THE U.S. ARMY COPRS OF ENGINEERS' ROLE IN RECONSTRUCTION OF KUWAIT: A CASE STUDY AND ITS IMPLICATIONS FOR FUTURE INTERNATIONAL MISSIONS

by

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ABSTRACT

THE U.S. ARMY CORPS OF ENGINEERS' ROLE IN RECONSTRUCTION OF KUWAIT: A CASE STUDY AND ITS IMPLICATIONS FOR FUTURE INTERNATIONAL MISSIONS

by

Brian L. Baker

Submitted to the Departments of Civil Engineering and Political Science on January 17, 1992 in partial fulfillment of the requirements for the degrees of Masters of Science in Civil Engineering and Political Science.

The political universe is changing in the wake of a united Europe, the Soviet Unions' collapse and the assertion of US military dominance in Kuwait. We have moved from a bipolar to a unipolar universe, with the US alone now occupying the central position.

How long this political configuration will persist is hard to predict: perhaps ten years, maybe less. The integration of Europe will likely create the largest and most influential marketplace on earth. And the birth of the Commonwealth of Independent States (CIS) will create a monumental reconstruction market for years to come. These circumstances, when coupled with the Corps of Engineers' construction expertise and its recent experience in Kuwait as program manager for reconstruction, puts the US in a position to take the lead in international reconstruction efforts.

This thesis is a call for employing the US Army Corps of Engineers in post cold-war Europe and the "Soviet Union" as the US agent for reconstruction. The Corps could act as program manager and facilitator of innovative construction management programs. My central thought is that these management programs, having been developed in a relatively low risk environment at home and tested abroad could be transferred directly to the private sector for reconstruction/ disaster relief efforts in Eastern Europe and the CIS. As a result, our technology and construction contractor bases would be strengthened, bolstering our nation's competitiveness in this burgeoning global market sector.

Unless wisely invested, the inheritance from our cold-war victory and subsequent Gulf War victory will soon be exhausted. We should see ourselves as stewards of the planet, whose task is to sustain ourselves an help rebuild our neighbors, simultaneously. The US has a distinct responsibility and the Corps a unique aptitude to assume the lead in reconstruction/ disaster relief worldwide. This opportunity will not last forever, we must therefore, act now and form a national strategy to utilize the Corps as our reconstruction agent in this new international marketplace.

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This thesis is the result of much hard work and dedicated thought over the last seventeen months. During that time, our nation was called to the Gulf as part of an international coalition to free Kuwait from Iraqi occupation. Although, I did not participate in that campaign directly, I did so in spirit. This manuscript is a synopsis of that effort. I have had to rely on the assistance and understanding of many people who rightfully share in its completion.

My wife, Kelli, whose assistance, love and understanding kept me true to the task at hand; my twin daughters, Erin & Lauren, who, armed with crayolas, "helped me with my homework", at every opportunity; my mother and father, whose lifelong encouragement and example brought me to think I could even be accepted at MIT; and Professors Moavenzadeh & Choucri, my thesis advisors and academic mentors, whose wisdom and patience have encouraged me with this multi-discipline undertaking.

I would also like to express my appreciation to the US Army Corps of Engineers for availing me the opportunity to study at a world class institution such as the Massachusetts Institute of Technology.

to the soldiers

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INTRODUCTION

For the past decade, many observers have predicted that the bipolar rivalry between the United States and the Soviet Union would gradually be supplanted by a multipolar political universe. The rise of a united Europe and a reunited Germany and the concurrent emergence of Japan as an economic giant suggested that there would soon be several superpowers, and none would predominate.

But with Soviet communism's collapse and the assertion of US military dominance in Kuwait, these predictions have been thrown into question. We have moved from a bipolar to a unipolar universe, with the US alone now occupying the central position. Few imagined that the American century would be reborn so soon after its declared demise.

The reasons are several. Prospective challengers are now disabled or preoccupied with internal transformations. Germany finds its hands unexpectedly full with bringing its eastern third up to speed. Scandal-ridden Japan wavers in indecision - an economic superpower without a mission of its own in world politics.[1] The Soviet Union's virtual surrender on all fronts leaves the US without any substantial opposition on the world

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[1]Mark Sommer, "US Geopolitical Windfall", The Christian Science Monitor, 22 OCT 1991.

stage.

How long this political configuration will persist is hard to predict: perhaps 10 years, maybe less. Germany's reintegration will be completed by then and its perceived weight in the world more substantial. Though still far from complete, the integration of Europe will likely have already created the largest and most influential marketplace on earth. Instability and the proliferation of nuclear concerns stemming from the disintegration of the Soviet Union[2] will be among the most important challenges posed to Americans in the 1990s.

This thesis is a call for employing the U.S. Army Corps of Engineers in post cold-war Europe and the "Soviet Union" as the U.S. agent for *reconstruction*.[3] The Corps could act as program manager and facilitator of innovative construction management programs. My central thought is that these management programs, having been developed in a relatively low risk environment at military installations at home and tested abroad; particularly in the Middle East--most recently Kuwait, could be transferred directly to the private sector for reconstruction/ disaster relief efforts in Eastern Europe and the CIS. As a result, our technology and construction contractor bases would be

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[2]The term "Soviet" will no longer apply after the first of the year (1992). The former USSR is slated to become a Commonwealth of Independent States (CIS).

[3]The task of reconstructing war torn societies must address three areas: 1) political institutions; 2) economy/physical infrastructure; 3) and civil society, the latter being the most complex. It is the second area (physical infrastructure) that I will spend the bulk of this paper addressing. One must, however, address the entire spectrum if one expects to be successful.

strengthened, bolstering our Nation's competitiveness in this burgeoning global market sector. A second but equally important role for the Corps might be in the nuclear disarmament arena, whereby the Corps would use its vast organizational and management skills to oversee such a program.

The US Army Corps of Engineers is an organization with worldwide *mega-project*[4] management experience. It has a well developed organizational structure, standing operating procedures for construction management and diplomatic duties in performing military construction for friendly foreign nations.

The U.S. has a distinct responsibility and the Corps a unique aptitude to assume the lead in reconstruction/ disaster relief worldwide. As this Nation's Engineer, the U.S. Army Corps of Engineers is capable of applying its vast engineering management expertise towards finding feasible solutions to international infrastructure crises. This is not just wishful thinking, however. With over a century of experience, the Corps has forged strong relationships with society and industry. In addition, the Corps is a stable, government organization capable of bearing significant financial and operating risk.

Engineering skills and tools are abundant within the Corps at its thirteen (13) engineering divisions and thirty-nine (39)

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[4]As mankind approaches the 21st Century, ***international mega-projects*** are likely to become increasingly common in the engineering and construction industry. A mega project could be defined as a high impact technically complex project which requires careful advanced planning, lasts several years, has a significant impact on the public and industry, employs thousands of people and typically costs over $1 billion--value alone is insufficient.

districts worldwide, and at its four (4) central laboratories. The synergy of using all of these to facilitate the development of new and better construction management programs geared toward the international arena, is clear. In fact, the Corps is already an active player in this process.

The Corps has a well documented track record in the international construction arena. Therefore, its performance on international mega-projects is relevant to understanding its capability to undertake a task of this magnitude.

The Corps' reconstruction and environmental cleanup efforts in Kuwait are a serious, massive enterprise. The Corps of engineers is highly skilled in emergency mop-ups. The Corps' disaster assistance to Kuwait is similar to that which the Corps has done in the states (i.e., Alaskan Oil Spill, Hurricane Hugo, Loma Pareta earthquake, etc.)[5] In addition to these recent reconstruction/ disaster relief efforts, the Corps has completed over $18 billion in construction throughout the Middle East over the past 25 years. The scale and scope of these efforts are massive.[6] Its because of this and the recentness of our Kuwaiti efforts that I examine the Corps' role in the Middle East at great length.

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[5]Extract Summary of remarks by BG Witherspoon at the Federal Liaison Network Luncheon, April 16, 1991.

[6]

MIDDLE EAST PROGRAM	VALUE($MILLION)
SAUDI ARABIA	16,000 (completed)
EGYPT	891 (ongoing)
KUWAIT	717
-DESERT STORM	300
-KUWAIT RECOVERY	217
-KUWAIT RECONSTRUCTION	200
EUROPE DISTRICT	667
OTHER	255
TOTAL	>18,000

Above and beyond these wealth of attributes is the fact that the Corps is an agent of our government and our national policy. It has its finger on the pulse of national sentiment and our policy-makers' desires, along with understanding its greater task of maintaining the Nation's trust. The Corps is central in coordinating the engineering solutions to our problems and presenting them to our Nation. Hopefully, our nation's civilian leadership recognizes the correlation between this and the proliferation of opportunities to employ the Corps in the international arena. Ironically, the very same organization within the Corps (Transatlantic Division) has recently been assigned the Middle East and European geographical areas of responsibility--adding to the importance of reviewing this organization's structure.

The U.S. Army Corps of Engineers has countless years of experience in military and civil works construction. This thesis will review the position of the Corps of Engineers in regard to increasing its role in reconstruction and emergency operations in the international arena. To accomplish this, this paper will: First, review the history of the Corps of Engineers, its organizational structure and foreign mandate as well as a vision of its future role in the international arena. Second, review its historical experience in the Middle East and attempt to ascertain why the Corps is particularly suited for this new role. Third, analyze the historic role the U.S., particularly the military, has played in post-war reconstruction and emergency operations in the international arena. Fourth, review Kuwait as a case study, honing in on the Corps' role in reconstruction: post Gulf War; and

attempt to draw from this, lessons learned--to be applied elsewhere in the international arena. Finally, a conclusion will be offered regarding the Corps' future potential as the U.S. agent for reconstruction in the Eastern European and Soviet markets.

Unless wisely invested, the inheritance from our cold-war victory and subsequent Gulf War victory will soon be exhausted and we will find ourselves in hock as never before. We should see ourselves as stewards of the planet, whose task is to sustain ourselves and help rebuild our neighbors, simultaneously. The U.S. is in a position now, to take the lead in a planned reconstruction effort in Eastern Europe & the CIS and the Corps of Engineers has the where-with-all to execute a plan of this magnitude. This opportunity will not last forever, we must therefore, act now and form a national strategy to utilize the Corps as our reconstruction agent in this new international marketplace.

Chapter 2

THE UNITED STATES ARMY CORPS OF ENGINEERS

2.1 BACKGROUND: The purpose of this chapter is to offer a brief historic review of the civil works accomplishments of the Corps of Engineers (hereafter referred to as the Corps or USACE), its organization, mission and foreign mandate as well as a vision of its future role in the international arena.

The United States Army Corps of Engineers is both a civil and a military engineering and construction agency. It's work force of more than 40,000 civilians and 1,000 military personnel makes it the single largest engineering and construction organization in the world.

> "The Corps is broadly responsible for military construction, military engineering and supply, and military engineering training programs. It is a major Army command and, as such is the direct responsibility of the Secretary of the Army. As a civilian construction agency, the Corps is responsible for the design, construction, operation and maintenance of navigation and flood control improvements and related works."[7]

The commander of the Corps is a Lieutenant General, called the "Chief of Engineers", who also holds an army staff position. His command consists of thirteen Divisions and thirty-nine Engineer Districts, worldwide and four central laboratories.

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[7]Arthur Maass, Muddy Waters: The Army Engineers & The Nations Rivers, Cambridge, MA, Harvard Univ. Press, 1951, p. 21.

The Corps' civil mission currently includes many forms of construction work, environmental protection and cleanup, and development work affecting program/ project management and water and wetlands. In its military role, the Corps of Engineers provides military facility construction support to the US Army and Air Force at home and abroad, as well as to friendly foreign governments when directed by congress.[8] It is via this avenue that the Corps could lead the reconstruction efforts in Eastern Europe. The Corps is also responsible for Army facilities engineering, property maintenance and management of more than 24 million acres of real estate. In addition, the Chief of Engineers is responsible for the combat readiness of all military engineer soldiers, as well as for doctrinal development and emergency policy and plans. The Corps of Engineers also manages the Army's nuclear power program.

The history of the Corps of Engineers include this organization's direct effort in the planning, construction, and management of many of our nation's resources. In fact, this organization has been directly involved with and responsible for many of the nation's roadways, developing the nation's intercostal waterways, construction of lighthouses along the nation's shore line, flood control activities throughout the country, hydroelectric generation, and the construction of buildings and monuments within our nation as well as on foreign soil.

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[8]Richard J. Polo, "Innovation in the US Army Corps of Engineers: A Case Study of Ft. Drum", (Masters Thesis, MIT, May 1989), p. 34.

2.2 HISTORY: The Corps of Engineers has an important place in the nation's history. The Corps predates the establishment of the United States. From its inception in 1775, with the appointment of Richard Greely as the first Chief Engineer to the President, the Corps of Engineers has maintained a prominent role in construction and other non-military related infrastructure. With but a brief nineteen year period from 1783 to 1802, during which time the Corps was disbanded, this work effort has been unbroken.

On March 16, 1802, the present Corps of Engineers was formally established. Along with this formal creation, the U.S. Military Academy at West Point[9] was established for use as the sole school to train and supply engineer officers to the Corps of Engineers. This program for engineer specific training remained in effect until 1866, at which time the Corps lost formal control over that school. Since 1866, the Corps has continued to solicit scientific and engineering educations of its officers through this and other schools throughout the nation.

From its inception the Corps has been the predominant constructor of civil works in the Nation. It was the engineering department of the government which planned and executed the internal improvements initiated in the 1820's, which included navigation improvements on the Mississippi and Ohio Rivers, construction of the Chesapeake and Ohio Canal and completion of the Cumberland Road. Rivers and harbors work has generally fallen under the corps since 1852 and flood control since 1936.

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[9]West Point was the only technical engineering school in the country [predating MIT] until Rensselaer Polytechnic was founded in 1825 and it was administered by the Corps of Engineers until 1866.

In 1941, the Corps of Engineers became the in-house construction agency for the U.S. Army. At this time, Corps of Engineers officers oversaw the construction of military bases throughout the world in support of the Allied Nation's ongoing war effort. This year also marked the start of construction of the Pentagon building, located in Washington, D.C., which ultimately took two years to complete at a cost of $60 million.

Other Corps construction efforts during and after this period included construction of the Alaska Highway commencing in 1942, implementing the new construction program for VA Hospitals throughout the U.S. (a program commencing in 1946), the post-war reconstruction program in Greece from 1946-49, implementing portions of the Nuclear Power program beginning in 1952, support to NASA for the space program commencing in 1961, and implementing the nation's dam inspection program of 1977, to name but few.

Above and beyond these wealth of attributes is the fact that the Corps is an agent of our government and our national policy. It has its finger on the pulse of national sentiment and our policy-makers' desires--who not only control appointment of its top officials, but its organizational structure as well.

2.3 ORGANIZATION: At all echelons, the organizational structure within the Corps of Engineers is established by the dictates of Congress and the Secretary of the Army. At the top level, the Corps' organizational structure is designed to insure a clear communication line between the Chief of Engineers (appointed by Congress with recommendation from the President), the Secretary of the Army (answerable to the President), and Congress. Based on

this relationship, the Chief of Engineer's responsibilities for reporting become split between the Executive and the Legislative branches of government. Subordinate to the Chief of Engineers is the entire Corps operation, including that for civil works.

Directly below the Chief of Engineers reside eight directorates (figure 2.3.1). These directorates orchestrate the entire work effort of the Corps' civil and military works programs as well as ancillary services regarding basic support to the Corps of Engineers as an organization.

The relationships of these directorates, boards, subordinate offices, and civil works executing offices are presented diagrammatically on the following page.

