillery, and combat engineer battalions. Two companies of assault amphibian vehicles, a reconnaissance company, and the command element for RCT-7 rounded-out CSSD-72's customer list. Major combat items initially deployed to the Cement Factory Ridge were 26 M198 155mm howitzers, 38 M60 A1 tanks, 84 assault amphibious vehicles, and 54 TOW anti-tank missile systems mounted on M1045 HMMWV TOW carriers.[88]

Table: Regimental Combat Team 7 (RCT-7) on 2 September 1990[89]

Units Supported	Personnel Strengths
RCT-7 Command Element	356
1st Battalion 7th Marines	845
2d Battalion 7th Marines	836
1st Battalion 5th Marine	916
3d Battalion 9th Marines	838
3d Assault Amphibious Battalion	576
3d Tank Battalion	734
3d Battalion 11th Marines	898
3d Combat Engineer Battalion	417
Company C, 1st Reconnaissance Battalion	85
TOTAL PERSONNEL	6,501

Regimental positions straddled the coastal road that ran 180 kilometers north to the Kuwaiti border. CSSD-72 was located 22 kilometers by road from the furthest unit supported and four kilometers from the main supply route to the Port of Jubayl.

Extending Direct Support to Marine Aircraft Group 70

Never has this squadron been so completely challenged for such an extended period.[90] *—LtCol Stephen G. Hornberger, CO MWSS-374*

After claiming its equipment at the Port of Al-Jubayl, MWSS-374 moved, using its own organic transportation, to King Abdul Aziz Naval Air Station and Jubayl Naval Air Facility.* MWSS-374 was spread thin between the two air fields supporting both helicopter and AV-8B Harrier operations. Accordingly, MWSS-374 was the first organization supported by the Seabees.

At King Abdul Aziz Naval Air Station, MWSS-374 immediately began supporting AV-8B Harrier operations. The heavy equipment section built berms

*The unequal distribution of equipment from MPSRon-2 left MWSS-373 and -374 short on vehicles. (Col Robert W. Coop comments on draft, 9Feb97, Author's Files, hereafter Coop comments).

surrounding a 120,000-gallon-capacity tactical airfield fuel distribution system operated by the squadron's bulk fuel section. Fuel was provided by BSSG-7's 600,000-gallon capacity amphibious assault fuel system filled by the MV *Hauge's* ship-to-shore fuel transfer and by Saudi refuellers. The construction section assisted BSSG-7 engineers in establishing an ammunition supply point for aviation ordnance. On 21 August, the medical section established an aid station and tested the local water to determine its potability. MWSS-374 established a nuclear, biological, and chemical defense capability, arranged for rear area security, and set up its crash, fire, and rescue teams.[91]

At Jubayl Naval Air Facility, the MWSS-374 heavy equipment section built berms surrounding two tactical airfield fuel systems operated by the squadron's bulk fuel section. The Saudis provided the fuel. The heavy equipment Marines helped the expeditionary air field section level the ground in preparation for laying 90 sets of AM2 matting covering 76,032 square feet. Arriving on 31 August, the Seabee air detachment of NMCB-5 immediately assisted in putting down aluminum sheets of AM2 matting. This effort increased helicopter parking by 24 spots and reduced the level of flight-line overcrowding. MWSS-374's construction section, later assisted by the Seabees and using lumber procured by BSSG-7's contractors, began building strongback frames for tents, completing 12 by 2 September. Near the end of the month, the squadron's utilities section opened a 12-man shower unit and wired the strongback tents built by the construction section. The utilities section used 29 generators to supply the camp with power.[92]

Table: Marine Air Group-70 squadrons supported by MWSS-324 at Jubayl Naval Air Facility on 2 September 1990[93]

Squadron Name	Type Aircraft	Number of Aircraft
HMLA-367	AH-1W Super Cobra UH-1N Huey	14 9
HMLA-369	AH-1W Super Cobra UH-1N Huey	14 9
HMM-161	Ch-46 Sea Knight	12
HMM-165	CH-46 Sea Knight	12
HMH-462	CH-53D Sea Stallion	12
HMH-463	CH-53D Sea Stallion	6
HMH-465	CH-53E Super Stallion	6
HMH-466	CH-53E Super Stallion	8
VMA-311	AV-8B Harrier	20

MWSS-373 collected its equipment at the Port of Al Jubayl and moved to Shaikh Isa Air Base. The motor transport detachment hauled aviation support equipment and ammunition from Mina Suliman Container Port deposited by the MV *Bonnyman* and MV *Fisher*. On 27 August, the wing engineers began base camp construction, building showers, wiring tents, and pouring concrete tent pads. The MWSS engineers built berms for their three tactical airfield refuelling systems operated by the squadron's bulk fuel section.[94] MWSS-373 began establishing camp services such as food service, billeting, laundry, trash removal, electrical power distribution, and shower facilities to seven fixed-wing squadrons, the command element of MAG-70, and the advance party of the 3d MAW headquarters.[95]