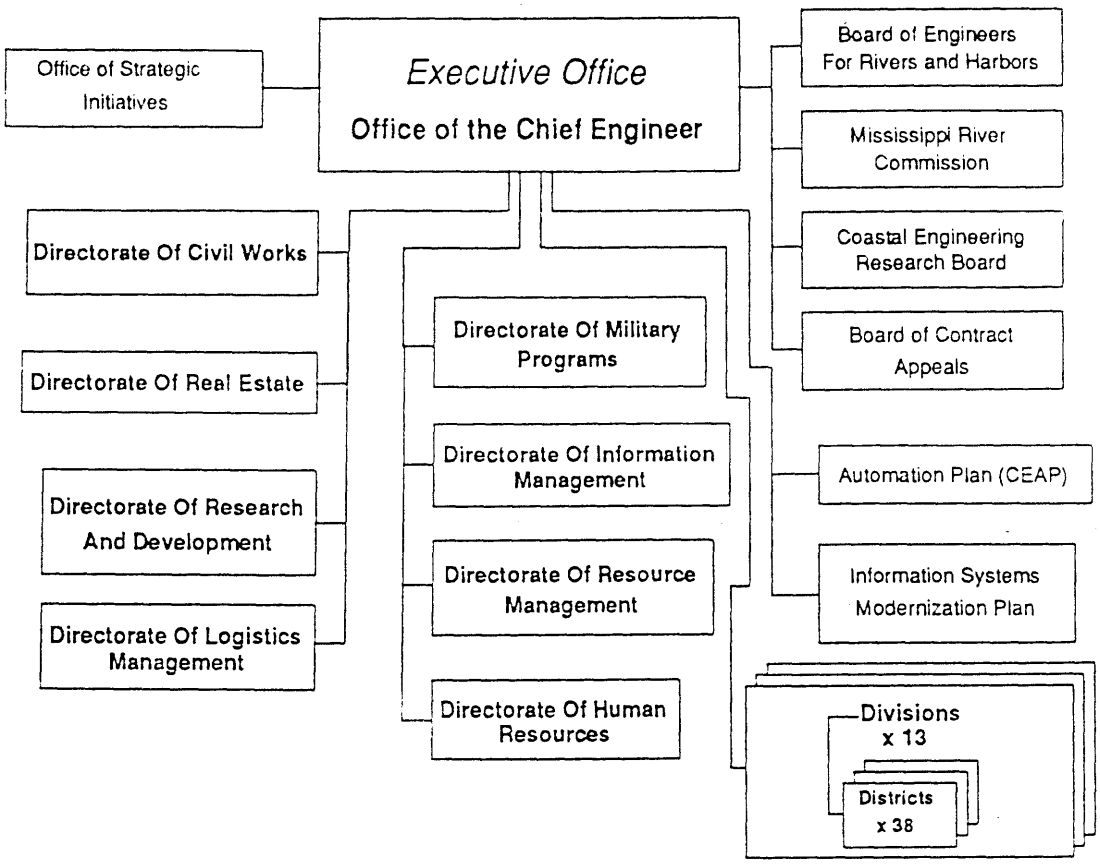

FIGURE 2.3.1

Corps of Engineers Organizational Chart

SOURCE: Mark Johnson, "Future Infrastructure Responsibilities: An Analysis of a Government Organization's Strategy", (Masters Thesis, MIT,1991), p. 44.

The internal organization of the Corps of Engineers includes thirteen division offices[10] and thirty-nine subordinate district offices(figure 2.3.2). Of the division offices, eleven share in their responsibilities between civil works and military works.

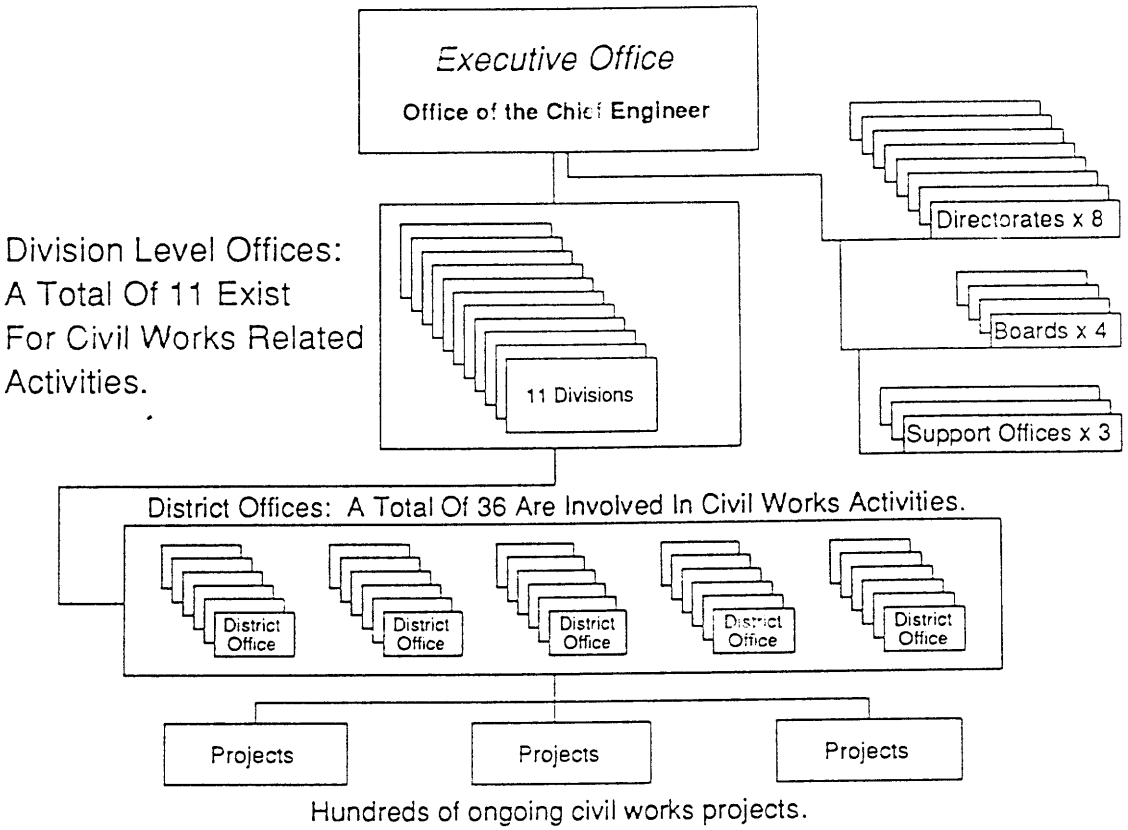

FIGURE 2.3.2

Corps' Organization at Division and District Level
SOURCE: Johnson, p. 48.

[10]Division offices are the equivalent of separate operating companies in private engineering and construction firms.

The Corps is a proponent of centralized planning and decentralized execution. Its organization reflects this philosophy. It generally places a great amount of construction management responsibility and contract administration authority at the lowest levels (at resident engineer or area engineer offices within engineer districts) while maintaining responsibility and authority for engineering and program management at district and division levels. It is through this vast organizational structure that the Corps accomplishes its mission.

2.4 MISSION: The Corps' civil works mission can best be described by the products and services provided by it, which include: 1) *construction management*, 2) engineering and design, 3) laboratory support, 4) real estate development and management, 5) regulatory functions, and 6) *emergency operations*. Additionally, the Corps has various mobilization and wartime missions that support not only U.S. military operations at home and abroad, but also secure and maintain the nation's infrastructure.

1) Construction Management, under either military or civil works funding, is provided within the dictates of the Federal Acquisition Regulation (FAR) and its Army and Corps supplements. The primary mechanism for bringing completed construction to the customer is the fixed price contract secured through competitive, sealed bidding. All Corps construction is performed under contract - the Corps has no organic civilian construction assets.

2) Engineering and design is performed either by in-house engineers or through negotiated, open-end design contracts with

regional and local architect-engineer (AE) firms.

3) Laboratory services are accomplished at all of the Corps divisions and at the four Corps labs: the US Army Waterways Experiment Station (WES); the US Army Construction Engineering Research Laboratory (CERL); the Cold Regions Research & Engineering Laboratory (CRREL); and the Engineer Topographic Laboratories (ETL), as well as by private agencies employed by contractors during construction.

4) Real estate development and management are functions which have been developed through vertical integration along the Corps Value Chain and deal with Army or Defense Department lands.

5) Corps regulatory functions pertain to the nation's waterways and its environmental mandate and are also performed at all Corps divisions.

6) Emergency operations are also provided by the Corps' divisions to assist the Federal Emergency Management Agency (FEMA) with damage assessments and emergency construction management during national and international emergencies and disasters.[11]

The Corps does substantial work in its international role--most recently with providing shelter for the Kurds in Northern Iraq and camps for the Haitians in Cuba. Congress often charges the Corps with these "foreign mandates".

2.5 FOREIGN MANDATE: In its worldwide mission, the Corps provides

[11]Alex Dornstauder, "Hazardous Waste Remediation & the US Army Corps of Engineers: Facilitating Technological Innovation Through Construction Management", (Masters Thesis, MIT, 1991), p. 74.

engineering, design, procurement, and construction services in two major arenas:

--Work for foreign defense forces

--Work for other U.S. government agencies operating in the region.

The Corps provides military construction services to foreign defense forces that request these services from the U.S. government. The work comes under the auspices of the Department of Defense Security Assistance Program, which relates to the sale of military equipment and weapon systems. However, the Corps' services to "others" as is the case here, also come under this same program. The work is accomplished under *foreign military sales case* procedures, and is financed by either the host government or through the U.S. military assistance program.

2.5.a FOREIGN MILITARY SALES ACT: The Corps gets its foreign mandate from Congress who determines whether the US becomes involved in a particular program or not through the Foreign Military Sales Act (FMSA). The FMSA became Public Law 90-629 on October 22, 1968 and has been revised six times from 1971 through 1976. Section 2769 sets policy for foreign military construction sales.[12]

Its primary provisions are that the President may sell design and construction services to any eligible foreign country if that country agrees (1) to pay the full amount of a contract which assures the United States Government against any loss on the

[12]US Code, Title 22 Section 2769.

contract and (2) to make funds available in such amounts and at such times as required to meet the payments under the contract, and any damages and costs of cancellation of the contract in advance of when they are due. The President delegated his functions under this law to the Secretary of Defense in a 1977 Executive Order. The FMSA does not spell out the extent and explicit terms of Defense Department involvement in providing design and construction services to foreign governments, this must be done separately for major civil works contracts as was done in Saudi Arabia, via the Engineer Assistance Agreement.

2.5.b ENGINEER ASSISTANCE AGREEMENT: The Engineer Assistance Agreement (EAA) was a country-to-country pact concluded on May 24, 1965 between the US Ambassador to Saudi Arabia and the Saudi Minister of Foreign Affairs.[13] It was sponsored by the US State Department. The EAA called for the United States to provide advice and assistance in the design and construction of certain military facilities for The Ministry of Defense & Aviation (MODA), funded by Saudi Arabia, as well as providing a training program for Saudi engineers.[14] The two countries agreed that the US Army Corps of Engineers would be the agency to perform the assistance defined under the agreement. Ultimately, the agreement was extended five times and USACE performed most of its Saudi Arabian

[13]Prince Sultan Bin Abdulaziz al Saud, King Faisal's brother, who headed the Ministry of Defense and Aviation (MODA) in the 1960's, turned to the Corps of Engineers to rebuild and modernize much of the military infrastructure of the Saudi Arabian Armed Forces.

[14]USACE, Information Paper, "U.S. Army Corps of Engineers Involvement in Saudi Arabia", April 1, 1988, p. 1.

program, including construction of King Khalid Military City (KKMC), under the EAA's guidelines.[15] It Became the basic agreement under which the Corps of Engineers functioned in Saudi Arabia and now stands as the blueprint for US reconstruction efforts in Kuwait.

The EAA warrants more than just passing attention because some of its provisions were far-reaching and farsighted. They had a great impact on USACE's management philosophy for KKMC and, later, became sticking points in relations between Saudi Arabia and the Corps.

Some of the important statements regarding construction management made in the EAA include:

> 1. The Corps shall be entirely responsible for the administration of all construction contracts awarded under the terms of this agreement.
> 2. ...the contractor shall receive instruction only by the contracting officer.
> 3. The Corps shall have the right to issue change orders to construction contracts as required by field conditions, technical and engineering considerations, construction problems encountered,...
> 4. Change orders that would change the authorized scope of the facilities being constructed will be issued only with concurrence of the Saudi government.

In essence, the EAA made USACE an agent of the Saudi Arabian government, acting for and on its behalf.[16] This arrangement

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[15]The crowning achievement under the EAA was the Corps' construction of the $7 billion King Khalid Military City--the largest and most challenging single military construction project in USACE history.

[16]This is precisely how the US could do business in Eastern Europe & the Commonwealth of Independent States--acting as the US agent for reconstruction.

gave USACE full control of design and construction management efforts with Saudi officials acting as Program Manager.

It is worth noting that clearly defining the role of the program manager, the construction manager and the owner in advance is a prerequisite of effective mega-project management. This is particularly true in the international arena where the various actors are from different regions on the globe and may have extremely different, sometimes incompatible practices. The Corps plans for these factors when managing international contractors.

2.5.c MANAGEMENT OF INTERNATIONAL CONTRACTORS: The challenge of doing construction in the international arena is compounded by special considerations for managing international contractors. They fall in two general areas: (1) standards and specifications; and (2) cultural considerations. The Corps discovered that skills required for international mega-project management include the ability to anticipate and plan for differences in contractor cultures and knowledge.

Some foreign contractors simply don't understand US specifications and measurements and try not to follow them. A Corps District Engineer remarked, "There's a propensity among international contractors to build things the way they want to build them without regard to the plans and specifications." He then related a story about a Filipino contractor that built a sewage treatment plant. It disregarded the plans and specifications and attempted to install the contract's electrical

system as it would in the Philippines. In turn, this required more Corps supervision and considerable rework to correct.[17]

Some of the associated problems with International mega-projects can be avoided altogether by integrating international contracting factors into project planning. A related aspect of planning for international contracting is preparing to accommodate the cultural differences of a foreign contractor work force. The important point of this discussion from the construction manager's perspective is that some of these cultural differences can be planned for to reduce their disruptive impacts. The Corps accepts these issues as part of its foreign mandate and considers them in the planning stages of all its missions - worldwide.

2.6 SUMMARY: From this brief review it is clear that the history of the Corps of Engineers in infrastructure related missions is rich and detailed and continues strong into this day. Missions assigned to the Corps of Engineers have been assigned due to both historic relevance as well as on an as-needed basis; although, the "as-needed" basis has often extended into long term commitments for the Corps of Engineers. To this day, Congress continues to assign domestic & international missions to the Corps as it recognizes the need for these particular and unique missions to be addressed. This is particularly true today.

The world is changing, primarily as a result of the victory

[17]"Phase Out in Saudi Arabia", The Military Engineer, March-April 1989, p. 82.

in the Cold War. In the international arena, the rules of the game are different. Bipolarity - the fundamental conditions since World War II - faded with the overall decline of the Soviet Union, crumbled with the Berlin Wall and expired with the dissolution of the Warsaw Pact and the Soviet Union.

The world is changing to one of multiple centers of military, political and economic power. This multipolarity will be less predictable, less stable and perhaps a bit uncomfortable for many while we adjust.

"The end of the Cold War, changes in domestic spending priorities and the constrained fiscal situation combine to ensure a real decline in the Army's [Corps] budget over the next several years. These fundamental changes, both abroad and at home, require the Army [Corps] to set a new course for the future. As we do so, it is important that we keep in mind where we are headed."[18]

2.6.a CORPS' FUTURE: As I see it, the Corps has several options:

1) It could continue to focus much of its resources on the domestic market - building its reputation as "mr clean" in the environmental arena and rebuilding the infrastructure here at home. This approach parallels the current debate in Congress to reinvest the "peace dividend" back into the American Economy.

2) My vision of the future Corps is an organization serving our nation at home and abroad. This vision reflects a significant

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[18]Gen. Gordon Sullivan, "Army imperative in peacetime: Keep the edge", Army Times, January 6, 1991, p. 47.

shift in thinking and direction. The Corps of today and tomorrow is not a smaller version of the old Corps, constrained by the Cold War. This is a different Corps - a Corps that balances continuity with fundamental change.

The Soviet Union is facing "a very large set of problems that will take 10 to 20 years to work out. Of primary concern to the United States are unanswered questions about the fate of the Soviet central government and control of the Soviet military" particularly, the nuclear arsenal.[19] Fear of a civil war faded as the central Soviet government weakened and the republics declared independence. But in its place grew fear of wars between the republics. I'm not sure we in the West totally understand the ethnic differences among the republics. Things could flare up. It could be scary. When the Ukraine voted itself independent from the Soviet Union Dec. 1, it became the world's third-largest nuclear power.[20]

The disintegrating Soviet Union is the most immediate example of where the U.S. military might be called on for non-combat purposes. The military's role should be subtle, similar to the role it now plays in Central and South America-digging wells, building roads and training the militaries of host nations. Such work is not done by brigades and divisions, but by the Corps of Engineers.

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[19]Bud Hay, "World Changes Turn US Military Focus Inward", Army Times, January 6, 1992, p. 28.

[20]Ibid.

The United States and its military could serve as a stabilizing force around the world - the cap on the bottle. The strategy of deterrence could yield to one of reassurance.

Congress recently earmarked $400 million of the 1992 defense budget for helping the Soviets ensure the security of the nuclear weapons. It is uncertain how the money is to be spent. Spending defense money to help an old enemy and using the military to perform humanitarian missions and as peace-keepers represent major changes in how the military is perceived and how it will perceive itself.[21]

As a Major Army Command, the Army Corps of Engineers could act as the conduit for US aid to the CIS. The Corps could act as an arm of the US Government for construction & reconstruction to include the monumental task of dismantling some of their nuclear arsenal. This most certainly will carry a large price tag and as such will involve a multinational coalition of donor countries. In order to manage this international undertaking, the Corps must sell itself on its merits rather than merely acting on behalf of the US Government as its agent for reconstruction.

The knowledge of the Corps of Engineer's past relations with international construction/ reconstruction efforts is necessary to effectively project what roll the Corps of Engineers will play in the not-too-distant future.

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[21]William Matthews, "World Changes Turn U.S. Military Focus Inward", Army Times, January 6, 1992, p. 47.

Case studies regarding the past activities of organizations are routinely conducted and reviewed as a means of providing an opportunity to learn from the lessons they uncover. Based on the findings of these case studies, that organization is then given an opportunity to improve its performance in similar, future settings. Thus, for an organization to better negotiate needed changes to its strategic planning and operations, that organization should look to its past.

The Corps has a rich and colorful history in the international construction arena but has not been without its troubles in pursuing its mandate. A review of the Corps historic involvement in the Middle East (ch 3) may help to understand its past role, and help facilitate a strategic plan for its new international role. A look at the US's historic role in reconstruction of war torn societies (ch 4) together with the Corps' recent efforts in Kuwait (ch 5) might shed some light on this new role as well.

Chapter 3

THE CORPS' HISTORICAL EXPERIENCE IN THE MIDDLE EAST

3.1 BACKGROUND: The United States Army Corps of Engineers (USACE), did its first work in the region during the closing days of World War II at Dhahran Air Base, Saudi Arabia, but the program did not reach monumental proportions until the 1970s. The Corps' organization has varied in both scale & scope over the years. First, called the Corps' Middle East District (1951-58), then its Mediterranean (1952-76) and Middle East (1976-86) Divisions, and its Middle East/ Africa Projects Office (MEAPO) (1976-91), managed a design and construction program that totals over $18 billion. That organization is presently termed the Transatlantic Division.

3.2 USACE TRANSATLANTIC DIVISION (TAD): The Transatlantic Division serves as the United States Army Corps of Engineers' design and construction agent for the Middle East, Africa and Europe. TAD currently stands as the Corps' largest international construction arm. The scale and scope of its operations in the region are quite substantial.

3.2.a SCALE/ SCOPE: TAD has a substantial geographic area of responsibility and a sizable program budget. Until February 25, 1991, TAD had been known as the Middle East/Africa Projects Office

(MEAPO).

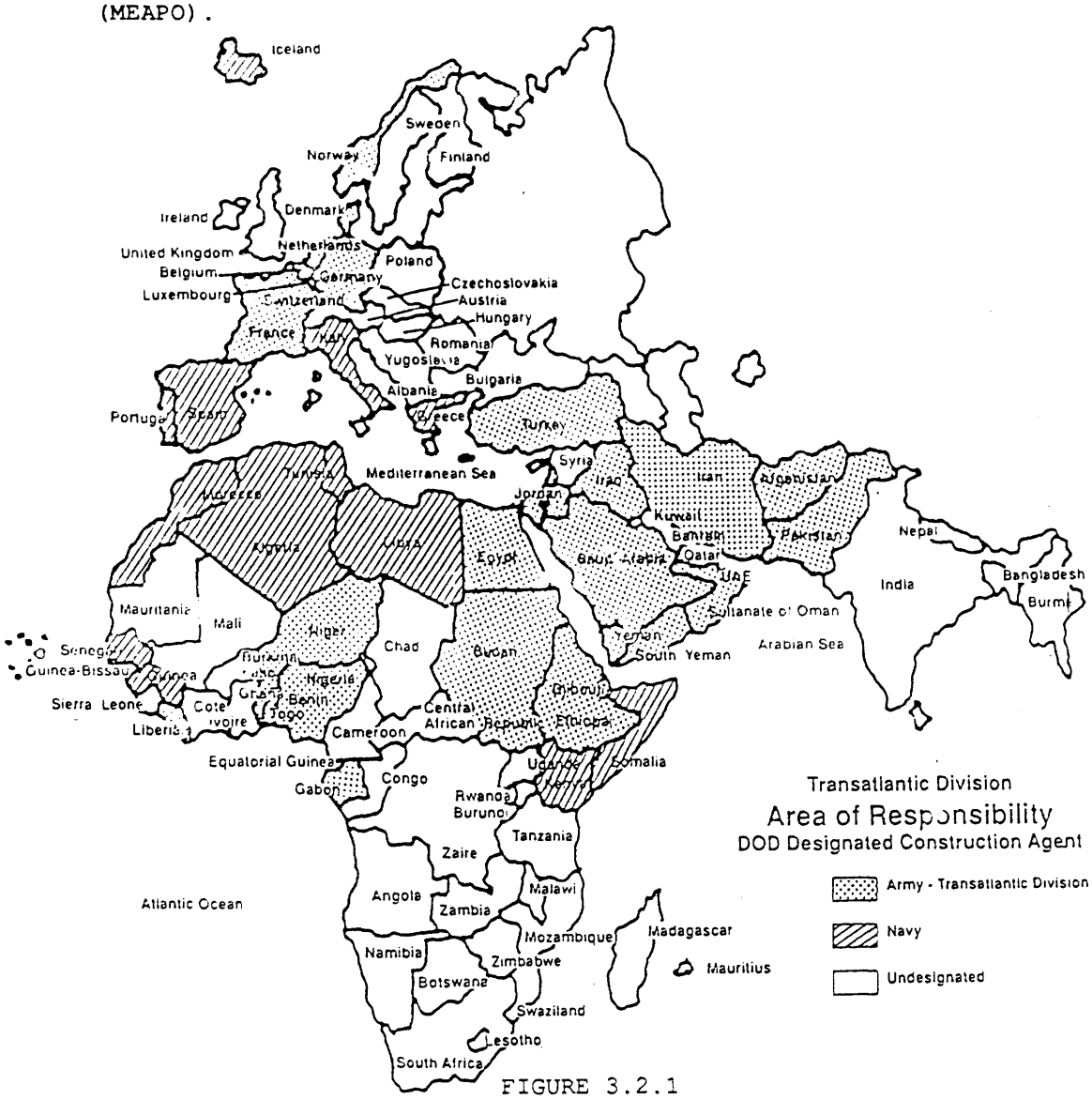

FIGURE 3.2.1

TAD SCOPE

SOURCE: USACE Commanders Briefing, dtd. August 26, 1991.

Within the Middle East, TAD provides its services in Egypt, Bahrain, and Saudi Arabia--where the bulk of the Corps' work has been completed. Work done in Saudi Arabia historically has been

on a reimbursable basis, with the Saudi government paying for all design and construction. This is not always the case, however. In Egypt, the work is funded through dollar credits provided by the United States as a result of the Camp David Peace Accords.[22] An appreciation for the scale of these efforts can be obtained from the figures below:

MIDDLE EAST PROGRAM	VALUE ($MILLION)
SAUDI ARABIA	** 16,000
EGYPT	* 891
KUWAIT	717
-DESERT STORM	300
-KUWAIT RECOVERY	217
-KUWAIT RECONSTRUCTION	200
EUROPE DISTRICT	667
OTHER	255
TOTAL	>18,000

* total expenditures for FY 90-92
** total expenditures for entire S.A. program (to date), 1965-90

FIGURE 3.2.2

TAD SCALE
SOURCE: USACE Commanders Briefing, August 26, 1991.

A regional program of this scale and scope requires a substantial organizational structure to administer it.

3.2.b ORGANIZATION: The Transatlantic Division has more than 300 employees in its headquarters in Winchester, Virginia. Reporting to TAD are: the Europe District, headquartered in Frankfort, Germany; the *Kuwait Emergency Recovery Office* in Kuwait City; and the Saudi Ordinance Program Division in Riyadh. Among the Area

[22]Fact Sheet, USACE Transatlantic Division, untitled, undated, pp.1-3.

and Residential offices are the Egypt Area Office in Cairo;[23] the Tangier Resident Office in Morocco; the Bahrain Resident Office; the MEAPO-Southwest Asia Office in Riyadh and Dhahran, Saudi Arabia - in support of Operation Desert Shield/ Storm. A diagrammatical representation of TAD's organization can be found at figure 3.2.3.

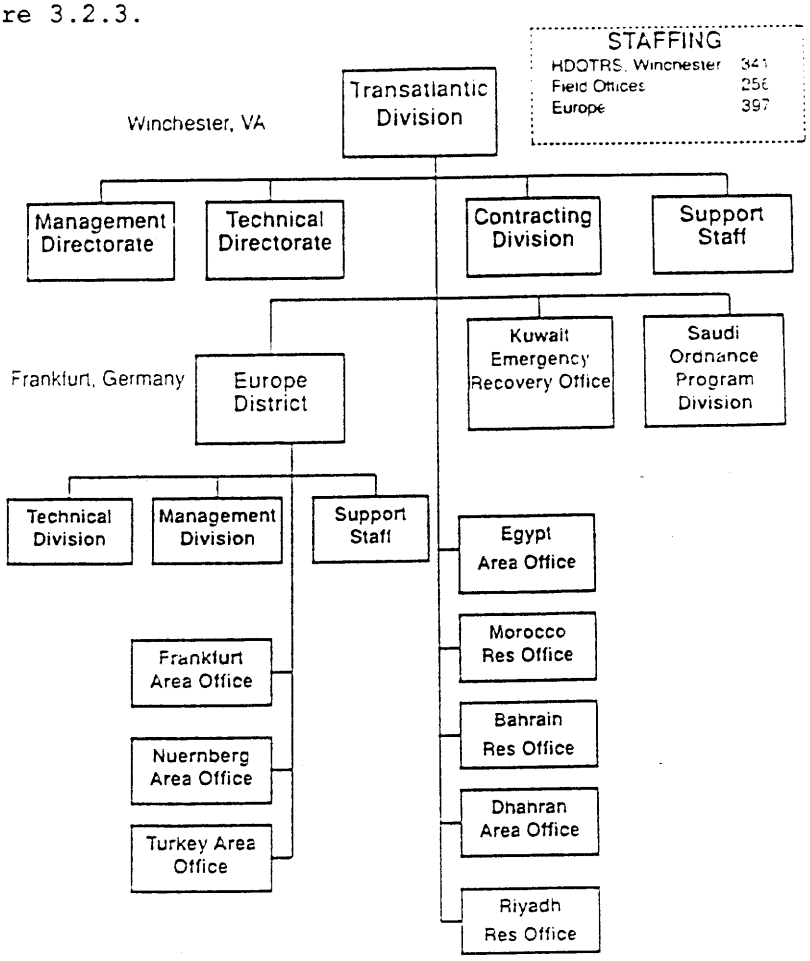

FIGURE 3.2.3

TAD ORGANIZATION

SOURCE: USACE Commanders Briefing, dtd. August 26, 1991.

[23]I have been assigned as Assistant Resident Engineer to the Egypt Area Office in Cairo and will report February 18, 1992 for a period of 18 months.

The Corps has recently upgraded TADs status to a division and put a general officer in charge, signifying the value placed on the region and the importance of its mission there. It is interesting to note that it is this very division which is responsible for Eastern Europe as well. The Transatlantic Division, which is currently involved with reconstruction efforts in Kuwait, could embody a reconstruction theme in its mission--one which could encompass new opportunities in Eastern Europe as well as the Middle East. The collective mission of these varied offices is broad, allowing room for their respective individual missions to be tailored to the geographical area and specific needs of that country.

3.2.c MISSION: The Transatlantic Division's mission is to accomplish planning, programming, design, construction management, and related procurement for the acquisition of facilities and infrastructure to support the following areas of responsibility:

* WARTIME CONTINGENCY PLANNING WITHIN UNITED STATES CENTRAL COMMAND AND UNITED STATES EUROPEAN COMMAND GEOGRAPHICAL AREA OF RESPONSIBILITY.

* CONSTRUCTION AGENT FOR US GOVERNMENT AGENCIES UNDER THE "SUPPORT FOR OTHERS" PROGRAM

* CONSTRUCTION AGENT FOR DEPARTMENT OF DEFENSE SPONSORED CONSTRUCTION UNDER FOREIGN MILITARY SALES CASE WITHIN ASSIGNED AREA OF RESPONSIBILITY.

* DEPARTMENT OF DEFENSE CONSTRUCTION AGENT FOR THE MIDDLE EAST, EUROPE AND DESIGNATED COUNTRIES IN AFRICA.

The Egypt area office in Cairo is the Department of

Defense's construction agent for Egypt and currently has the largest ongoing construction program within the Transatlantic Division, surpassing that of Europe, other N. African countries and the Middle East.

3.3 EGYPT: The U.S. Army Corps on Engineers has been involved in engineering and construction activities in Egypt for a number of years. It is presently the site for the corps largest ongoing international construction effort (approx. $1 billion).

The Egypt mission is assigned to the Corps' Transatlantic Division (TAD). The project management, design, an contracting are performed in Winchester, VA. The construction area office staff centered in Cairo manages the construction through four resident offices - in Alexandria, Cairo Central Air Base, Cairo East Air Base, and Abu Shwayer Air Base (PV III).

3.3.a BACKGROUND: During World War II, a substantial number of U.S. Army troops moved into Cairo while a number of facilities were constructed there by the Corps.

In 1979, President Sadat of Egypt offered to allow the United States "in event of need" the use of the Ras Bana military base facilities. Congress authorized a multi-million dollar construction program to upgrade the facilities to meet U.S. requirements. Design was completed by 1983 and construction was to start in 1984. However, the political and public activities were terminated in 1985 and the offer to use these facilities withdrawn.

Following the Camp David Peace Accords, Foreign Military

Sales (FMS) to Egypt increased considerably. With the introduction of American weapons systems into Egyptian military forces came the requirement to upgrade existing facilities and build new facilities to support these systems. The Middle East Division (MED), now the Transatlantic Division, initiated design and construction management assistance as part of the Peace Pharaoh program in 1979.

The initial work consisted primarily of mechanical and electrical designs and equipment procurement, with selected/advisory construction management assistance in subsequent programs. The facilities, primarily flight line and operation type, have been in support of weapons systems (i.e, F-4E, F-16, E-2C, C-130, etc.) primarily for the Egyptian Air Force (EAF), with the U.S. Air Force Logistics Command (AFLC) as our customer.

The Corps' involvement in project design and construction management has increased in recent years due to the awareness by the Egyptians that their facilities upgrade may require additional expertise and monitoring not available within the EAF. Most recently, the amount of national defense funds available to the EAF has been significantly reduced due to a downswing in the Egyptian economy. This fact, coupled with Egypt's paramount role among Arab Nations in the Gulf War has lead to even greater US/ Corps assistance.

3.3.b CURRENT PROGRAMS: A brief overview of major programs is as follows:

1) Egyptian Air Force (EAF): Most of this program is administered by the U.S. Air Force Logistics Command (AFLC) and is

the largest of the Corps/ Egyptian programs. The current value is approximately $400 million.

Highlights: 5 main operating air bases, 4 projects were awarded fiscal year (FY) '89, 2 projects awarded in FY '90, one project awarded in FY '91.

Eight to ten projects have been identified for the future of which Peace Vector IV[24] will be the largest single project with an approximate value of $200 million. The recently approved Apache Helicopter sales case, which includes approximately $20 million for design and construction of new facilities, is part of the EAF program but is not managed by the US Air Force.

2) Egyptian Land Forces: This is a relatively new program administered directly by the Corps. The total current program is approximately $70 million.

Highlights: 4 projects were awarded in FY '89, 8 new projects have been identified. The initial project was Workshop 101 which is a complete tank/armored vehicle rebuild facility. Present projects include maintenance facilities for various weapon systems, i.e., Hawk, Chaparral, etc.