Joining MWSS-373, on 22 August, at Shaikh Isa was Combat Service Support Detachment 71 (CSSD-71) formed at Al Jubayl. Captain Guido G. Aidenbaum commanded CSSD-71, tasked by the 7th MEB to provide fuel, water, subsistence, limited maintenance to ground equipment, disbursing, postal, dental, and limited legal services at Shaikh Isa. On 28 August 1990, CSSD-71 became operational and began setting up assault amphibious fuel systems, completing one and partially finishing another by early September. Major Allen Coulter, BSSG-7's operations officer, had relieved Captain Aidenbaum as the commander of CSSD-71 on 1 September.[96]

Table: Squadrons supported by MWSS-373 and CSSD-71 at Shaikh Isa, Bahrain on 2 September 1990[97]

Squadron Name	Type Aircraft	Number of Aircraft
VMFA-235	F-18 Hornet	12
VMFA-314	F-18 Hornet	12
VMFA-333	F-18 Hornet	12
VMFA-451	F-18 Hornet	12
VMA-542	AV-8B Harrier	20
VMA (AW)-224	A6-E Intruder	9
VMAQ-2	EA6-B Prowler	12

Marine wing service support squadrons, augmented by CSSD-71 and the leading elements of the Seabees, established a logistics capability in support of MAG-70. Their efforts allowed MAG-70 to conduct three days of maximum flight operations from all bases against the Iraqis and established a logistics system that would be expanded in the coming months.

A Logistics Snapshot One Month After the Iraqi Invasion

Logistical Support [was] provided to Marine Air Ground Task Force Elements around the clock.[98] *Commanding General, 7th MEB*

By 2 September, the 7th MEB had established a potent in-depth defense supported by a logistics system spanning a distance of 240 kilometers from Manifah Bay, Saudi Arabia, to Shaikh Isa Air Base, Bahrain. This system was created by the logisticians of BSSG-7, MWSS-373, MWSS-374, and the leading elements of Seabees and BSSG-1, who planted the logistics guidon in the Persian Gulf. During the next three months, I MEF would expand and refine the logistics system needed to defend Saudi Arabia and plan a more extensive arrangement to sustain a massive offensive into Kuwait.

Table: 7th MEB logistics structure on 2 September 1990

Location	Logistics Unit(s)	Supported Unit(s)	Distance to Saudi-Kuwait Border
Manifah Bay (FARP Foss)	-CSSD-73	-3d LAI Battalion	120
Cement Factory Ridge	-CSSD-72	-RCT-7	180
Jubayl Naval Air Facility	-MWSS-374 -Arrival Airfield Control Group, BSSG-7 -AirDet, NMCB-5	-MAG-70 (104 helicopters)	195
Port of Jubayl	-BSSG-7 -BSSG-1 -1st FSSG (fwd) COMCBOPAC (FD)	-MPS Ships -7th MEB CE -I MEF CE 1st MarDiv CE -RCT-3 CE -MAG-24 CE	210
King Abdul Aziz Naval Air Facility	-MWSS-374 -Bulk Fuel Det, BSSG-7 -AirDet, NMCB-4	-MAG-70 (20 Harriers) -2d LAAM Bn	220
Ras Al-Ghar Naval Base	-Engineer Det, BSSG-7	In Preparation for Regimental Combat Team-3	240
Dhahran Air Base	-Arrival Airfield Control Group BSSG-7	-Aerial Port of Debarkation	300
Shaikh Isa Air Base	MWSS-373 CSSD-71	-MAG-70 (89 Fixed Wing Air Craft) -MAG-70 CE -3d MAW CE	360

Defending Jubayl: 3 September-31 October 1990

The Situation

Defend in sector to protect vital facilities vicinity Al Jubayl.—I MEF Mission for September-October 1990

September began with high expectations of an Iraqi invasion of Saudi Arabia. General H. Norman Schwarzkopf believed the primary Iraqi assault route was south along the coastal highway towards the ports of Jubayl and Dammam. Central Command assigned the defense of the coastal avenue of approach to I MEF. Another possible attack route was from the northwest down the Tapline road which intersected the coastal highway in I MEF's area of responsibility near Abu Hadriyah, 70 kilometers northwest of the Port of Jubayl.* The U.S. Army component of Central Command (ArCent) defended the Tapline route with the 101st Airborne and the 24th Infantry (Mechanized) Divisions.** A lateral road, called the A-B Road, connected the Tapline road and the coastal highway 50 kilometers north of Abu Hadriyah, forming a "Triangle." Saudi Arabian forces screened the area north of the Triangle while French, Syrian, Egyptian, and Kuwaiti forces protected a third suspected attack route, west of the Americans.[99] While Central Command planned the defense of Saudi Arabia, I MEF and its major subordinate commands took charge of Marine forces in Saudi Arabia and Bahrain.***

On 3 September, I MEF replaced 7th MEB, the 1st FSSG absorbed BSSGs-7 and -1, and the 3d MAW became the MEF's air combat element. Three days later, the 1st Marine Division took charge of RCTs -7 and -3. I MEF, 1st FSSG, and, initially, the 1st Marine Division, established their headquarters at the Port of Jubayl. The 3d MAW located its headquarters at Shaikh Isa. To protect Jubayl from the Iraqis, I MEF ordered the 3d MAW to defend the area north of the 1st Marine Division's defense zone around the Triangle. General Boomer ordered the 1st FSSG to support the wing and the division and to plan and supervise rear area security.[100]

On 13 September, Marine Air Ground Task Force (MAGTF) 6-90, which sailed from Okinawa in the USS *Dubuque* (LPD 8), USS *San Bernadino* (LST 1189), and USS *Schenectady* (LST 1185), docked at Jubayl. Colonel Ross A. Brown commanded the MAGTF which consisted of the headquarters for

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*This road serviced the pipeline that carried oil from eastern Saudi Arabia to Lebanon. It was closed in 1981.

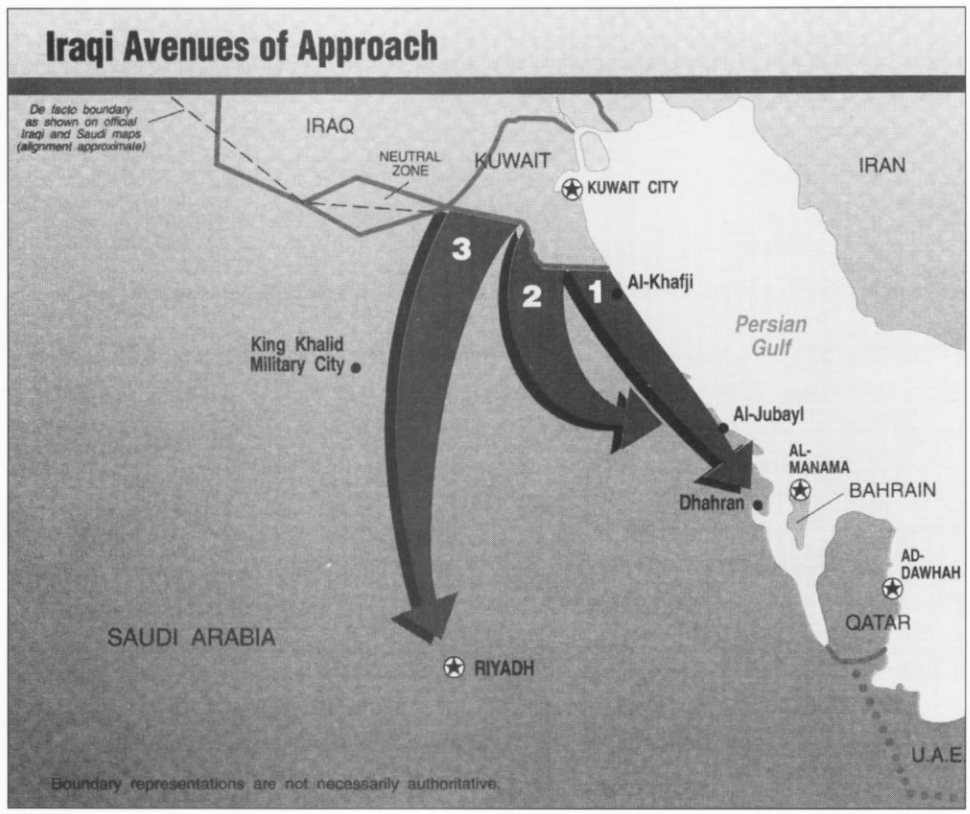
**Further south the 82d Airborne Division guarded oil fields and the 1st Cavalry Division served as a mobile reserve near Dhahran. The XVIII Airborne Corps commanded the Army divisions and served as the tactical headquarters for ArCent.

***The components of CentCom were organized along service lines, with one exception. I MEF served as the Marine component of CentCom, or MarCent, and the Navy, Air Force, and Army components were called NavCent, AFCent, and ArCent, respectively. The Special Operations Command Central Command (SocCent) was the functional command that controlled all special operations in theater.