3) Egyptian Navy: This program is a facility modernization program in support of ship missiles and torpedo acquisitions and upgrade. Master planning and weapons maintenance is also part of the modernization. A significant ($42 million) shiplift project is under construction in Alexandria called "syncrolift". This

[24]PV IV is the fourth in a series of Egyptian air bases which have been either constructed or reconstructed by the Corps. This project is near the town of Janaklies--approx. 2 hours SW of Cairo. The Corps is currently in the process of letting the contract. Work is scheduled to begin in the spring of 1992, and last approx. 3 years in duration.

program is managed directly by the Corps with support from the U.S. Navy. A Harpoon missile storage and maintenance project was recently completed. The total current program is approximately $100 million.

Highlights: Syncrolift (marine lift & dry-dock facilities) projects are under construction; 5-6 new projects have been identified.

3.3.c SUMMARY: The overall Egyptian program is oriented toward building a capable defense infrastructure. It never-the-less requires the same engineering expertise as does other less military oriented civil works projects--perhaps more. The Corps fulfills this role. I might also add that it is precisely this role that is urgently needed in the CIS. These eastern bloc nations will be in need of some type of infrastructure to insure that command and control is maintained within their respective defenses. The central control of these systems may be a thing of the past. Particularly, if the various republics maintain sovereignty and push for a more individual/ regional defense infrastructure.

The former Soviet Unions' Central Military Command may be broken apart, just who is in control of the military infrastructure is uncertain. One thing is for certain though, this debate will be in the forefront of the international communities' concerns until we are all assured that firm control of the nuclear arsenal/ military infrastructure has been reestablished. This very well may entail constructing new regional facilities or rebuilding older ones.

Although the Egypt Area Office has the largest ongoing construction program, Saudi Arabia has claims to the largest completed program, and the largest and most challenging single military construction project in the Corps' history.[25]

3.4 SAUDI ARABIA:

3.4.a GENERAL: The Corps primary mission in Saudi Arabia was, "...to provide engineering and construction management services to Saudi military agencies, but it was also involved in other than military programs...".[26] The programs involved both military and civil works construction projects. This was a broader program than that of Egypt for the simple fact that it did include civil works construction projects--for purposes other than building a military infrastructure. After the early projects, Saudi Arabia entered into a series of formal country to country agreements with the US to manage projects funded by the Saudis. The most significant of the country-to-country agreements executed by Saudi Arabia and the US was the Engineer Assistance Agreement (EAA), previously discussed in chapter 2. This is a unique case in the international construction arena where the Saudi's alone controlled the purse strings.

The EAA called for the United States to provide advice and assistance in the design and construction of certain military facilities, as well as providing a training program for Saudi

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[25]Dr. John T. Greenwood, Diplomacy Through Construction: The U.S. Army Corps of Engineers in Saudi Arabia, USACE, Office of History, 1988, p. 1.

[26]Richard F. Nyrop, Saudi Arabia: A Country Study, 4th ed., Washington, D.C.: The American University, 1984, p. 270.

engineers.[27] This training program could be used as a blueprint to train engineers.

During the early years of the Saudi Arabian program, this arrangement worked very well. Saudi Arabia had a large budget but virtually no qualified engineers and managers and no construction industry base to work from.[28] The Saudis welcomed the Corps of Engineers' expertise and delegated the necessary authority to compliment it. However, by 1983 the Saudis had developed a core group of USACE-trained engineers, the country had a growing construction materials industry and funds were running short. This combination of developments lead Saudi officials to increase pressure for an active role in construction management.

In essence, the EAA made USACE an agent of the Saudi Arabian government, acting for and on its behalf. This arrangement gave USACE full control of design and construction management efforts.

Although the EAA guided USACE's organization for and management of the program, the Foreign Military Sales Act (FMSA) was the determining factor that allowed the US to become involved.

The Kingdom easily met the FMSA's prerequisites due to Saudi Arabia's strategic importance in the 1970's and its oil wealth. This paved the way for Corps of Engineers involvement in the King

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[27]USACE, "Information Paper - U.S. Army Corps of Engineers Involvement in Saudi Arabia", April 1, 1988, p. 1.

[28]Although the fiscal situation may be somewhat different in E.Europe, there is certainly a need to build a construction industry base--a task the Corps is up to. This could be done on some sort of a credit basis whereby, the US provides dollar credits to respective countries who in-turn "hire" the Corps to manage the reconstruction program. The Corps subsequently lets the contracts to qualified US firms--thereby bolstering the US economy while simultaneously rebuilding our neighbors.

Khalid Military City (KKMC) project under the terms of the EAA--the largest and most challenging single military construction project in USACE history. The Corps' organization was tailored to meet the demands of this most valued project.[29]

3.4.b ORGANIZATION AND STAFFING: USACE'S project organization and staffing metamorphosed during the 12 year duration of the KKMC project. Though carefully planned initially, the actual organization and staffing differed significantly from the plan. This was a result of unforseen recruiting and construction difficulties as well as changing requirements from the owner. In this section, I examine USACE's organization and staffing throughout the project and determine its effectiveness.

The rapid growth of the entire Saudi Arabian program, caused USACE to create a new Division office in 1976--MED. Division offices are the equivalent of separate operating companies in private engineering and construction firms. The US Army Engineer Division, Middle East (MED) was responsible to the Chief of Engineers to perform all construction projects in the Middle East, except for those in Israel. Most of the projects were in Saudi Arabia, but there was also work in Jordan, Oman and Egypt.

The major organizational changes made within the Saudi Arabian program were:

1. Replacement of the Area Office for KKMC with a dedicated District Office

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[29]Jeffrey Smith, "Mega-Project Construction Management: The Corps of Engineers and Bechtel Group in Saudi Arabia", (Masters Thesis, MIT, 1991), pp. 39, 83.

2. Establishment of two new area offices: one to administer the life/construction support contract and one for the fixed price contracts.

3. Incorporation of "management assistance" personnel into USACE offices.

The Middle East Division split the Saudi Arabian District into two elements, creating the Riyadh District which handled all construction projects in the Kingdom except KKMC, and the Al Batin District, which was dedicated solely to the KKMC project.

The creation of a separate district, Al Batin accomplished the reorganizations primary objective which was to develop an organization for the King Khalid Military City which could simultaneously:

(1) Manage design by American Engineering Companies.

(2) Manage massive construction by foreign firms.

(3) Manage procurement and supply of government furnished equipment.

(4) Accomplish the first three objectives at the lowest possible cost.

At this early point in project design and planning, the existing organization with functional area control was appropriate. Although it had other work in the Kingdom, KKMC was clearly the top priority for MED. All functional areas within the division were oriented to planning the KKMC project. The project manager didn't have to compete for other projects to marshall

support for his own. Therefore, he didn't need full control of the project planning elements.

4.3.c. King Khalid Military City (KKMC):

4.3.c.1 BACKGROUND: At more than $6 billion, the King Khalid Military City is the largest military construction project ever undertaken by the US Army Corps of Engineers. Design work began in 1976, soon after USACE was directed by the State Department to perform as the project's design and construction manager. USACE completed facilities for one armored brigade at KKMC in 1984. King Fahd inaugurated the city on April 6, 1985 and USACE completed construction of KKMC in 1987. Saudi Arabia's Ministry of Defense and Aviation (MODA) now controls and operates KKMC with engineers from its General Directorate of Military Works (GDMW) who were trained by USACE.[30]

3.4.c.2 PROJECT SCALE: Initially estimated to cost $9 billion, KKMC was the largest construction project ever for the Corps of Engineers--a complete city and base with facilities and services for a projected population of over 70,000; an air base; a hospital; and the Saudi Arabian Army Engineer Center. The project was so large and complex that the Middle East Division set up the Al Batin Engineer District in 1977 just to manage the job.

Before construction could start at Al Batin, a port had to be built at Ras Mish'Ab on the Arabian Gulf for shipments of

[30]Summarized from information in the article "Phase out in Saudi Arabia," The Military Engineer, March-April 1989, pp. 81-84.

building materials and equipment. The facilities were specially designed for containerized cargo and millions of tons of bulk cement. The new port and its modern cargo handling facilities costing $216 million were operational in December 1977.

The crisis in the international oil market in the early 70s and the consequent drop in revenues forced Saudi leaders to curtail their development program. The cutbacks affected many Corps' projects. In 1983 KKMC was scaled down, reducing the estimated cost to $7 billion. The Corps completed and subsequently turned over the finished project to MODA in 1986 at a cost of just over $6 billion.[31]

3.4.c.3 PROJECT SCOPE: Lieutenant General E.R. Heiberg[32] concisely summarized the scope of the KKMC undertaking in his speech to the American Society for Macro-Engineering when he said:

> "The challenge was to take the remote desert of Wadi Al Batin with no infrastructure, forty miles from the nearest highway, extreme congestion at the nearest port over 100 miles away, no local labor force, no available construction materials (except aggregate) with wide price fluctuations and annual price escalations of 20-25%...to take this environment and create the King Khalid Military City for a population of (50,000)."[33]

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[31]USACE, Living in Saudi Arabia: A Guide for Corps of Engineers Employees, Winchester, VA: The Middle East Division, Undated, p. 3.

[32]LTG Heiberg was the Chief of Engineers at the time.

[33]LTG E.R. Heiberg III, "The Future of Macro-Projects - A Global Perspective", Address to the American Society for Macro-Engineering. (Washington, D.C., March 13-14, 1986) p. 3.

KKMC is a self-contained city, completely independent of the surrounding area. It is octagonally shaped and 2.7 kilometers across (see MAP 3.4.1). It generates its own electrical power, has its own water supply and chilled water system and completely treats and recycles its wastewater for irrigation. KKMC has its own road network, houses and provides all support facilities for the city's 6,500 families and has its own hospital, mosque and education system.

The octagonally-shaped city is divided into north and south sections. Family housing dominates the north section, while housing for single men and military facilities dominate the south. KKMC was assembled from precast concrete elements. Most of the city's buildings are arranged in low-rise clusters to provide natural protection from the harsh environment.[34] The design combines features of traditional Islamic architecture with modern technology to produce a functional community which is less opulent than much of the contemporary work done throughout the Kingdom.

Some statistics give the engineer a better feel for the magnitude of the city:

-2.5 million square meters of buildings (27 million square feet).

-18 wells, each 1,600 meters (approximately 1 mile) deep to provide 21 million gallons of water per day, with a peak demand of 30 mgpd.

-A water treatment plant designed to treat 18 mgpd.

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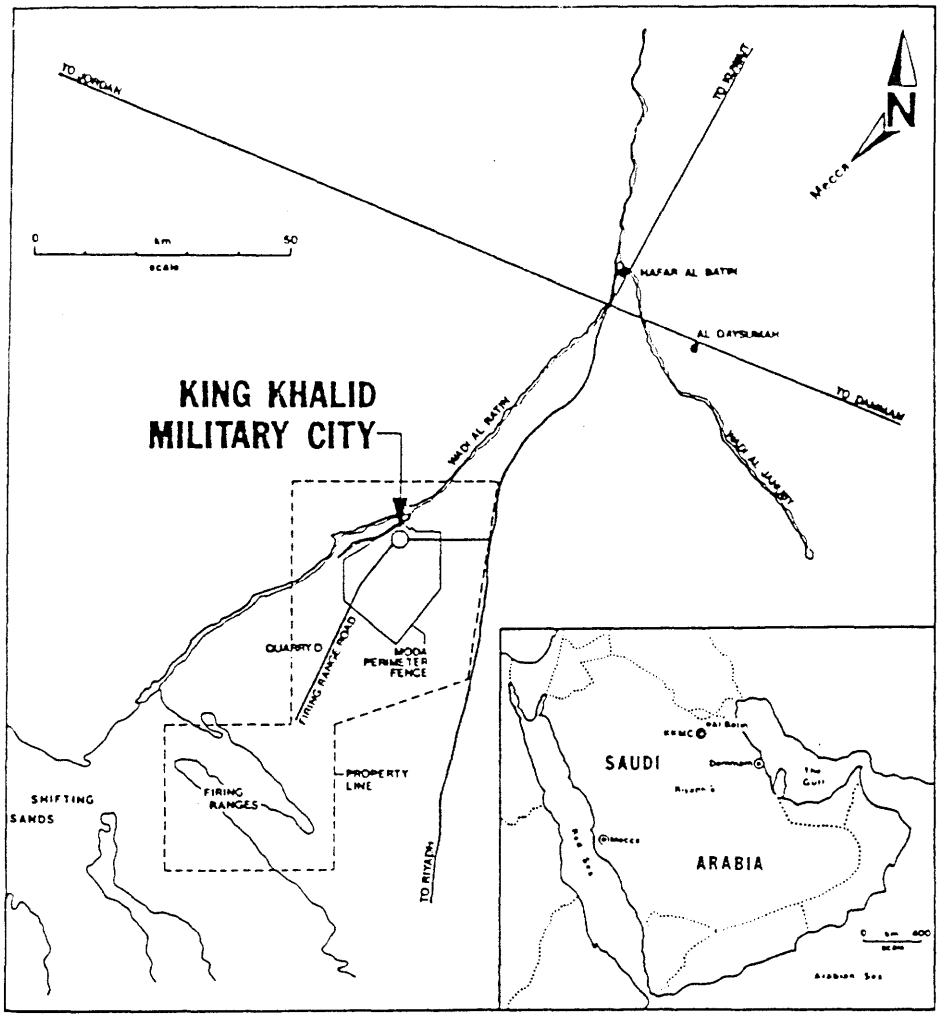
[34]"Historical Report; Construction & Support Services, KKMC", Morrison-Knudsen Saudi Arabia Consortium, Baltimore, MD, February 22, 1986.

-A chilled water plant rated at 52,000 tons.

-A sewage treatment plant designed to treat 7 mgpd.

-A 200 mega-watt power plant with 8 gas-turbine generators.

-The entire city, including training ranges, was built on a mere 70,000 acres of land.



MAP 3.4.1

KKMC AREA MAP

SOURCE: Smith, p. 94.

3.4.c.4 POLITICAL CONSIDERATIONS FOR KKMC: There were many political considerations for USACE's construction management approach for King Khalid Military City (KKMC), built in Saudi Arabia in the late 70's and early 80's, they ranged from congressional reluctance to employ the American government's civil works experts in a foreign country, to protests over Saudi boycotts of Jewish workers and products, to US construction firms' international lack of price competitiveness in fixed-priced contracting.

The first issue, at the beginning of the KKMC program, revolved around a congressional debate of whether to employ the Corp's of Engineers in such a massive foreign program. USACE had just completed a four year struggle with the Carter administration to maintain it's role as the nation's primary civil works manager when the House appropriations committee criticized USACE in a annual report for stretching its manpower pool by taking on the massive Saudi projects, alleging that its domestic capabilities suffered as a result.

The Chief of Engineers defended USACE involvement in the S.A. program, espousing that the Saudi work helped to hone and maintain the agency's construction management skills. He stressed that the Saudi mega-project would produce and train the future engineers and managers of American military and civil works mega-projects.[35]

By the early 1960s Saudi Arabia had become strategically

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[35]"Corps Chief Boosts Engineers", Engineer News Record, February 5, 1981, p. 23.

important to the US. The Saudis were staunchly anticommunist and, many felt, would provide a bulwark against Russian intrusions into the Middle East. In addition, they had become the leading supplier of foreign oil into the US. As some US officials saw it, the Corps of Engineers could be used to cement ties between the two nations - at no cost to the US taxpayer.[36]

The argument expanded and took on additional foreign policy implications as a result of USACE involvement in engineering and construction of two fast tracked military airports for the Israelis during the same period. Not only did this put a further drain on rapidly shrinking Corps of Engineers manpower resources but it created a potential diplomatic war over loyalties to adversaries separated only by the Gulf of Aqaba. Remarkably, USACE was able to deflect most of the criticism of this arrangement by having two completely separate divisions control the projects, each in relative secrecy.[37] We could find ourselves in this very situation if we were to act as the US agent for reconstruction in Eastern Europe & the Soviet Republics.

The most pressing political consideration for USACE during construction of KKMC involved its attempts to provide work for US architect/engineers, suppliers and construction contractors. Although USACE had a mandate from Saudi Arabia to ensure the project was open to competitive international bidding, the Corps

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[36]"A Controversial Role for Army Engineers in Saudi Arabia", US News & World Report, October 18, 1976, p. 77.