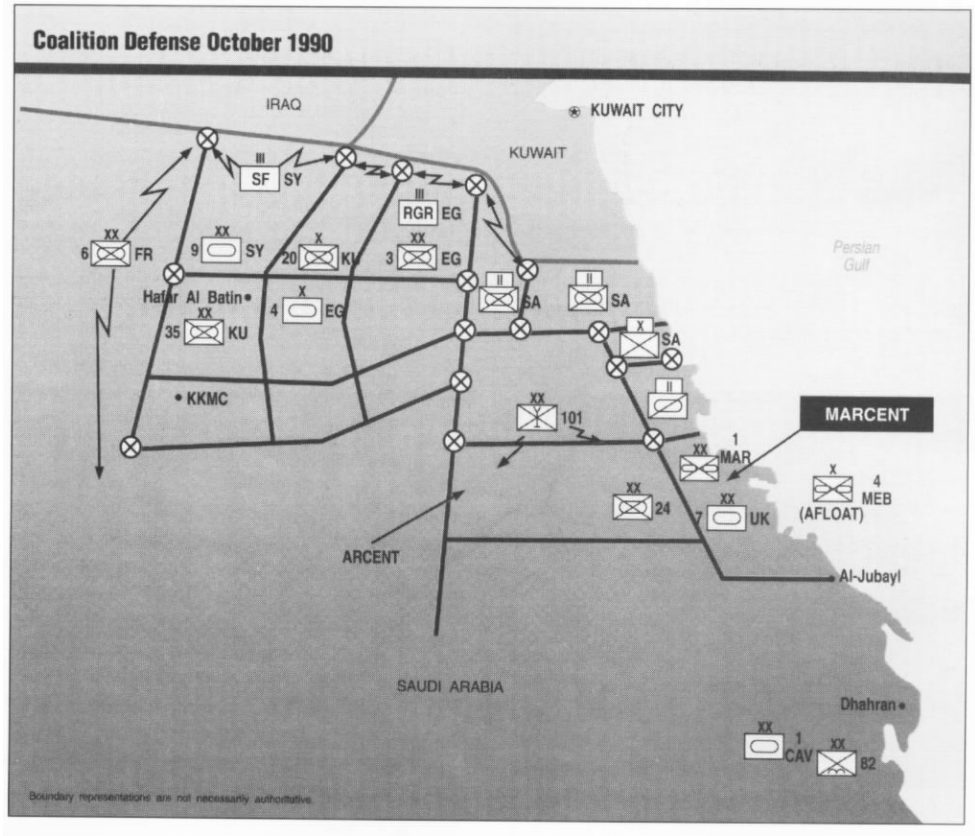
Regimental Combat Team (RCT) 4, the 1st Battalion, 6th Marines, and CSSD-31.[101] Major Thomas J. Nielsen commanded the 19 Officers and 261 members of the CSSD which the 3d FSSG formed on Okinawa earlier in August.[102] Upon its arrival in Saudi Arabia, I MEF broke up MAGTF 6-90 and distributed the pieces within the MEF. the 1st FSSG gained CSSD-31 and the command element of RCT-4.

1st FSSG Reorganizes

The I MEF staff was to be sensitive to the fact that, . . . the FSSG and wing, had very thin staffs. —I MEF Command Chronology, September 1990



On 6 September, General Brabham arrived in Jubayl and inherited an organizational challenge.[103] Facing him were two BSSGs and a CSSD, each of which had similar sets of detachments of varying size and capabilities, but none of which were properly organized to conduct combat service support in the Gulf region. Due to the lack of air transportation, the 1st FSSG's battalion headquarters remained at Camp Pendleton under the command of Colonel Paul A. Pankey.[104] This situation denied General Brabham the command and control capabilities necessary to lead a large organization easily and to take advantage of



the vast amount of experience resident in the battalion staffs.*

To solve these problems, General Brabham reorganized 1st FSSG into a direct support group, a general support group, and a headquarters and services group. General Brabham assigned Colonel Alexander Powell, the former commander of BSSG-7, as the commander of Direct Support Group (DSG) 1, and gave him the responsibility of sustaining the 1st Marine Division and the 3d MAW. Expecting to be the 1st FSSG's operations officer upon arrival, Colonel Thomas E. Hampton, a former infantry officer and Vietnam war veteran from southern Illinois, was instead ordered by General Brabham to take charge of General Support Group (GSG) 1.[105] The mission of this organization was to provide general support to the MEF. To command the Headquarters and Support Group (H&SG), General Brabham tapped Lieutenant Colonel Henry T. Hayden and ordered him to provide internal support to the 1st FSSG, a variety of services to I MEF, and to coordinate port security.[106] General Brabham ordered Colonel Brown to use the RCT-4 headquarters to coordinate security in the vital area around Jubayl.

General Brabham believed that the new FSSG structure was well-suited for the fast changing tactical situation facing I MEF, while effectively using

*On the positive side, the battalion staffs provided stability to the majority of the 1st FSSG personnel who remained at Camp Pendleton until December 1990.

Photo courtesy of LtGen James A. Brabham, Jr.