[37]"A Construction Job That Will Buy Peace", FORTUNE, July 16, 1979, p. 64.

also felt an obligation to secure work there for American companies. This notion was reinforced by General Morris, then Chief of Engineers, who said about the Corps upon his retirement, "Our job [abroad] is to make a place for US designers and constructors."[38]

I've identified three tenants stemming from these political debates which transgress international boundaries and as such, are very much applicable to the new international markets:

1) International work helps to hone and maintain the Corps' construction management skills.

2) The Corps of engineers can be used to cement ties between nations which become strategically important to the US.

3) The Corps provides opportunity for US architect/engineers, suppliers and construction contractors to work abroad.

I believe the Corps has applied these tenants to the Middle East region in general, thereby leveraging itself at home and abroad, and has had tremendous success. It could do the same in other international markets as well.

3.5 SUMMARY: The Corps Middle East Program has not been an unqualified success. USACE has made some costly mistakes over the course of the past 25 years but has overcome many problem areas.

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[38]"Winding Up Tour, Chief Sizes Corps", Engineer News Record, September 4, 1980, p. 18.

The organization has displayed the flexibility needed to manage crises and correct deficiencies before they become critical. It has also displayed a willingness to take risks and the skill to make most of them pay off.

This is evident by virtue of its successful completion of over $18 billion in construction projects in the region. The scale and scope of the Corps' present operations in Egypt, coupled with its past operations in Saudi Arabia are excellent examples of how an engineering/construction manager combines planning, organization, staffing and control to complete international construction projects. The scale of the Corps M.E. program however, is not indicative of all international programs. Other circumstances need to be considered for future international missions.

1) Eastern European nations do not have the capital to reinvest in their own infrastructure as did Saudi Arabia during the 70s and 80s.

2) There is currently a downturn in the construction placement and engineering design placement forecasted by the Corps' Transatlantic Division (see figures 3.5.1 & 3.5.2). This is representative of the present US economy. The US alone cannot afford to finance a reconstruction plan for Eastern Europe, this necessitates a multinational reconstruction plan - which in turn requires an organization tailored to the specific needs of that program and receptive to its multinational constituency - a shoe the Corps is not currently organized to fit. Similar problems were abound during reconstruction efforts in Korea after the Korean war(see 4.2.c, Reconstruction of Korea).

(Excludes Desert Shield/Storm & Kuwait)

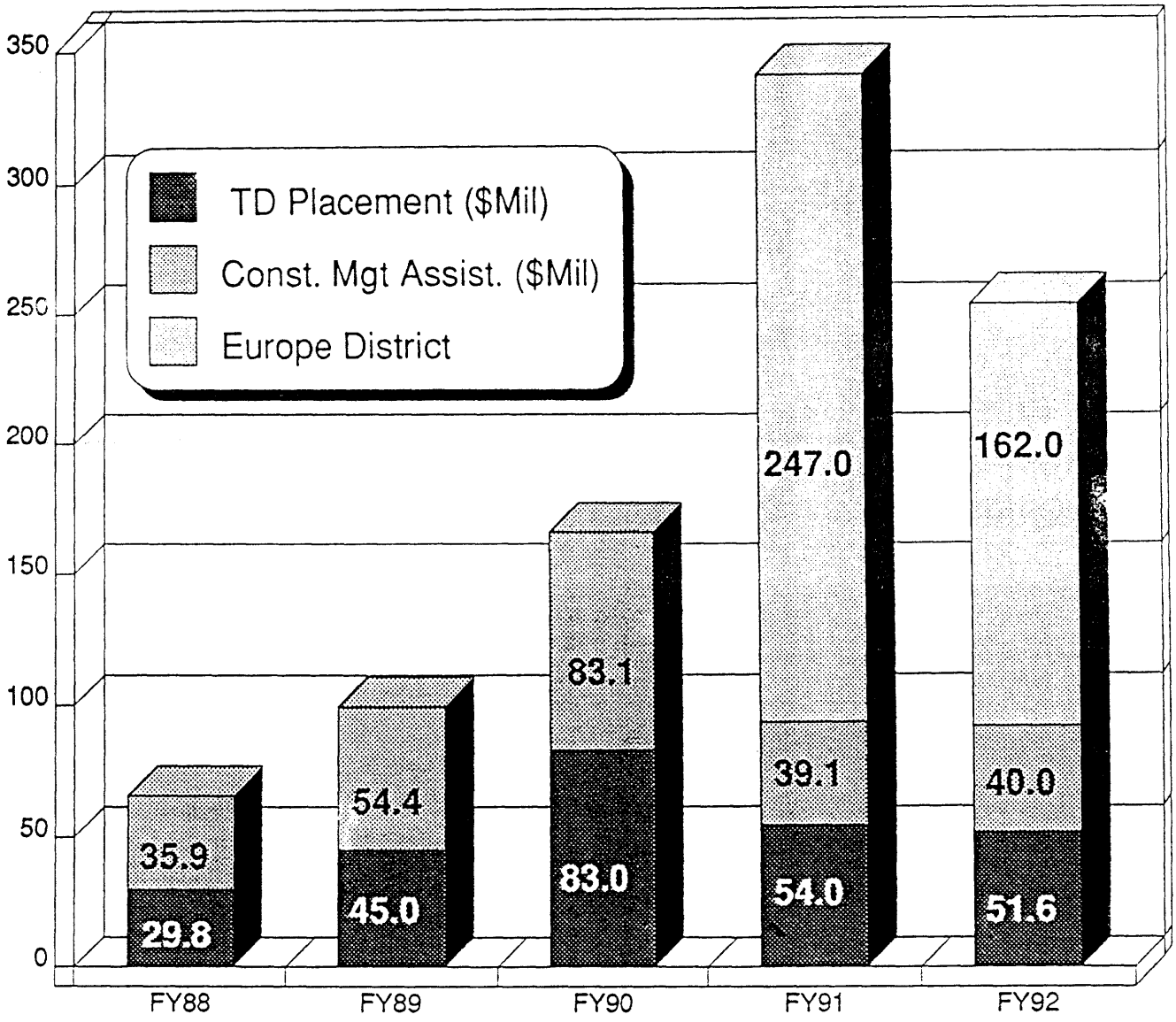

FIGURE 3.5.1

TADs FORECASTED CONSTRUCTION PLACEMENT

SOURCE: USACE Command Briefing, October 16, 1991

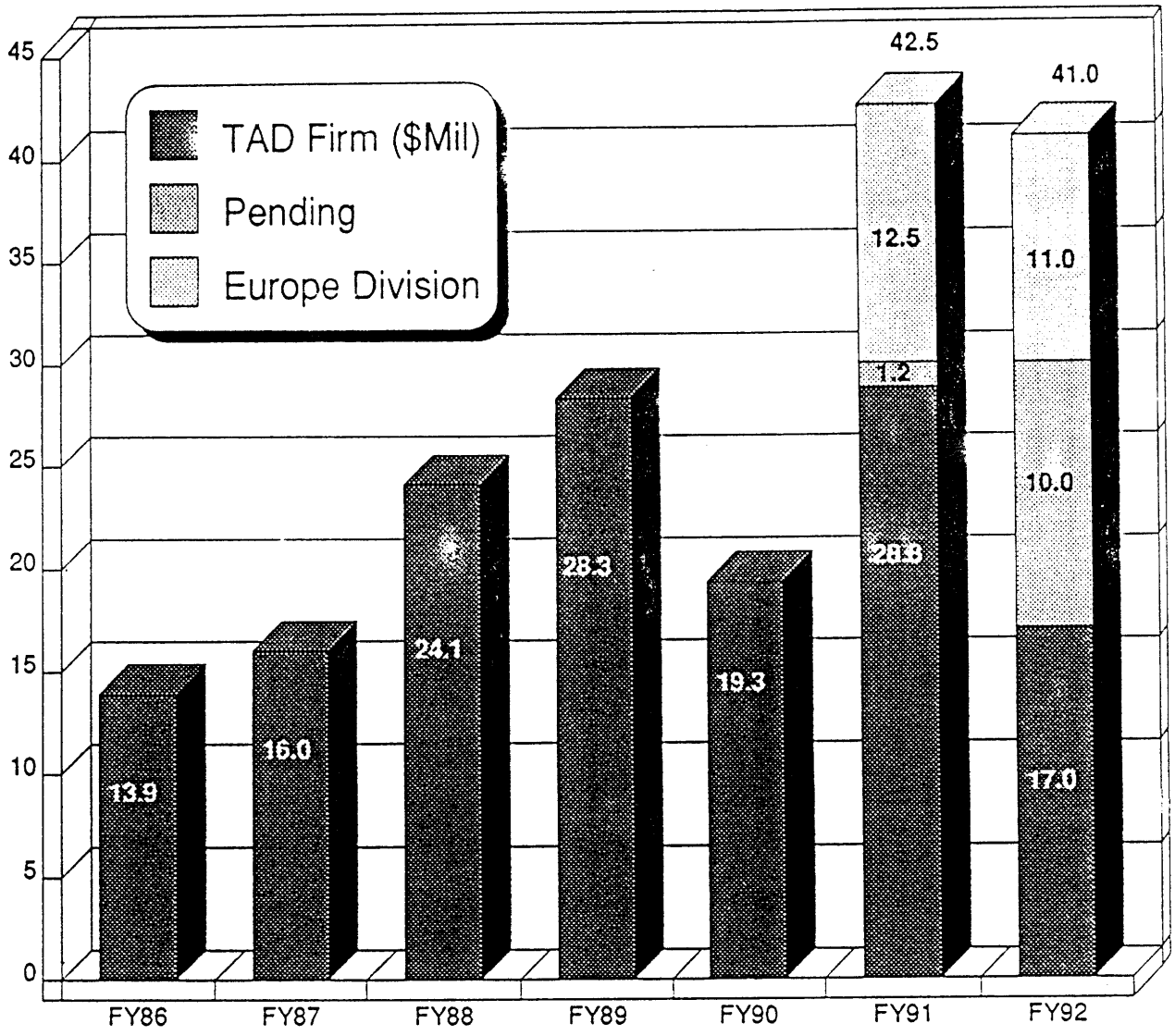

FIGURE 3.5.2

TADs ENGINEERING DESIGN PLACEMENT

SOURCE: USACE Command Briefing, August 16, 1991

The Corps ongoing involvement with the reconstruction of Kuwait and potential future involvement with the rebuilding of Eastern Europe & the CIS leads me to envision a reconstruction theme embodied in its mission. If this notion were to come to fruition, and the Corps did reorganize to meet these needs, then we may see increased projections for new construction and reconstruction in the out years (1995 & beyond). A closer look, analyzing the historic role the US, particularly the military, has played in post-war reconstruction might shed some light onto the Corps' future role in this arena.

Chapter 4

US INVOLVEMENT IN THE RECONSTRUCTION OF WAR TORN SOCIETIES

4.1 BACKGROUND: The importance of planning reconstruction can be understood when one looks at the past. One example is the United States following the Civil War. The Civil War which ended by the victory of the North over the South, was not followed as in later wars by a period of planned reconstruction. When the war ended, destruction was heavily concentrated in the Southern states where the need for capital for reconstruction was more than pressing. However, no plan for the transfer of capital from the North was ever considered and the economy of the South was left to regain back its strength on its own. Because of the lack of resources, the economy of the South remained devastated many years after the war ended. This attitude seemed to prevail throughout history. It wasn't until the conclusion of WWII that a reconstruction theme permeated the international scene in which the US has played a major role ever since.

4.2 HISTORICAL PRECEDENTS: Historical presidents for reconstruction abound in the aftermath of World War II. Ironically, most of the plans that were implemented have been successful in reviving their respective devastated economies.

Although the Eastern European and Soviet economies have not been subject to a war per-se, they are never-the-less devastated and in need of reconstruction. As such, we expect similarities to these war torn societies.

4.2.a RECONSTRUCTION OF EUROPE & THE MARSHALL PLAN: The first hint that a comprehensive reconstruction plan was underway, came on June 5, 1947, when Secretary of State, George C. Marshall, gave the commencement address at Harvard University. After painting a bleak picture of Europe's economic conditions, he announced that the United States might be prepared to assist the European nations "in a return to normal economic health" through a program designed to provide "a cure rather than a mere palliative". But the initiative of drawing up such a program, "must come from Europe", and the program itself "should be a joint one, agreed to by a number, if not all, European nations". This message has been subsequently credited with the launching of the European Recovery Program, better known as the Marshall Plan.[39]

When it emerged from Congress, the Economic Cooperation Act, which embodied the American expectations from the Marshall Plan, called for a healthy European economy, independent of outside assistance by 1952. The act specifically stipulated a recovery plan based on four specific endeavors:[40]

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[39]Immanuel Wexler, The Marshall Plan Revisited, Greenwood Press, Westport, CT, 1983, p. 54.

[40]The Marshall Plan: A Retrospective, Westview Press, Boulder, CO., 1984.

First, the reactivation of the most efficient existing production facilities was viewed as necessary. Second, recipient countries were to undertake internal financial and monetary measures to stabilize their currencies, maintain proper exchange rates and restore confidence in their monetary system. Third, the countries involved would have to expand multilateral intra European trade. And finally they would have to bind themselves to a joint organization that would encourage and review their development of European economic cooperation. A look at the evolving European Community (EC) today depicts significant emphasis still being placed on the latter three of these endeavors.

> The Treaty of Maastricht (named after the provincial Dutch town that hosted the recent EC summit) is a turning point for Europe. It practically ensures that a common European currency will go into circulation before the end of the century. It creates a European police force, dubbed Europol. It sketches plans for a future European army. It endows the EC with new responsibilities in a dozen areas, from culture to telecommunications and consumer protection.
>
> It was high time. Battered by stiff competition from Japan and the United States, the EC is on the verge of creating a single internal market for its 340 million citizens, to go into effect at the end of next year. But it was the cataclysmic changes in Eastern Europe and the Soviet Union that finally pushed the Europeans to get their political act together. Those changes left Western Europe the dominate economic power on the Eurasian continent, but without the diplomatic or military strength to cope with the new situation to the east.
>
> The Europeans will act as the "European pillar" of NATO. In other words, America and Canada will retain their key roles as partners in the defense of Europe, at the same time as the

> Europeans increase responsibility for their own security. Indeed, the Maastricht accord goes a considerable way toward meeting the traditional American call for a more robust and politically united Western Europe. Given the increasingly unstable and unpredictable state of Eastern Europe and the Soviet Union, Washington needs all the effective political support it can get from its traditional allies. "Maastricht," says a senior U.S. official, "is one of those very rare things these days - a virtually unmixed blessing."
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> The creation of an organic Europe is still decades away. Differences in culture, language and national temperament will hinder progress and may still derail the process. But the agreement that recently emerged dramatically increases the possibility that a real United States of Europe will one day exist.[41]

It appears as though the American expectations for the Marshall Plan may finally come to fruition - with the emergence of the EC. Expectations for a healthy European economy by 1952 was perhaps ambitious. However, Europe did recover soon thereafter. The area of investment which attracted the largest investment in Western Europe following the war was infrastructure: electricity, gas and power supply, followed by transport and communications - due largely to the massive destruction which took place. Government investments were prioritized to support the immediate reconstruction of this infrastructure; rebuilding the railways and transport systems and repairing and modernizing the expansion of capacity in the "basic" sectors, those which needed to expand

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[41]Scott Sullivan, "Europe Takes a Giant Step", NEWSWEEK, December 23, 1991, p. 36.

before the rest of the economy could.[42] Historical records show that Europe required between $15 billion and $20 billion in aid for reconstruction.[43]

The big difference between then and now, of course, is that in 1947 the United States was by far the richest nation in the world, and today it feels comparatively broke. The Marshall Plan cost more than $100 billion in 1991 dollars. The Bush administration is suggesting a paltry $600 million to help the Soviets, and two thirds of that is to aid nuclear disarmament.

Handing out the aid will be a monumental task. It is still far from clear who is in charge throughout the various republics. Despite a poor harvest, the Soviets probably have enough food, but they lack a way to distribute it. Farmers horde their produce, awaiting price liberation. Roads and railways in the Soviet Union are in wretched shape. It is entirely possible that the West will have to create its own distribution network, probably by using the military. Before the winter is out, the world could be treated to the strange spectacle of NATO convoys penetrating deep into their old enemy territories on a mission of mercy.