BGen James A. Brabham, Jr., Commanding General, 1st FSSG, seated at the right of the picture, visits one of his forward CSSDs. Note the Texaco flag on the wall.

scarce administrative assets to run the new organization.[107] Additional benefits were the simplified command structure and the improved mission focus of 1st FSSG's commanders. The costs of the reorganization were the initial confusion and loss of accountability as the people and equipment from both BSSGs and CSSD-31 were distributed throughout the new organizations. The 1st FSSG solved the accountability problem by hard work, time, and the establishment of centralized administration. In addition, the smallness of the 1st FSSG, which was about half its peacetime size, made the reestablishment of responsibility for both people and equipment much easier. The loss of unit identity posed a greater problem for General Brabham as California, Hawaii, and Okinawa Marines left their old units and commanders lost commands. Sensitive to the human dynamics involved in such a comprehensive reorganization, General Brabham spoke at length to all officers and visited the new units after activation. In order to be fair, Brabham used seniority as a basis for determining command and not the geographic origin of the officer.[108]

On 9 September, Colonel Powell took charge of Direct Support Group-1 (DSG-1) which consisted of a small headquarters and BSSG-7's three CSSDs.[109] He placed his command element of 13 Marines at the port near GSG-1 and worked within the FSSG to advocate the needs of the forward units, which he believed was his primary job.[110] Turning to his CSSDs, Powell redesignated CSSD-73 at Manifah Bay as CSSD-141, but retained Captain Adrian W. Burke as its commander. On 4 September, Colonel Powell stoodup CSSD-111 to support the 1st Marine Division, less units supported by Captain Burke, and assigned Lieutenant Colonel Richard L. Kelly, a supply/logistics officer from Pennsylvania

who served his first years in the Corps as an infantry officer, to command CSSD-111.* On 13 September, CSSD-111 moved to Abu Hadriyah and absorbed CSSD-72 which had previously supported RCT-7 at the Cement Factory Ridge.[111] At Shaikh Isa, CSSD-71 changed its name to CSSD-131 with Major Coulter remaining in charge. On 26 September, Colonel Powell ordered Captain Guido G. Aidenbaum, the first commander of CSSD-71, to activate CSSD-132 at the Jubayl Naval Air Facility. At the end of September, DSG-1 consisted of 956 Marines and sailors organized into four CSSDs and a command element.[112]

Table: CSSD lineage

Old Name	New Name	Location
CSSD-71	CSSD-131	Shaikh Isa
CSSD-72	CSSD-111	Abu Hadriyah
CSSD-73	CSSD-141	Manifah Bay
N/A	CSSD-132	Jubayl Naval Air Facility

On 12 September, Colonel Hampton activated his command element and organized the seven detachments of GSG-1.[113] Lieutenant Colonel Ernest G. Beinhart III, the former commander of BSSG-1, took charge of the landing support detachment. The commanding officers of BSSG-7's medical, dental, and engineer detachments retained their commands. Colonel Hampton ordered Lieutenant Colonel Charlie F. Smith to command the motor transport detachment; Lieutenant Colonel Leon S. Lusczynski, the former executive officer of BSSG-7, to lead the maintenance detachment; and Lieutenant Colonel George M. Conroy to take charge of the supply detachment. GSG-1 consisted of 2,815 Marines and sailors located, primarily, at the Port of Al Jubayl.[114]

Lieutenant Colonel Hayden organized H&SG into four companies. Captain Timothy M. Wilkinson commanded the headquarters company, Captain Ricardo R. Hackney led the communications company, and Second Lieutenant Gino P. Amoroso took charge of the military police company. These companies supported 1st FSSG. The services company, commanded by Captain Joseph M. Dietzler, provided postal, legal assistance, exchange, disbursing, graves registration, and data processing services to I MEF. In addition, Lieutenant Colonel Hayden was the officer-in-charge of the Critical Facilities Operations Center which implemented security at the Port of Jubayl.[115]

*LtCol Richard L. Kelly served a tour at Central Command during the mid- 1980s and accompanied Gen Brabham to Riyadh in August. (Col Richard L. Kelly, comments on draft, n.d., Author's Files, MCHC, hereafter Kelly comments).