The case of Japan after World War II was different from that of Europe in that it was occupied and governed by US forces. It never-the-less stands as another example of a country that

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[42]Fadi Majdalani, "Financing The Reconstruction of Lebanon", (Masters Thesis, MIT, 1988), p. 68.

[43]Immanuel Wexler, The Marshall Plan Revisited, Greenwood Press, Westport, CT, 1983.

suffered a great amount of destruction but was able to reconstruct its economy with the help of the United States.

4.2.b THE RECONSTRUCTION OF JAPAN & THE McARTHUR PLAN: After the end of the war and the occupation of Japan by the US Army, the Americans soon realized that it would be impossible to administer directly a nation as complex, and, culturally and linguistically alien as Japan. This led to the decision to rule through the Japanese government. For that purpose, the Supreme Commander for Allied Powers (SCAP) was created. SCAP, headed by General McArthur who had a staff of 5,983, concentrated its efforts on the reform of the Japanese economy. However, Japan with a population of 82,000,000 and stripped of its colonies and the armed forces that enabled it to exploit an empire, was facing difficulties in its reconstruction.

The McArthur Plan for Japan had a goal of setting the Japanese on a pay-as-you-go basis by 1953. The aim of the plan was also to end the flow of US aid to Japan, which in 1949 totalled $1.3 billion. The plan called for additional spending of $870 million in the form of raw materials for the different industries before Japan could pay her own way.[44]

As these steps were taken, further events sped up the economic recovery of Japan. On one hand, the US department of the Army urged that the reparation policies be softened in order to give Japan a chance of economic revival. It suggested that only

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[44]"Reconstruction of Japan Under Informal Peace: Japan is Being put Back into Business with US Help", US News, April 23, 1948.

primary war industries be removed, but that secondary war industries be left to produce peace time goods.[45]

As the measures taken were implemented Japan's economy started to grow at a faster rate. One must note that Japan's recovery would not have been possible without the firm foundations of competence that the Japanese already possessed: universal literacy, high levels of government efficiency and strong habits of hard work and cooperation.

The outbreak in 1950 of the Korean War increased the demand for Japanese products especially by Americans in order to support their forces in Korea. Trade contracts increased, economic conditions improved and as soon as 1950, US aid began to shrink progressively. From 1950 to 1951, it dropped from $440 million to $320 million. Historical records indicate the US contribution to be between 3 & 4 billion in aid for reconstruction.

4.2.c THE RECONSTRUCTION OF KOREA: On June 24, 1950, North Korean troops crossed the 38th parallel and invaded South Korea. Less than twenty four hours later the United Nations Council branded the invasion a breach of peace, called for the withdrawal of the North Koreans, and asked all nations to help to accomplish that withdrawal. On June 26, President Truman declared that the United States would support the United Nations' appeal. The decision of the US to meet the North Korean aggression and to

[45]A measure of this type might be appropriate for some of the former Soviet Republics within the CIS.

assume military responsibility as a United Nations Unified Command, was quickly followed by a deliberate policy to assist in the reconstruction of the peninsula when hostilities ceased.[46]

Soon after the UN appointed an Agent General and the reconstruction mission was set into motion, problems started to appear. The UN used the US Army as a base for organizing the relief operations. The United Nations Command (UNC) under the leadership of General McArthur, was not willing to let a civilian agency (the UN) operate independently from the military command especially that the war was still raging on. In July 1951, after nearly five months of negotiations, the agreement reached stipulated that the UNC was in charge for the operation of the UN programs of relief and short term economic aid until the military operations permit the transfer of this responsibility.

For nearly one year, neither the UN nor the Army [Corps of Engineers] was solely in charge of the reconstruction efforts. The program lacked a single governing body initially, and subsequently showed very little progress during the first two years of reconstruction. The United Nations personnel consisted of two groups: first, a group of technical advisors and program experts that dealt with long range planning; and second, personnel engaged in relief and short range rehabilitation and

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[46]Gene Lyons, Military Policy and Economic Aid: The Korean Case, 1950-1953, Ohio State University Press, Columbus, 1961.

reconstruction.[47]

To meet the relief requirements two sources of supplies were made available to the Corps. On one hand there was the material procured with US funds originally appropriated to the economic aid program. These funds were channelled directly to and managed by the Corps. On the other hand, supplies, equipment and personnel came from United Nations members other than the United States and from specialized agencies and private social welfare and health agencies such as the Red Cross. These pledges were routed through UN channels and were managed separately.[48]

The Corps was not organized to operate under a multinational umbrella - answering to a multitude of donor countries/ agencies. This is a weakness the Corps must address if it is to operate in Eastern Europe today as the US agent for reconstruction.

By the time the armistice was signed (July 27, 1953), the United States had spent $1.2 billion in economic and military aid to South Korea. At that time, additional nonmilitary reconstruction was estimated to cost the US approx. $1.5 billion. A report by the National Security Council recommended that a bilateral program of defense support and reconstruction over a period of 4 to 5 years be set up. The estimated cost of such a program would be $1 billion and the program was to emphasize the reconstruction of agricultural and industrial production

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[47]The Corps was primarily involved with the short range reconstruction efforts. It now possesses the expertise to contribute significantly to the long range planning for reconstruction as well.

[48]Much like what was done in Kuwait after the Gulf War.

facilities in order to achieve a stable economy outside aid. Total estimates for the reconstruction of S. Korea vary significantly. The US alone has spent in excess of $ 5 billion.

The case of Korea highlights a historical example of efforts under the operational control of the military (Army Corps of Engineers) and the problems encountered. It is evident that, if the Corps is to manage reconstruction efforts in the future, then it must address the shortcomings encountered when working with a myriad of international organizations - as it did in this case.

4.3 SUMMARY: There are a number of historical precedents for creating international commissions that work with host governments in dealing with issues of reconstruction. Shortly after World War II, the United States joined with other nations in creating the International Bank for Reconstruction and Development, which played a major role in the redevelopment of Europe. The U.S./ Chinese Joint Commission for Rural Reconstruction played a similar role in the development of rural Taiwan. While no post-war situation is like another, these experiences point to the utility of and need for creating international professional technical bodies that can play a role in the planning process during a period of reconstruction. While the creation of an International Commission for Rural Reconstruction in the Commonwealth of Independent States could await the formation of a new government, "...there are obvious advantages in having such a Commission in

place when large-scale reorganization is under way."[49]

The reconstruction of physical infrastructure and of social cohesion (civil society) is closely linked, even contingent upon, reconstruction in modes of governance (political institutions). This challenge involves assessing and formulating wherever necessary three essential conditions for the viability of the political community: (a) the robustness of the social contract, (b) the stability in the structure of the political process, and (c) congruence in the dimensions of national security (i.e., the conditions for economic, political and strategic security are set in place).[50] These considerations must be addressed early in the reconstruction process - strengthening the argument for creation of a reconstruction commission.

The task of reconstructing the CIS would need to address three areas: 1) political institutions; 2) economy/physical infrastructure; 3) and civil society, the latter being the most complex. It is the second area (infrastructure) for which the U.S., specifically the Corps of Engineers is particularly suited.

The U.S./ Corps could bring with it a basic accounting of resources necessary for meeting reconstruction challenges including (1) analytical capabilities for development of overall

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[49]Myron Weiner, "Engineering and Planning for Rural Reconstruction in Afghanistan", A Feasibility Study Prepared by the Reconstruction Group of the Center for International Studies of the Massachusetts Institute of Technology; Myron Weiner, Project Director; September 1991, pp. 4, 90.

[50]Nazli Choucri, "Post-War Reconstruction in the Middle East: Challenges of Design and Development", The Middle East Program at MIT, December, 19902, p. 4.

framework and designs; (2) construction and building materials; (3) skilled and unskilled labor; (4) managerial and organizational capabilities; (5) financial resources.

A reconstruction commission charged with addressing mega-reconstruction efforts and activities of this magnitude would involve international participation of the public and private sectors. Given the scope of expected reconstruction efforts in Eastern Europe and the CIS, these would also involve the development of appropriate methods for cooperation and coordination of activities - a task the Corps could not handle without substantial reorganization, the creation of a truly international arm' solely responsible for reconstruction/ nuclear disarmament would be necessary.

The US does not offer these services solely out of the goodness of its heart, however, Americans expect something back in return which often has far reaching economic, political or strategic implications as was the case for US involvement in the reconstruction of Kuwait.

Chapter 5

THE CORPS' ROLE IN RECONSTRUCTION OF KUWAIT

5.1 GENERAL: The potential reconstruction opportunities in Kuwait were at one time thought to be enormous--of similar scale and scope to that of Europe under the Marshall plan after WWII (over $100 billion, 1991 dollars).

In reality, the destruction to the city was minimal when compared to initial estimates.[51] The Iraqis paid special attention to the infrastructure of the city, destroying control panels and turbines at the power plants, damaging pumps at the water pumping stations, and generally trashing schools, offices, hospitals, police and fire stations, defense installations and port facilities.[52]

The long hiatus in decision-making caused by the confusion of war, compounded by the resignation of the Kuwaiti government, left the entire world to self indulge with speculation. Much of the industrialized world bombarded Kiwaiti officials with offers

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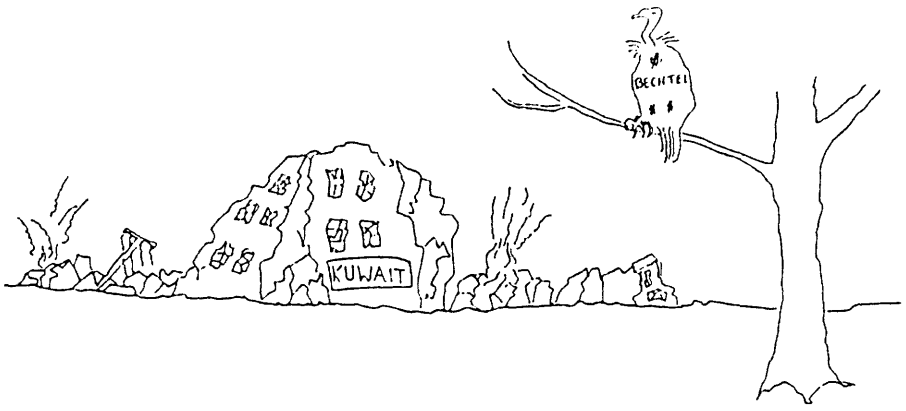
[51]Initial estimates for the reconstruction of Kuwait ranged from $100 - $500 billion.

[52]Interview with Dr. Janet MacDonnell, USACE historian. Dr MacDonnell documented--first hand, the Corps efforts as she was the Corps designated historian for Operations Desert Shield/ Storm and the subsequent reconstruction of Kuwait.

of assistance in an effort to stake a claim to its rebuilding plan. What began as polite expressions of interest in reconstruction turned into frantic scrambles to seal deals with Kuwait. The prospect of a contract bonanza stirred up an unprecedented degree of interest and direct government-to-government campaigning on behalf of international companies.



TO THE VICTORS BELONG THE SPOILS

FIGURE 5.1.1

Satirical Cartoon

SOURCE: Charlotte Andrews, 48 Precious Moments from George Bush's Perfect little War, Cricket Press Inc., 1991.

The early role of US companies in securing what was perceived as a monopoly of the emergency recovery work acted as a spur to the international community. Many prospective international companies challenged the US which had, through the appointment of the US Army Corps of Engineers (USACE) and Bechtel, become the principle foreign partners of the Kuwait Emergency Recovery Program (KERP).

5.2 BACKGROUND: USACE was termed "program manager" early on, following a request by the government of Kuwait for emergency assistance and civil reconstruction--to begin as soon as Kuwait was freed from Iraqi occupation. On January 14, 1991, the US Defense Department signed a $46.3 million foreign military sales case (SEE FIGURE 5.2.1), under section 607a of the Foreign Assistance Act, that directed the Corps of Engineers to assist in the restoration of facilities and systems controlled by three ministries: Public Works, Electricity, and the National Guard (the nations police force). The initial effort was to provide engineering and construction services during the emergency phase of the recovery, expected to last 90 days.

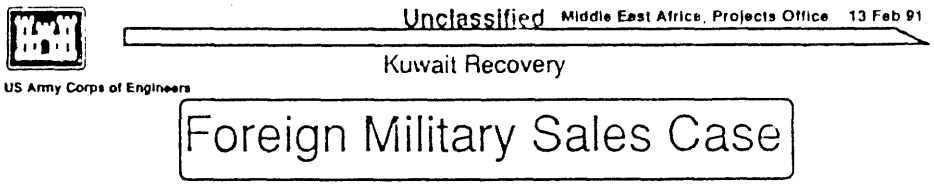


FIGURE 5.2.1

FOREIGN MILITARY SALES CASE

SOURCE: USACE Command Brief, August 16, 1991

5.3 US INVOLVEMENT EARLY ON:

WHY THE CORPS? The Government of Kuwait had to choose a program manager early on and had several obvious categories of candidates

to choose from: 1. government vs. private; 2. national (Kuwaiti/Arab) vs. foreign. They considered what alternative institutional arrangements were possible? A private construction firm contracted to do public works? A non-profit quasi-public entity designed to work with local and provincial authorities? They questioned whether donor organizations work directly with the proposed entity, reviewing accounts, evaluating performance, etc. or whether an intermediary institution (e.g. and expatriate non-government organization (NGO) would be necessary?

The team also studied other engineering organizations engaged in rural public works, those that are predominantly engineering organizations, and those multi-purpose NGOs combining public works with rural development activities.

The GOK chose a foreign governmental agency e.g., the US Army Corps of Engineers. Aside from the obvious political ramifications, the Corps accurate assessment, and subsequent *mobilization* of resources was paramount in GOK's decision to "hire" USACE to manage their reconstruction efforts.

Several international firms were considered as potential reconstruction program managers ("Bechtel, Brown & Root and Parsons were considered, with Parsons winning out...until the Corps came along with plans to mobilize quickly").[53] The Corps was involved in Operation Desert Storm and as such was involved from the beginning. It developed a deployment schedule for reconstruction - early on (see figures 5.3.1, 5.3.2).

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[53]Quote from Al-Abdullah, Assistant Under Secretary, Ministry of Public Works, Kuwait, July 1, 1991.