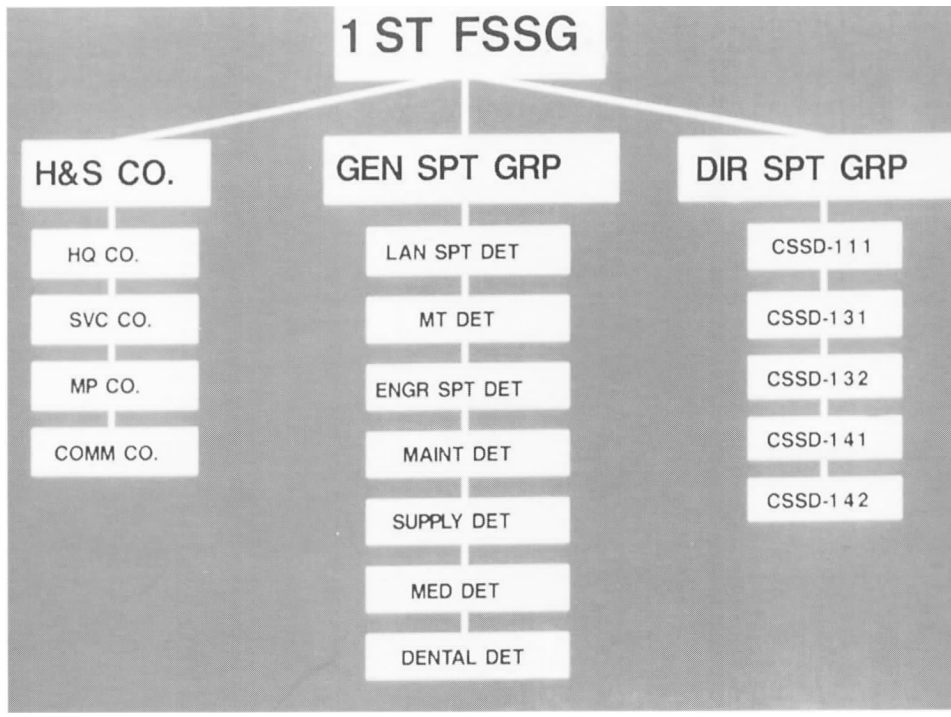


Photo courtesy of LtGen James A. Brabham, Jr.

A briefing slide used by LtGen Brabham that diagrams 1st FSSG Structure in the Persian Gulf.

Supporting the 3d MAW

> *The immediate priority for the Marines was to expand aircraft parking areas at three host nation airstrips . . . . . Each of these strips had adequate runways, but lacked the ramps and taxiways to accommodate the number of airplanes which would be based there . . . . The Marines' second priority was to improve berthing areas for their troops.*[116]

On 3 September, Major General Moore organized the 3d MAW's 246 aircraft into three aircraft groups. At Shaikh Isa, MAG-11 took operational control of all fixed-wing squadrons, at Jubayl Naval Air Facility, MAG 16 directed helicopter operations, and at King Abdul Aziz Naval Air Station, MAG-13 (forward) supervised Harrier jet and Rockwell OV-10 Bronco light reconnaissance aircraft operations. The three air groups and airfields formed the main hubs of the 3d MAW's defensive effort. Eventually the wing also established smaller operating areas at Ras Al Ghar and Manifah Bay which were also sustained by its three support squadrons, the 1st FSSG, and the Seabees.[117]

Table: 3d MAW squadrons and aircraft.[118]

Location	Squadrons	Number/Type of Aircraft
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-16)	VMA-311	20 AV-8B Harriers
	VMO-2	8 OV-10 Broncos
Ras Al Ghar	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 Int (MAG-11)	VMGR-352	8 KC-130 Refuellers

The Seabees Arrive

To improve the capabilities of host nation airdromes, I MEF sent most of the arriving Seabees to airfields in Saudi Arabia and Bahrain. On 13 September, 136 sailors and 46 pieces of equipment belonging to NMCB-7's air detachment, led by Navy Lieutenant Michael Dolan, landed at Shaikh Isa. On 30 September the advance party arrived and was followed on 2 October by the MV *Danah* which docked at Mina Suliman with the battalion's equipment. Nine days later, the main body of NMCB-7, commanded by Commander Gary M. Craft, reached Shaikh Isa which completed the battalion's deployment from Okinawa.[119] On 14 September, the advance party and air detachment of the Guam-based NMCB-40

Photo courtesy of LtGen James A. Brabham, Jr.

GSG-2 engineers dig and transport marl to stabilize the soil at Jubayl Naval Air Facility.

reached the Port of Jubayl with 189 Seabees and 40 pieces of equipment. Four days later the battalion's equipment on board the MV *Maersk Constellation* docked at Jubayl and was followed on the 27th by the main body of the battalion, commanded by Commander John R. Doyle. During the last week of September, the advance party of NBCB-5 arrived in Saudi Arabia and joined its air detachment at Jubayl Naval Air Facility.[120] On 7 October the MV *Greenridge* arrived with NBCB-5's equipment and the next day, Commander David Walsh landed with the remainder of the battalion. On 15 October, the MV *Kubbar,* carrying NMCB-4's equipment, dropped anchor at Jubayl while the main body, led by Commander James Corbett, landed in Saudi Arabia. NMCBs-4 and -40 took over Camp 13 in the Industrial City and called their new home Camp Rohrbach.[121] On 15 October, Captain Johnson commanded a force of 2,397 sailors and 1,125 pieces of equipment in general support of I MEF which in turn, directed the main Seabee effort to the expansion of aircraft parking at all three major air bases.[122]

Jubayl Naval Air Facility

The overcrowded flight line was the main problem facing MAG-16 at Jubayl Naval Air Facility.[123] The additional aircraft parking completed in August failed to relieve the congestion caused by 102 Marine Corps, 12 U.S. Army, and 10 Royal Saudi Navy helicopters crammed into the airport.[124] The risks of flight-line crowding were painfully demonstrated on 13 September when the rotor blade from a taxiing CH-53E hit the rotor of another Sea Stallion parked nearby, and damaged both aircraft as well as a neighboring Saudi chopper.[125] To alleviate overcrowding temporarily, MAG-16 dispatched 19 Sea Stallions 60 kilometers southeast to the Royal Saudi Navy Base at Ras Al Ghar and 14 helicopters to Manifah Bay.[126] The long-term problem, however, still remained.