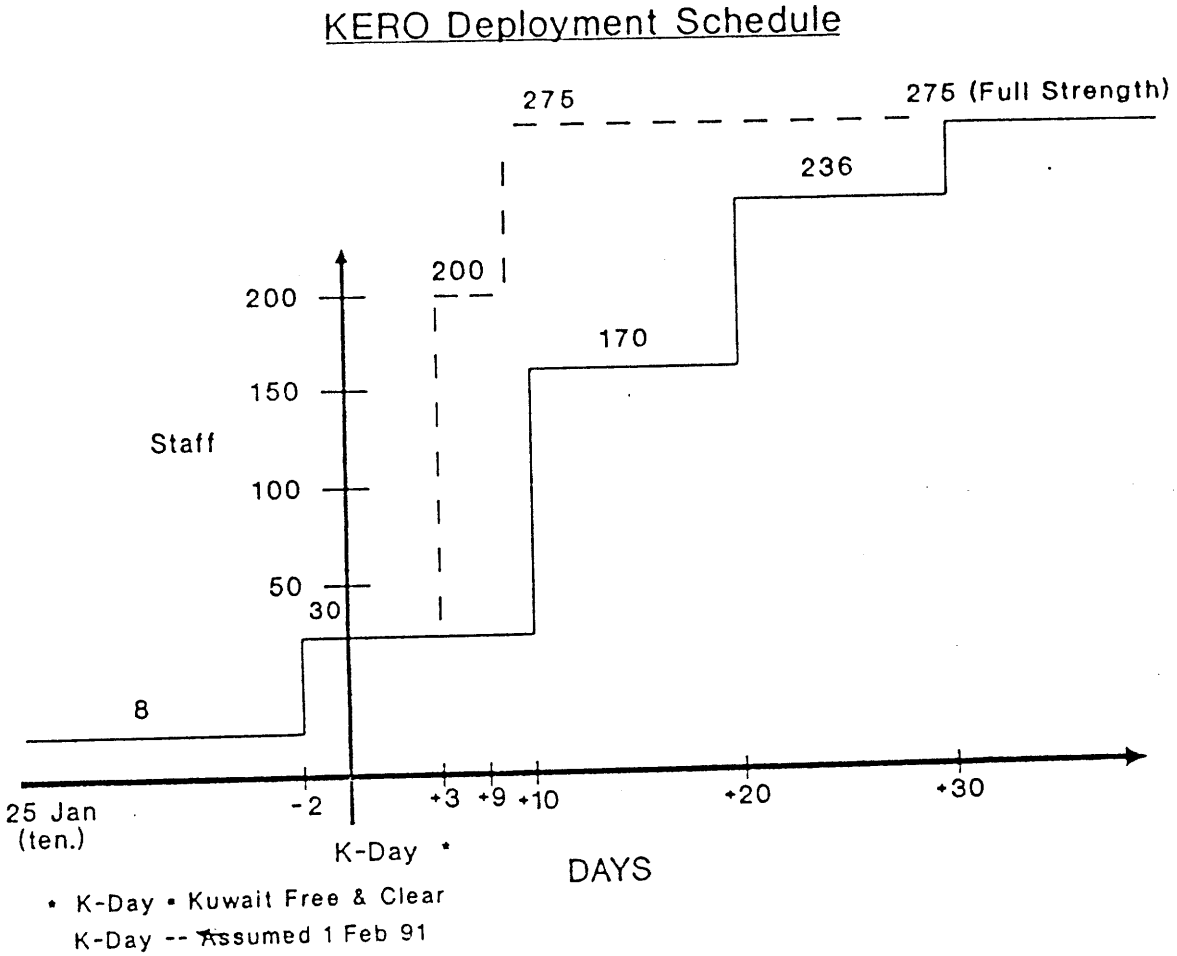

FIGURE 5.3.1

KERO DEPLOYMENT SCHEDULE

SOURCE: USACE Commanders Brief, August 16, 1991

US Army Corps of Engineers

KERO Deployment

26 Jan 91	275 volunteers recruited; equipment procurement initiated
29 Jan 91	Advance party "A" (8 people) arrive in Saudi Arabia
K - 2	Advance party "B" (22 people) arrive in Saudi Arabia
K Day	Advance party moves to Kuwait
K + 5	Main body completes movement into Kuwait
K + 90	Mission ends

Unclassified

FIGURE 5.3.2

KERO DEPLOYMENT

SOURCE: USACE Command Brief, August 1?, 1991

The sequence of phasing of reconstruction activities was dictated by the GOK, to a large extent, however, the Corps (program manager) provided the contract strategy (see figure 5.3.3) for reconstruction involving necessary inputs, sequences of resource needs and sequencing of activities, and expected outcomes. Identifying the extent of flexibility associated with different phases, and tasks was a major component of the overall planning and an essential condition for effective implementation. The recovery plan for Kuwait was mapped out early on, based on an initial contract strategy which partitioned the country according to levels of threat - with the main goal of assessing the damages as soon as hostilities had ceased.

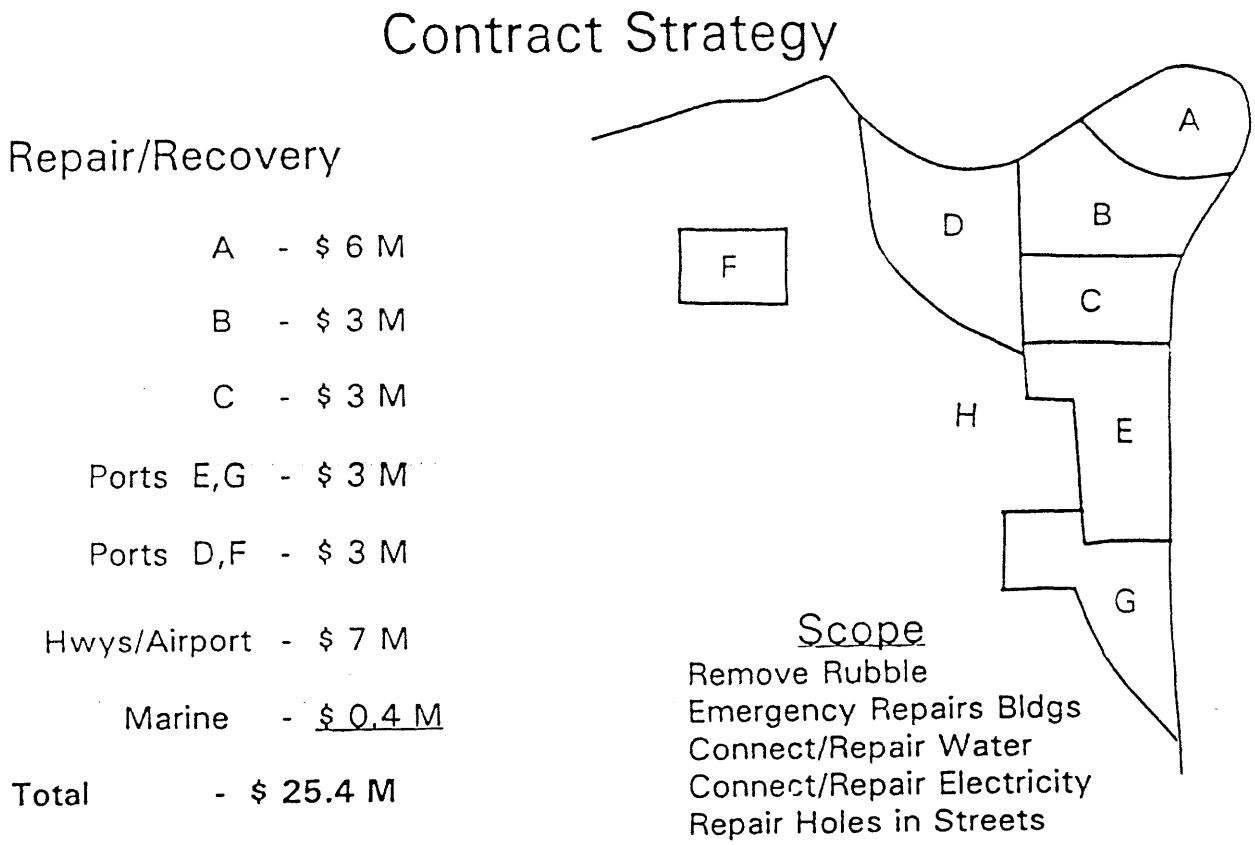

FIGURE 5.3.3

INITIAL CONTRACT STRATEGY
SOURCE: USACE Command Brief, August 16, 1991

One significant reason for the early implementation of a contract strategy and the overwhelming success of Operation Desert Storm was the technology used by the U.S. led coalition forces. While most people now are familiar with such high-profile systems as the Patriot Missile and smart bombs, they are only part of the military technology story.

The U.S. Army Corps of Engineers' laboratories developed crucial technology enabling the coalition forces to exploit the battlefield. One way the labs did this was by providing the capability to "see" the entire battlefield. All four Corps labs contributed to this effort: the U.S. Army Engineer Waterways Experiment Station (WES), Vicksburg, MS; the U.S. Army Construction Engineering Research Laboratory (CERL), Champaign, IL; the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH; and the U.S. Army Engineer Topographic (ETL), Fort Belvoir, VA.

Engineer Topographic Laboratories (ETL)

The ability to "see" the battlefield is vital to be able to control the action upon it. In General Schwartzkopf's famous briefing on February 27, 1991, he emphasized the fact that technology had enable him to "see" the entire battlefield while Saddam Hussein could not. Much of the superior knowledge of the battlefield was provided by technology from ETL in the form of expedient mapping, terrain analysis, positioning and navigation, imagery intelligence, and battlefield environment exploitation. Much of this technology has direct application to the reconstruction process.

U.S. Army Engineer Waterways Experiment Station (WES)

The Waterways Experiment Station is the largest Corps R&D complex, with six separate laboratories. As such, WES provided a wide spectrum of support--including explosives, dust control, mobility modeling and evaluation, military hydrology and support

to the oil spill, to mention a few areas of support. The following passage discuss in limited detail some of these activities as they pertain to reconstruction.

CADD-GIS for Kuwait City--The Kuwaiti reconstruction effort is a major undertaking. In 1983, Kuwait City contracted with a foreign consortium for the country's first digital topographic and utility data base using a Computer Aided Design and Drafting (CADD) platform. WES' CADD Center was tasked to develop utility and topographic drawings of 600 square kilometers of Kuwait City from the existing multi-source data base.

Based on the Corps' requirements, the WES CADD Center generated over 7,200 data files to produce 2,753 drawing files and reduced the estimated plotting time of 200 hours by half.

U.S. Army Construction Engineering Research Laboratory (CERL)

CERL has been developing an integrated Theater Construction Management System (TCMS). In September 1990, CERL provided experimental software and a computer hardware platform to two units deployed to Desert Shield. CERL delivered the following software: Computer Aided Drafting (CAD) drawings for 2,789 Army Facilities Component System (AFCS) facilities and installations; commercial CAD software for adapting these drawings; commercial construction-scheduling software for creating Critical Path Method (CPM) networks; and a software shell developed at CERL to integrate the individual software programs. The computer hardware included a 33 Mhz microcomputer with a 320-megabyte hard disk, a 120-megabyte tape drive, an eight-pen plotter, and a laser printer. These programs have been especially helpful in Kuwait.

Cold Regions Research and Engineering Laboratory (CRREL)

Pipeline Crossing Story--Partly in the Desert Shield planning, it became evident that if the coalition forces were to conduct operations in Kuwait they would have to breach or cross several petroleum pipelines. CRREL used expertise and background gained from working on the trans-Alaska pipeline to provide information and give perspective to the Engineer School on crossing these large pipelines. They provided detailed information and discussed potential problems as opposed to providing a simple "generic" solution.

CRREL also provided background geographic data and identified potential problem areas for selected mountainous, cold regions within the theater. In addition the lab provided preliminary assessments for the effectiveness of selected weapons based on prior demonstrations and extensive research in blase efforts. Using satellite imagery, CRREL has supported remote sensing of the huge oil spill in the Gulf for intelligence and control.[54]

This is but one example of the vast resources available to the Corps while operating in the Gulf. Another equally important arm of the Corps is the "Green Suiters". Those individuals who are soldiers and often alternate their duties between Combat Engineering and civil works - it is those folks (civil works) who truly carried the weight during recovery operations in Kuwait. Most of these individuals were dispersed among one of several

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[54]David Maune, Colonel, US Army, "US Army Corps of Engineers' Laboratory Support to Operations Desert Shield and Desert Storm and to Kuwait Recovery Operations", The Military Engineer, August 1991, p. 10.

organizations operating in the Kuwait area of operations.

5.3.a THE KUWAIT TASK FORCE (KTF): KTF, comprised of some 50 US military civil affairs advisors, began working with a planning group from the GOK early in December, 1990. The KTF mission was to provide advice and technical assistance to the Kuwaitis in several critical areas. The focus of the planning, advice, and technical assistance was to restore basic, emergency governmental services until the GOK regained control of the country. Included in the services were repairing the transportation system, providing housing, clearing garbage, reestablishing telecommunication services and similar functions needed to provide for the basic health and welfare of the Kuwaitis. Most of these functions are handled by the Corps routinely, making it fairly obvious why the Corps was chosen as program manager. The Corps may very well be the largest "public" US construction manager, however, I might point out that does fall under the Department of Defense (DoD). DoD has therefore, not only been keenly interested in the war itself but, the potential reconstruction opportunities as well.

5.3.b DEFENSE RECONSTRUCTION ASSISTANCE OFFICE (DRAO): DRAO was established in April, 1991. The DRAO mission is to provide US DoD support to the GOK for emergency restoration of civil services and military reconstruction and recovery in the wake of the Iraqi invasion and occupation.

DRAO's civilian and military staff act as the GOK's agent

for the reconstruction assistance provided by the US Army Corps of Engineers' Kuwait Emergency Recovery Office (KERO) and other DoD assistance activities in support of Kuwait's recovery.

Working under a letter of exchange signed April 5, 1991 by the representatives of the GOK and the USA, DRAO provided planning guidance and technical support to the various ministries of the government. Together, DRAO and ministry leadership identified and developed reconstruction projects to restore and/or repair civil services.

The reconstruction assistance provided by the US to the government and people of Kuwait is by mutual agreement and meets the national interests of both governments.[55]

5.4 KUWAIT EMERGENCY RECOVERY OPERATIONS (KERO): KERO was established as an organization within the Corps' Transatlantic Division, an office with vast construction experience overseas in general, and the Middle East in particular. KERO was organized as a small Engineer District office with a headquarters and emergency operations, project management, engineering and contracting divisions.

The overall program for reconstruction was conceived in terms of seven damage assessment groups (DAG): ports, airports, fresh and waste water treatment, power production, roads, public buildings and defense installations--each aligned with a particular Ministry in the Kuwaiti Government (each a separate

[55]BG Witherspoon.

institutional activity). The DAGs were subdivided into damage assessment teams (DAT) made up of US and Kuwaiti engineers. These teams were augmented with contractor representatives to conduct joint surveys of project sights. As KERO's operations matured, DAG offices were made responsible for managing the work of contractor personnel.

The total reconstruction program is broken down into three phases: 1) emergency phase (first 90 days after liberation); 2) recovery phase (restoration efforts needed to get Kuwait back on its feet - short of large scale reconstruction; and
3) reconstruction phase (remaining efforts through 5 yrs).

The Corps completed the 90 day emergency phase - with American contractors capturing most of the work. It them moved into the recovery phase - Americans capturing a smaller percent of the market; and has subsequently been awarded few additional contracts in the reconstruction phase.

5.4.a EMERGENCY PHASE (FIRST 90 DAYS AFTER LIBERATION): During the emergency phase of the operation, Corps efforts were focused on restoring essential services such as electricity, water supplies and transportation corridors - sea, land and air - to meet immediate health, safety and security needs of the country. The recovery phase focuses on areas like schools, more permanent repairs to public buildings and transportation networks "...the kind of things that will help the country begin to operate more

closely to its pre-war conditions".[56]

An examination of the work performed by each damage assessment group demonstrates the accomplishments of KERO during its first 90 days in country.[57] This information has been supplemented with an August '91 update -- 150 days after liberation[58] and appears in order of precedence assigned by the GOK.

DEFENSE: Kuwaiti's defense infrastructure was heavily damaged and in some instances destroyed as a result of the occupation and the air and land offensive. The Defense DAG has completed the general damage appraisals for the 19 defense installations in the country, as well as completing detailed cost estimates on 40 key facilities.

The Defense DAG was initially concerned with supervising emergency repairs and renovations on Air Force hangars at the Kuwait International Airport, a key Ministry of Defense facility and the National Guard headquarters.

ELECTRICITY: 98% of the populated areas now draw power from the Ministry of Electricity and Water. The first power to Kuwait City however, was distributed over lines surveyed and repaired by KERO

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[56]Colonel Ralph V. Locurcio, "The Corps in Kuwait: Kuwait Emergency Recovery Office (KERO)", Engineer Officer Bulletin, US Army, July 1991, NO.13, pp. 16.

[57]James N. Parker Jr., "Kuwait Effort Moves Into Recovery Phase", Transatlantic News, Vol.6, No.5, May 1991, pp. 1.

[58]Fact Sheet on the Reconstruction of Kuwait: 150 Days After Liberation, Embassy of the USA, State of Kuwait, 1AUG91.

and its contractors. The three lines running from the Doha power station to Omeriya, a distance of 23 kilometers, were the first lines repaired after the liberation of Kuwait. In addition KERO contractors have repaired 40 km of power transmission lines from Al-Zour power station to the Shuaiba substation, completed emergency repairs to a major substation on 6th Ring Road, restored power to the airport and completed 64 damage surveys.

Corps contractors have begun work on four additional transmission lines and are repairing the Fintas "W" substation. To date 8,635 km (5,400 miles) of transmission lines have been replaced and the Doha East, Doha West, and Al Zour power plants all provide adequate (surplus) power.

WATER & SANITATION: Three desalinization plants are operating, with the two billion gallon reservoir nearly full to capacity. Team members in the Water DAG have supervised repairs to six major breaks in the Al Zour to Mina Abdulla pipeline and the conversion of three brackish water lines to fresh water in order to increase the flow to the West Finatees reservoir. Additionally, they have completed 28 damage assessments. The Ministry of Electricity and Water has assumed total responsibility for continued repairs and maintenance.