To solve the congestion problem, the Navy-Marine Corps team of MWSS-374 and NMCB-5 began constructing three parking aprons covering 1.8 million square feet of desert. Site preparation required that loose sand be reinforced with up to three feet of structural fill, compacted, and leveled to a three per cent minimum grade to support the strips of aluminum AM2 matting used to lay the parking ramps. NMCB-5, reinforced with equipment from NMCBs-4 and -40 and GSG-1 as well as the Marines of MWSS-374, strengthened the sand with marl, quarried and hauled from a nearby pit by GSG-1 and the newly arrived MWSS-174.* On 10 September, NMCB-5, MWSS-374, and MWSS-174 joined together to lay 120,264 square feet of matting which exhausted the available supply until 14 October, when additional matting arrived on the MV *Greenridge*. Engineers placed the AM2 matting in a checkerboard pattern with a hole in the middle like a square donut to conserve the amount of material used. By the end of October, the Marines and the Seabees completed 76 percent of Parking Apron 2 and 18 percent of Parking Apron 3.[127]

Concurrent with the construction of helicopter parking, teams of Marines and Seabees built and operated facilities for MAG-16. The Seabees from NMCB-5 worked two 10-hour shifts to fabricate frames and decks which a second set of Seabees nailed together to create a tent structure with flooring. Following the Navy, the Marines of MWSS-374 hung canvas and wired the tents for electricity. Despite a shortage of construction material, nearly 350 tents were completed by the end of September. To feed the multitude of pilots and support personnel, the NMCB-5 erected a galley which MWSS-374 operated. To repair aircraft, MWSS-374, with the help of MWSS-174, constructed a 10,000-square-foot clam-shell hangar.[128]

As grateful helicopter pilots moved their sleeping bags from the sand to tents with floors and electricity, MWSS-374 retrieved its detachment from King Abdul Aziz Naval Air Station and focused efforts on supporting MAG-16's extended operations.[129] On 24 October, MWSS-374 conducted forward arming and refueling (FARP) operations for the CH-53D Sea Stallions of HMH-462. Refueling was conducted from the back of an LVS with fuel stored in sixcon fuel modules. In addition, the squadron sent a detachment to Manifah Bay to lay 14,000 square feet of matting to support helicopter operations at FARP Foss.[130] In the meantime, CSSD-132, operating at the air station since late September, provided dental treatment, medical care, and, by the end of October, issued 972,000 gallons of fuel to MWSS-374.[131]**

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*Marl is a mixture of clays, carbonates of calcium and magnesium, and remnants of shells used as structural fill to stabilize soil.

**MWSS operations were initially degraded by the shortfall in communications equipment allowed by their tables of equipment. To counter this deficiency, Gen Moore directed Col Coop, the acting 3d MAW logistics officer and commanding officer of MWSG-37, to purchase 200 Motorola wireless radios and a number of low wattage power units. This ad hoc communications system was ideal for MWSS operations. The Motorolas eliminated the need to string and maintain miles of wire around runways and their low power output limited the system's range and vulnerability to enemy monitoring. (Coop comments).

King Abdul Aziz Naval Air Station

At King Abdul Aziz Naval Air Station, General Moore placed MWSS-174 in direct support of MAG-13 (Forward). Lieutenant Colonel James P. Chessum commanded MWSS-174 which came from Hawaii as part of the 1st Marine Brigade. In early August, MWSS-174 sent personnel from Hawaii to Guam with the 1st MEB's preparation party to make ready equipment for unloading while MPSRon-3 steamed towards Jubayl. Two weeks later, another group from MWSS-174 flew to Saudi Arabia to help unload MPSRon-3. MWSS-174's advance party and main body followed, bringing the squadron's personnel strength to 526 Marines and sailors who joined the 137 Seabees of NMCB-4's air detachment at King Abdul Aziz Naval Air Station.[132]

Going to work on 4 September, the Navy-Marine Corps team of MWSS-174 and NMCB-4's air detachment expanded taxiways and aircraft parking spaces. Construction started on a 3,600-foot taxiway and 20 dug-in parking spots for the Harriers of VMA-311. To stabilize the sand, which was not as deep as the sand at Jubayl Naval Air Facility, the Seabees used soil cement, while the MWSS-174 Marines compacted and graded the taxiway prior to laying AM-2 matting. Towards the end of September, NMCB-4 began a 22,500-square foot Harrier jet vertical take-off and landing pad, a second taxiway, eight revetments for the OV-10 Broncos of VMO-2, a helicopter refuelling pad, and a Harrier engine test stand.[133] The arrival of AM-2 matting on board the *Greenridge* allowed MWSS-174 and the Seabees to lay 373,790 square feet to complete the taxiway, parking, and landing pad by the end of October. During October, CSSD-132 established a refueling operation and issued 1,281,000 gallons of fuel to MWSS-174.[134]

MWSS-174 operated primarily at King Abdul Aziz Naval Air Station, but deployed detachments to Jubayl Naval Air Facility, Manifah Bay, and Ras Al Ghar. MWSS-174, took over refuelling, military police, rear area security, weather reporting, communications, medical, chaplain, crash and fire rescue, and mess hall operations at King Abdul Aziz from MWSS-374.* To augment other 3d MAW operations, Lieutenant Colonel Chessum sent a crash and fire rescue team and engineers to Jubayl Naval Air Facility. He also ordered a tactical assault fuel distribution system, one ROWPU, and an engineer detachment to forward arming and refueling point (FARP) Foss. During September, the motor transport detachment drove 81,294 miles and hauled 1,740 tons of cargo and 9,367 passengers to support the squadron's far-flung operations which included operations at Ras Al Ghar.[135]

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*MWSS military police (MP) operations were initially hampered by the lack of equipment. In the United States, the MWSS military police worked for the installation commanders who owned and maintained their equipment. When the MPs deployed for war with their parent squadrons, their equipment remained at the U.S. installations. As a result, the MWSSs had to scrounge radios, vehicles, and crew-served weapons after the MPs arrived in the Gulf. (Coop Comments).

Ras Al Ghar

During September, Ras Al Ghar absorbed both ground and aviation units awaiting deployment to forward locations. On 8 September, MWSS-174 joined the 1st FSSG and RCT-3 at the Saudi naval base. On this day, seven members of the crash and fire rescue team with a fire truck arrived to support MAG-16's CH-53 Sea Stallion helicopters relocated from Jubayl Naval Air Facility. Four days later, six of the squadron's bulk fuel Marines, equipped with a helicopter expedient refueling system and a M970 5,000-gallon tanker, established a helicopter refuelling point. On the 15th, MWSS-174 set up a communication site while the utilities section wired 80 tents, erected a shower unit, and left three generators to power the tent camp for the helicopter squadrons.[136] During the month, GSG-1 opened a dental clinic and its engineers built strong-back frames for RCT-3.[137]

Shaikh Isa

At Shaikh Isa, MWSS-373 and NMCB-7 built facilities for the 3d MAW's headquarters and MAG-11's seven jet squadrons. During the first part of the month, MWSS-373 completed the installation of a shower, wired 3d MAW's headquarters tents for electricity, and poured concrete foundations for tents. On the 13th, 136 Seabees and 46 pieces of equipment from NMCB-7 's air detachment, led by Lieutenant Michael J. Dolan, USN, arrived from Okinawa. Lieutenant Dolan built a tent camp for the 3d MAW headquarters in which the Seabees laid more than 600 concrete slabs and fabricated and erected 416 frames for both berthing and office spaces. On 15 September, the Seabees leveled a temporary bomb storage and container stacking area and began building an ammunition supply point for MAG-11 which they completed in little more than a month. Reinforced by the battalion's main body on 11 October, NMCB-7 began the expansion of the runway apron on the 15th. The Seabees leveled, compacted, and reinforced with fill purchased locally Shaikh Isa's loose soil prior to laying 600,000 square feet of AM2 matting. NMCB-7 completed this project on 19 December.[138]

While the sailors of NMCB-7 expanded facilities at Shaikh Isa, MWSS-373 and the newly redesignated CSSD-131 supported MAG-11's operations. Though MWSS-373 also assisted the 3d MAW at other locations, at Shaikh Isa, Lieutenant Colonel Hanson focused the squadron's main activities on providing camp services, conducting crash and fire rescue missions, recovering aircraft, and refuelling MAG-11's jets with fuel provided by CSSD-131.[139] In September, CSSD-131 grew to a strength of 142 Marines and sailors. It erected a second amphibious assault fuel system, and provided MWSS-373's three tactical fuel dispensing systems with 100,000 gallons of fuel per day throughout October.[140] MWSS-373 extended its operations outside of Shaikh Isa by building a guard tower for the KC-135 Hercules refuellers of VMGR-352 at Bahrain International Airport and by sending expeditionary airfield personnel and crash and fire rescue teams to assist MWSS-374 at the Jubayl Naval Air Facility.[141]