Present efforts are focused on three areas: assessment and repair of the pressurized network; repair of water lines to Ras Al Qualaya naval base; and temporary repairs to the Mina Abdulla pump station.

Personnel in the Sanitary DAG have completed 27 damage surveys on 77 different facilities. Contractors have repaired six

breaks in the sanitary sewer system lines. After KERO completes a detailed system analysis, remaining work on the sanitary system will be completed by the Government of Kuwait.

ROADS: Corps contractors repaired 12 kilometers of Nuaisib Road, the major artery into Kuwait from Saudi Arabia. Iraqi forces had trenched and destroyed the roadway as a deterrent to an allied ground offensive. More then 70% of the bomb craters on major roadways have been repaired and contractors have removed 2,800 wrecked vehicles, 584 "Jersey" barriers and 258 Iraqi defensive bunkers from over 200 kilometers of highway. At present the KERO Roads DAG is supervising repairs to Al Salmi motorway, Kuwait's other north/south artery, and planning for repairs to the Al Abdaly road is in progress.

AIRPORT: The Airport DAG has completed 22 damage assessments at Kuwait International Airport. The KERO team has supervised emergency repairs to the reception area at the airport and the Corps contractors have completed initial emergency repairs to the main terminal, allowing passenger traffic, customs operations and baggage handling operations to resume. More than 463 obstructions, ranging from large shipping containers to war damaged vehicles have been removed from runways and taxiways.

Additional repairs to the terminal are underway and design work is continuing on the renovation or reconstruction of several key facilities, including hangars, cargo building, training building, and additional terminal security and departure gates.

Contractors are repairing damages to one of the two runways and some of the apron area near several passenger gates caused by bombing. The International Airport resumed 24-hour operations on August 1 with five operational gates at the main terminal. Six additional gates will open by the end of September, 1991.

PORTS: Al-Shuaiba Port is open to commerce after a Corps contract provided for a marine side scan sonar survey of the harbor and entrance channel.

In addition to the marine survey, Port DAG team members also have completed damage surveys to land side facilities at Al Shuaiba and AL-Shuwaikh. The GOK will contract for the repair and restoration of port facilities.

PUBLIC BUILDINGS: The Public Buildings DAG has completed 450 damage assessments on public buildings in the following sectors: Health, food distribution, security, fire department, public housing, communications, public transportation, and schools. Emergency repairs are completed on 70 government buildings now in use by the Government of Kuwait (GOK).

A critical program in the eyes of the government was the reopening of the public school system by the beginning of the school year. To do that, more than 300 schools had to be surveyed, cleaned, and repaired. KERO engineers completed these assessments. Damages varied, although 70% of the schools appeared to have sustained light damage. Of particular significance was the stolen laboratory equipment, five tons of books (over 700,000 volumes), and the University's mainframe computer--all missing and

needing to be replaced.

The Parliament (National Assembly) Building and the Kuwait Museum are undergoing extensive repairs from heavy artillery damage and fire bombing by Iraqi forces. Permanent renovations are expected to be completed by April 92.

For state buildings, the Corps completed emergency repairs and clean up of two sections of the Bayan Complex, totaling $1.5 million. Eight damage assessments were completed for state buildings, including the Seif Complex. The GOK has assumed responsibility for managing the renovation of state buildings.

It became increasingly apparent that communication with each of these separate instillation activities was critical to the overall program for reconstruction. As program manager, the Corps acted as the hub, providing a basic accounting of resources and allocating resources necessary for meeting reconstruction challenges.

The Corps made great strides during this phase of the operation - where it operated autonomously. It is here where the Corps vast organizational skills and standard operating procedures for emergency operations played a key role.

5.4.b RECOVERY PHASE: The Corps began to loose ground after the initial 90 day emergency phase. Problems began to arise: The GOK, for instance, made deals for emergency repairs and rehabilitation work on its own, notably the ministries of health,

electricity and water--with no coordination with to the Corps.[59]

Many international companies saw fit to bypass the Corps, dealing directly with the ministries. This was a major source of several problems as you might expect. There were several examples of the very same work being let by both the Corps and a particular ministry to two entirely different contractors.[60] Additionally, the contracts themselves were sloppy. In an effort to expedite work, pre-qualification rules, bid procedures and bond requirements were not being followed. This was to be the beginning of a great loss for the Corps.

5.4.c RECONSTRUCTION PHASE: The Corps lost in a big way when it comes to the reconstruction phase. It received some negative press as program manager and had visibly lost ground in the overall scheme of things, including a much smaller piece of the reconstruction pie. When asked about the Corps future as program manager, Bader Al-Qabandi, the number two man on the Kuwaiti reconstruction team suggested "it's anyone's guess". The only reason the Corps was named was because "it would take a long time to settle with a private company, and because of the urgency of the war."[61]

The Corps was to handle emergency and long-term restoration of all 18 military installations--including two air force bases,

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[59]"Special Report - Kuwait", Meed, 17 MAY, 1991, pp. XXII.

[60]Personal interview with Captain Dan Encines, USACE project officer, Kuwait, 26 AUG, 1991.

[61]"Kuwaitis Rethinking Management Plans", Engineering News Record, July 1/8, 1991, pp. 30.

three army bases, and one navy base--plus the headquarters buildings for the ministry of defense. Now, the Kuwaitis are back peddling. The Corps prefers to call it "a rethinking." The Kuwaitis say they want to handle more of the military reconstruction themselves, kicking a hole in the program that could encompass two-thirds of the work the Corps was counting on. The Corps has been relegated to rebuilding only the two air bases at a cost of about $150 million each.[62]

The US share of the Kuwaiti reconstruction effort will be at least 35% over a five year period.[63] This is much smaller than the 70% share the US received in emergency clean-up work. But 35% is still substantially greater than the 15% of the market share the US had of Kuwaiti business prior to the invasion - substantially less work than thought.

Al-Abdullah (the powerful assistant under secretary in the ministry of public works) believes that the Corps rates only fair marks as the manager of the reconstruction. The building is "not as organized" as he would like, he says. He pushed for a private management company instead. Bechtel, Brown & Root and Parsons were considered, but the Corps came along with plans to mobilize quickly. Al-Abdullah fought his countrymen but claims "too many fingers got in the pot and spoiled it."[64]

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[62]Ibid. pp. 26.

[63]Jean AbiNader, President of the National US-Arab Chamber of Commerce, Gulf Reconstruction Report, APR 10, 1991, pp. 11.

[64]Ibid., pp. 28.

5.5 SUMMARY: The magnitude of problems and business opportunities in Kuwait had too many people expecting too much, too soon in rewards. Reconstruction of Kuwait alone has not and will not turn around the economic recession in the US, and not even the downturn in the construction industry. There is considerably less structural damage to the infrastructure than expected and therefore, it is unlikely that there will be much need for large-scale civil works contracts for rebuilding. The core infrastructure remains mostly intact, in need of repair and refurbishment but not replacement.

Early alarm, verging on the hysterical, that the US would make a clean sweep of reconstruction work, was clearly misplaced. Work awarded under the 90 day recovery program did go mostly to US main contractors but the majority of follow-on contracts did not. The Corps "short list"[65] lost its seemingly magical significance, once it was released that the Corps wasn't the only avenue of approach for rebuilding work.

In the end run, the Corps failed to secure a large portion of the work. It failed in its task to create an effective organization which could work with local authorities to carry out reconstruction and development activities, whose activities could be effectively monitored by donor agencies, and which had the standing to warrant support from a variety of bilateral and multilateral donors. This task was made unusually difficult by

[65]"short list" - list of companies that pre-qualified with USACE for work in the emergency phase.

the special political circumstances under which such an entity must function.

5.5.a POLITICAL CLIMATE IN KUWAIT: Before the war, most Kuwaitis led a pampered life in an explosive region. More than 90 percent worked for the government, holding down a desk and a chair at one of the ministries. Health care was free, newlyweds were given a house. Oil paid for an expatriate work force to keep things running; it imported the amenities, and those in position took a nice commission on the deal.

The lifestyle contributed to an attitude of indifference that outsiders interpreted - accurately - as arrogance. It cost the Kuwaitis some bad press in a crisis in which they were the victims. Now the Kuwaitis are challenging each other to reshape their society and government.

Almost exclusively, the business of Kuwait is oil and it is government-owned.[66] Tenders for foreign equipment and services are put out by the Kuwait Oil Co., and the bids and related approvals work their way tortuously through the bureaucracy. A particular problem for private business is the government policy on work visas. Officials insist they want to cut the foreign labor force, but businessmen say they can round up the necessary visas - it just takes a little longer.

Business as usual reigns in this desert sheikdom a year

[66]Today, Kuwait is classified as the fourth largest oil-producing country in the world. The oil bonanza, apart from consolidating the political power of the state - and that of its ruling family - has also given the state considerable economic power. This is evident from the international participation in the Gulf War.

after Saddam Hussein's Iraqi legions were repulsed. In these months of reflection and restoration, many influential Kuwaitis appear unable to look beyond the trauma of the occupation and its ugly aftermath of vigilantism. Western diplomats say the abuses against alleged collaborators have largely been brought under control by Kuwaiti security.

Palestinians who left by the tens of thousands during the occupation have been denied re-entry, and others are being forced out as their work permits here expire. Bedouins - Kuwait's so-called stateless Arabs - also face continued discrimination. Some bedouins of Iraqi ancestry went north during the occupation and now are stranded in the demilitarized zone separating Kuwait and Iraq. Kuwaiti authorities refuse to accept them, suggesting that they could comprise an Iraqi fifth column. Little over a year ago, Kuwait depended on bedouins for security: They made up the majority of the army's enlisted ranks.

Meanwhile, according to Western businessmen and diplomats, Kuwaiti officials' main interest appears to be not so much getting the best value for the dinar but spending the fewest possible dinars - a time-consuming bidding process. "We're right back to the same old system," an American businessman agreed, questioning the professionalism and efficiency of the government, with or without foreign managers. "You make a bid, it goes to the ministry, and the man just sits there and waits. Waits for better offer, waits for another bid, waits for word from the old personal representatives (the fixer).

Demands for political change are rampant even today, particularly among the Kuwaitis who remained there during the occupation. All in all this presented an impossible political situation - the Corps could not adequately deal with.

Chapter 6

CONCLUSION/ RECOMMENDATIONS

We have moved from a bipolar to a unipolar universe with Soviet Union's collapse and the assertion of US military dominance in Kuwait. The US alone now occupies the central position and with that comes responsibilities to the International community.

The U.S. will most surely get involved with reconstruction/ disaster relief efforts in Eastern Europe and the Soviet Republics. Recalling from history, the U.S. understood that war-torn Europe stood on the brink of collapse, perhaps revolution after WWII. The challenge for the Truman administration, at that time, was to make Americans realize that it was in their long-term interest to come to the rescue.

A half century later, George Bush faces similar problems. By having Secretary of State Baker call at Princeton for an international conference on Soviet aid, Bush was borrowing another page from the Truman playbook. The plan to aid Europe was announced in 1947 not by the president but by Secretary of State George C. Marshall (hence the Marshall Plan).

The big difference between then and now, of course, is that in 1947 the United States was by far the richest nation in the world, and today it feels comparatively broke. The Marshall Plan cost more than $100 billion in 1991 dollars. The Bush

administration is suggesting a paltry $600 million to help the Soviets.

In the case of aid to developing nations to combat overpopulation, declining resources, underemployment, hunger and poverty, the US contribution ranks 18th among the 24 leading industrialized nations in relation to size of its economy. At 0.18 percent of GNP, the US is far below the target of 0.7 percent long ago agreed upon by all UN member states. Moreover the vast majority of US economic assistance is concentrated on just four strategic allies,[67] two of them from the Middle East.[68] Perhaps it is opportune for the US to change its current practices, shifting more to the new global environment.

Handing out the aid will be a monumental task. It is still far from clear who is in charge throughout the various republics. Despite a poor harvest, the Soviets probably have enough food, but they lack a way to distribute it. Farmers horde their produce, awaiting price liberation. Roads and railways in the Soviet Union are in wretched shape. It is entirely possible that the West will have to create its own distribution network, probably by using the military. Before the winter is out, the world could be treated to the strange spectacle of NATO convoys penetrating deep into their old enemy on a mission of mercy.[69]

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[67]Israel, Egypt, Pakistan and El Salvador.

[68]"US Geopolitical Windfall", The Christian Science Monitor, 22 OCT 1991, p. 19.

[69]Evan Thomas, "The New Case for Soviet Aid", NEWSWEEK, November 23, 1991, p. 29.

Just who will do this work is uncertain, but one thing is for sure: the US Army Corps of Engineers is already tasked with performing diplomatic duties in emergency operations and military construction for friendly foreign nations. The Corps is an agent of our government and our national policy. It has its finger on the pulse of national sentiment and our policy-makers' desires. Hopefully, our nation's civilian leadership recognizes the correlation between this and the emerging opportunities to employ the Corps in the international arena.

The Corps has displayed the flexibility needed to manage crises and correct deficiencies before they become critical. It has also displayed a willingness to take risks and the skill to make most of them pay off. This is evident by virtue of its successful completion of over $18 billion in construction projects in the Middle East. I reviewed the history of the Corps of Engineers, its organizational structure and foreign mandate, and reviewed its historical experience in the Middle East. The Corps is particularly suited for this new role. The scale and scope of the Corps' present operations in Kuwait and Egypt, coupled with its past operations in Saudi Arabia are excellent examples of how an engineering/construction manager combines planning, organization, staffing and control to complete international construction projects. Additionally, the historic role the U.S., particularly the military, has played in post-war reconstruction and emergency operations in the international arena is substantial. If we recognize lessons learned from previous experiences in reconstruction, particularly Kuwait, they could be

applied to the Eastern European and Soviet markets.

The Corps should sit as a member of a reconstruction commission charged with addressing mega-reconstruction efforts and activities involving international participation of the public and private sectors. Given the scope of expected reconstruction efforts in Eastern Europe and the CIS, these would also involve the development of appropriate methods for cooperation and coordination of activities - a task the Corps could not handle in either Korea or Kuwait. The creation of a truly international arm' solely responsible for reconstruction/ nuclear disarmament would be necessary.

If we do employ the Corps in post cold-war Europe and the "Soviet Union" as the U.S. agent for reconstruction, I believe that our technology and construction contractor bases would be strengthened, bolstering our Nation's competitiveness in this burgeoning global market sector simultaneously, while we help our neighbors.

The U.S. and the Corps benefit as well:

1) International work helps to hone and maintain the Corps' construction management skills.

2) The Corps of engineers can be used to cement ties between nations which become strategically important to the US.

3) A pressing political consideration involves opportunity to provide work for US architect/engineers, suppliers and construction contractors abroad.

I believe the Corps has applied these tenants to the Middle

East region in general, thereby leveraging itself at home and abroad, and has had tremendous success. We must recognize however, that the case of Saudi Arabia was unique - in that there were few players and ample resources to pay for construction projects. The Corps could do the same in the new, emerging market but would have to reorganize to do so - a more substantial reorganization than was done for Saudi Arabia[70] and Kuwait.

Although the fiscal situation may be somewhat different in E.Europe, there is certainly a need to build a construction industry base--a task the Corps is up to. This could be done on some sort of a credit basis whereby, the US provides dollar credits to respective countries who in-turn "hire" the Corps to manage the reconstruction program. The Corps subsequently lets the contracts to qualified US firms--thereby bolstering the US economy while simultaneously rebuilding our neighbors.

Unless wisely invested, the inheritance from our cold-war victory and subsequent Gulf War victory will soon be exhausted and we will find ourselves in hock as never before. This is more easily recognized when viewed against the worldwide triumph of corporate capitalism. Three giant mergers in fierce competition with one another may effectively rule not just individual nations but whole clusters of allied economics - American, Inc., Europe, Inc., and Japan, Inc. Hence, the world may be neither bipolar nor unipolar but tripolar.

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[70]The rapid growth of the entire Saudi Arabian program, caused USACE to create a new Division office in 1976, which was the equivalent of having a separate operating company in a private engineering and construction firm.

We should see ourselves as stewards of the planet, whose task is to sustain ourselves and help rebuild our neighbors, simultaneously. The U.S. has a distinct responsibility and the Corps of Engineers a unique aptitude to lead these efforts in Europe and the CIS. This opportunity will not last forever, we must therefore, act now and form a national strategy to utilize the Corps as our reconstruction agent in this new international marketplace.

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